

Pathways in the Chicago-Area Building Trades

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September 2020

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Executive Summary

The Chicago Area Construction Industry

The following report describes the Chicago area building trades focusing on how the hiring process operates and how Blacks, Latinx and women have fared in recent years in the industry.

The Chicago region employs more than 100,00 persons in the building trades. Leading numbers of workers by trade in the Chicago region are: Laborers - 21,573; Carpenters - 19,488; Electricians - 12,814; Plumbers - 10,606; Painters - 7,597; Operating Engineers - 6,101

Compensation

The median wage for all construction workers in the Chicago area is \$32.53 and the median annual earnings are \$67,664.

The median entry level wage for construction occupations is \$18.71 and the median entry level annual earnings is \$38,927

The median wage for experienced workers is \$40.02 and the median experienced annual earnings is \$83,240

While wage and salary levels are correlated, the industry is highly seasonal with frequent job changes so most employees do not regularly work a full year, full time.

Projected hiring needs of the building trades

In the Chicago area, the Illinois Department of Employment Security estimates 10,842 new hires in the building trades annually through 2026.

For individual trades, leading estimated annual recruitment needs are: Laborers - 2,429; Carpenters - 1,893; Electricians - 1,547; Plumbers - 1,317; Operating Engineers - 740; Painters - 657

Pathways into the building trades

There are three principal construction career pathways:

Union apprenticeship. Union training staff select among applicants to participate in a combination of classroom and on-the-job training lasting from three to five years and culminating with admission to union journey worker status and very strong employment

opportunities.

Trade school or community college. Students may earn a certificate or associates degree. Graduates will eventually enter apprenticeships, join unions, work independently or for a non-union contractor.

Begin low-skilled with a non-union company, learn from a skilled tradesperson, and either continue in low-skilled positions or become a skilled worker, but non-union. Workers may eventually do an apprenticeship or, in rare cases, test into a union.

A variety of apprenticeship and training programs operate in the Chicago area

Unions train apprentices at elaborate union-operated training centers, many located in Chicago suburbs. Due to their location, and the ever-changing work locations, use of a car is essentially required. Depending on the trade, apprentices may need to purchase tools and will pay a percentage of union dues. Employers pay apprentices an escalating wage during the apprenticeship that culminates in a full union wage for journey workers after completion of apprenticeship requirements.

Area community colleges and proprietary schools provide training in selected trades. These programs provide preparation for an apprenticeship or for entry-level employment. Tuition ranges from inexpensive community colleges to around \$16,000 per year for proprietary schools, although schools help students access financial aid and most pay much less than full tuition.

Entry requirements for apprenticeships and schools

Unions generally require apprentices to be 18, have a high school diploma or GED, have a driver's license and access to a car, be able to pass a basic math and mechanical logic test, sometimes including algebra, pass a physical, pass a drug test, and demonstrate motivation through an interview that can be culturally subjective. It is generally recommended, but not required, to have some previous employment in hands-on work, preferably construction oriented.

For community college or trade school entry, high school completion or GED is the primary requirement. Because the Chicago City Colleges are preparing many of their students to enter apprentice programs, they try to mirror apprentice requirements such as math and reading skills, timeliness, and for some programs a driver's license.

Training Program Capacity and Need

With projected regional need around 10,000 new workers per year, and around 5,000 estimated annual trainees, additional trainees would probably be employed. However, many of the needed new construction workers will be marginally trained

helpers, laborers, roofers, pavers, painters and other lower-skilled workers who do not need much, if any, formal training.

Each union manages its number of apprentices to assure employment for them and assure that over-supply does not lead to lower wages.

There appear to be between 3,000 and 3,500 union apprentice slots in the Chicago area each year. The figure may be lower this and next year due to Covid-related changes to enrollment.

The Community Colleges of Chicago have about 1,000 enrollment slots per year for building trades programming. They serve applicants who meet their admission standards on a first-come, first-served basis until a trade cohort is filled. Other area community colleges offer between 500 and 1,000 slots per year, but these are almost entirely in electrician, welding and HVAC.

Trade schools and Associated Builders and Contractors (non-union apprentices) offer several hundred slots per year in electrician and HVAC, and fewer slots in other trades.

Apprenticeship Enrollment

The most common apprenticeship entries in the Chicago area in recent years were: electrician and carpenter (over 400 each annually), plumber and laborer (250 to 350 each), iron worker and painter (100 to 200 each)

The vast majority of building trades trainees are males. A majority of apprentices are White and trade school enrollment is becoming largely Latinx and Black.

Aspiring trades workers face a variety of challenges

The construction industry presents many challenges for entry-level workers. The limited number of union apprentice slots in most trades makes many of them highly selective. Challenges include the ability to pass a drug test, ability to do basic math and apply mechanical logic, a relatively high level of physical strength and fitness, willingness to rise early in the morning and always be on time, and for many trades, willingness to work in extreme heat, cold, or wet environments. Because for many positions the end of a job may mean a layoff, success requires the ability to continually look for new opportunities and adjust to new co-workers and managers.

Blacks and women, and to a lesser extent Latinx, must be able to navigate cultures where they may be exposed to racist and sexist attitudes in some workplaces. Blacks, Latinx and women may lack the social networks in the industry that are needed for many job searches.

The union apprentice path is cost-efficient as unions pay for most of an apprentice's training from funds generated from member dues and the worker is paid well above minimum wage throughout the apprenticeship. Apprentices may need to pay for tools and union fees. However, there are burdens for union apprentices who lose their job and fall behind in dues, and for apprentices who have trouble bridging a few weeks of initial unpaid probation.

Obstacles to attending trade schools can include the time commitment required to complete a one-semester program, required math and reading comprehension, applying construction technique skillfully, and paying tuition.

For the person with the requisite skills and temperament, a construction trade is a good opportunity. It does not require college education and rewards practical, as opposed to mental, aptitude. A union apprenticeship provides a very good non-college career path to a solid middle-class income. A non-union construction path can provide a middle-class living for a person lacking the skills or interest for a college-trained career.

Program Completion and Job Placement

About two-thirds of apprentices complete their programs. Depending on the trade, completion rates range from over 90% to around 50%.

Completion rates for non-union training programs range from around 30% to over 90%, depending on the program.

Pre-apprenticeship programs tend to have high completion rates but do not necessarily lead to further training or employment.

The Community Colleges of Chicago construction programs average about 70% completion across their trades offered.

Blacks have lower completion rates for apprenticeships than do Whites or Latinx. Women have high completion rates.

Almost all completing apprentices find jobs, although they may change jobs often. Unions and union shops have a mostly symbiotic relationship where unions refer apprentices they think their signatory companies will want. For the most part, union and contractor cultures align so a union trades person usually can find employment consistently.

For non-union trade school graduates, job placement rates appear to be 80% or better, but the programs have high drop-out rates so the likelihood of a person entering the program and finishing with a job is far lower.

Starting Compensation

Starting wages for non-union employment such as a laborer or helper is minimum wage or close to it. Union apprentices start at 50% of the union journey worker wage, between \$17 and \$25 per hour. Apprentice wages progress in equal increments until program completion. Union apprentices may receive referrals to jobs, but are ultimately responsible for remaining hired and may have to undertake their own job search. Certain occupations require a licensing examination for a person to work without licensed supervision.

Non-union compensation varies wildly, from minimum wage to the equivalent of a union wage if a trainee is highly skilled and/or is able to work for a quality contractor. In the early career years, workflow is generally less consistent so total annual compensation will be lower than in later years.

Employment Retention

Union journey workers are well-prepared for steady employment. The union apprentice application process is very rigorous for most trades, wage increases are steady, and for non-college occupations, the final wage of between \$40 and \$50, is quite good. A large proportion of union trades workers remain in that career. About one quarter will eventually work for themselves.

Non-union workers appear to stay in their jobs far less consistently. A large proportion of them are younger workers with little or no attachment to their trade, doing low-skilled work that they may move in or out of. Many are recent immigrants and/or are undocumented.

Among professions, construction is one of the least consistent in terms of regular work. Many workers, both union and non-union are laid off when jobs end, and for many trades work is highly seasonal.

For young, non-union workers, progress is determined by self-directed job searches, training, and motivation. Like with union workers, for some occupations, workers must prepare to pass a licensing examination.

Race, Gender, Training and Hiring in the Building Trades

The construction trades and apprenticeships in the Chicago area remain majority White. Large numbers of Latinx work in construction but they are disproportionately in lower wage, less skilled occupations. Blacks are significantly under-represented among apprentices and trades workers, highly skilled, and less skilled. Very few women work in construction trades or apprenticeships. Blacks, and to some degree Latinx, are less likely to complete apprenticeships than are Whites.

Our study revealed a number of possible reasons for the apparent under-employment of Blacks, Latinx and women. None of them is a single cause of the problem, but together they likely create the disparities:

- Construction hiring is mediated by informal relationships and tradition within unions and many employers, composed mostly of white men, many with multiple generations in the trades. Both intentional and unintentional discrimination may take place against Blacks and women in some settings.
- Apprentice interviews and employer hiring are subjective and at risk of discrimination stemming from cultural and racial biases. Interviewers may favor applicants with family background in trades – more likely for Whites – or who speak, or dress, look, or carry themselves as they do.
- The industry has thousands of very small companies that lack personnel management capacity. Part by habit, part by preference, and part by necessity they rely on kin and friendship networks for employment referrals that are often segregated racially.
- Few young Blacks or Latinx in Chicago were parented by people working in building trades, a common route to the occupation for many white men. Consequently, they are less aware of the profession’s possibilities and may have done less hands-on trade-related work as children.
- Fewer Black and Latinx Chicago high school students have met minimum SAT standards in mathematics. Consequently, many may not pass apprentice entry standards, or are ranked lower than Whites who, on average, perform better on apprentice math tests.
- Low-income Blacks or Latinx may not have ongoing access to a car, a virtual requirement for most apprenticeships, and later for work. They are also more likely to need assistance with childcare and may be less well situated to bridge early periods of layoff and still pay union dues.
- Higher Black non-completion of apprenticeships may be caused by receipt of less credit for pre-program work experience, and/or antagonistic co-workers or managers.

U.S. Department of Labor affirmative action goals for unions lack sanctions owing largely to Supreme Court rulings – witness the problems of higher education in general with affirmative action - and Equal Employment Opportunity regulation does not extend to the thousands of small construction companies.

The Chicago Area Building Trades Eco-System

Hire 360

Hire360 is a new coalition of the larger unions, developers, and construction companies in the Chicago region seeking to increase numbers of people of color and women in construction trades by more widely advertising trades and apprenticeships, helping clients better prepare for the apprentice admissions process, paying various apprentice fees and costs, and referring persons to United Way to address other barriers.

Unions

Chicago remains a very strong union marketplace. Union apprenticeships provide the highest quality training and the surest path into the highest paying employment. Union contracts effectively define the prevailing wage used for much government work, and most large public and private commercial projects have union-controlled hiring. Unions supply about half of the workers in each trade and union apprenticeships are the largest suppliers of workers in most of the higher-skilled trades. Most unions regulate the number of workers by limiting the number of apprenticeships to the number of workers for whom they expect work.

Government

State and local governments regulate licensing of workers and contractors, and indirectly hire, and set rules for hiring, large numbers of building trades workers.

U.S. Department of Labor/EEO Federal affirmative action regulations apply to apprenticeships but only mandate minority hiring goals. The many small construction companies are exempt from EEO and laws against hiring discrimination because of their size. EEO is minimally effective for large contractors because the supply of people of color and women licensed or journey-workers is small.

Illinois Tollway and the Chicago Cook Workforce Partnership operate ***ConstructionWorks***, which uses community-based partners to train participants in basics of various construction trades for apprenticeship or employment, and limited pay reimbursements for hiring participants.

The ***City of Chicago*** has ordinances and programs requiring local hiring, minority contractor participation, prevailing wages, and apprenticeships, and licenses many construction trades.

Illinois Works is a new state initiative that will provide \$25 million to community-based organizations for pre-apprentice programs and requiring 10% first year apprentices on state public works projects.

Illinois Department of Labor and Illinois Department of Commerce and Economic Opportunity have monitored, operated and funded various construction apprentice and training programs.

Educational Institutions

Community Colleges of Chicago – Provides a wide array of construction trades training at Kennedy-King and Daley colleges. They have strong training relationships with Commonwealth Edison and People’s Gas for job/apprenticeship referral. Certificate programs provide pre-apprenticeship training orienting the student to the basics of their selected trade and providing a foundation for an apprenticeship. For a person interested in a non-union career, community colleges are an option to begin the career.

The Chicago Public Schools - Offers basic training in several trades through Chicago Builds and its Career and Technical Education program at four high schools.

Community-Based Organizations and Associations

Hispanic American Construction Industry Association, the Chicago Urban League, Black Contractors United, Chicago Black United Communities, and others have long worked for diverse participation in apprenticeships and minority contractor participation on public and private-sector projects. Many provide or sponsor pre-apprentice or basic training. Chicago Women in Trades advocates for women in apprenticeships and trades and operates pre-apprenticeship and training programs. Associated Building Contractors (ABC) is a leading non-union contractors association that provides non-union apprenticeships and industry lobbying.

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1. Introduction

The building trades are notable for being one of the best-compensated occupations that typically does not require a college degree, even comparing favorably to many that do.¹ As such, construction might appear to be a strong occupational option for less-educated young people who in earlier decades might have worked in manufacturing. The field has, at this writing, largely survived the Covid19 crisis with little downturn in the Chicago region and, pre-Covid, the Illinois Department of Employment Security projected it to grow. Many consider building trades workers to be disproportionately older, and union leaders express some concern that insufficient numbers of young people are motivated and sufficiently qualified, to replace retirees. So on paper, at least, the building trades would seem to be a promising vocational opportunity for many.

That said, the industry has characteristics that complicate access to it. Chicago construction is heavily union, perhaps the most so in the nation. While this means strong compensation for workers, it also brings with it traditions that can make the industry hard to break into for young people without experience working with their hands or family in trades. The industry has been almost entirely male and until recently, predominantly white. Many Latinx work in construction today, but they disproportionately work the lowest-paid jobs. The strongest route to a career is the registered apprenticeship, which is managed by unions, and takes three to five years to complete. Apprenticeships require drug testing, which marijuana users routinely fail, and require math skills that appear to exceed those of many lower-performing students.

How promising, then, are construction jobs for lower skilled job seekers, and for African Americans, Latinx, and women, in particular?

The following report provides an overview of how the construction industry operates in the Chicago area with regard to hiring patterns and practices, how workers train and progress in trades, and its access for people of color and women. The construction industry in the United States, and in the Chicago area in particular, is distinct in several ways:

- Very few of its large companies are publicly owned.
- Prime contractors that manage the tasks of numerous sub-contractors engaged for each project lead much of the work.
- Little of the industry depends on college educations.
- Some occupations require almost no training; others quite a lot.
- Unions have a huge impact on wage levels.
- Unions provide most of the formal training of the industry's workers.

¹ Manzo, Frank and Bruno, Robert. 2020 *The Apprenticeship Alternative: Enrollment, Completion Rates and Earnings in Registered Apprenticeship Programs in Illinois*. Illinois Economic Policy Institute and University of Illinois Labor and Employment Relations.

- The industry is heavily male and tradition remains important to it.

Collectively, these attributes provide both opportunities and challenges to those seeking training and jobs.

Surprisingly little has been written about some very important issues bearing on the industry. Among these issues is how, whether, and why the traditional “old boy” network operates in industry hiring, and how and whether the structure of the industry discriminates against some types of people irrespective of employer or union intentions. While we offer data and provide a framework for considering these issues, we believe a full-fledged study of industry hiring practices would help inform public policies, and affirmative action policy in particular, at local, state and federal levels.

Overall, we find that the industry has elements that will always limit it to persons with particular skills, strengths, and temperaments. And the industry remains organized around subcontracting, apprentice selection, and labor law in ways that make access for some harder than it should be. Some of this might be changeable; some of it may not be.

Methodology

The report relies on a number of types of data. The overall statistical shape of the industry in the Chicago area is described by data sets developed by the U.S. Bureau of the Census, Illinois Department of Economic Security, and U.S. Department of Labor that are conventionally used for industry descriptions, hiring projections, and apprenticeship patterns. For some tables in the report, and particularly those providing data about unions, we use Current Population Survey Outgoing Rotation Group (CPS) data because it is the only Census product that records union membership. Because the data set that includes union variables is small, data was aggregated for the Chicago, St Louis, Detroit and Milwaukee metro areas to create statistical reliability impossible by using Chicago’s data alone. Each of these cities has significant union history, an aging manufacturing base, similar city-suburban settlement patterns, large African American populations, and histories of strong European immigration so we are satisfied that their data reliably describes union patterns relevant to understanding Chicago.

When people speak of the Chicago area, they are not always referring to exactly the same place, and for our purposes in this research, that is not problematic. Almost all of the tables in the report describe characteristics of the industry in percentages and the addition or subtraction of a particular suburban county does not affect our conclusions. Different sources were selected because they uniquely provided information on particular issues. The “Chicago region” is sometimes defined somewhat differently across these sources. Where PUMS (Census Public Use Microdata Samples) data is used, the region consists of Cook, Lake, DuPage, McHenry, Kane, and Will counties. The region is best approximated in the IDES (Illinois Department of Employment Security)

data by WIA (Workforce Investment Act) areas comprising, Cook, DuPage and Lake counties. The RAPIDS (federal apprenticeship data) data includes the six-county area.

The investigators interviewed eighteen leaders and managers from major labor organizations, unions, and advocacy organizations representing a wide variety of viewpoints of different racial/ethnic groups, women, unions, and private sector employers. They were asked about their institutions, and most questions bore on their view of training, preferred paths into the trades for new workers, and obstacles trainees face. We learned important things from each of them. Interviewees were promised confidentiality in their responses and that nothing they told us would be written by us so as to identify any particular information or opinion expressed by them. To assure that anonymity, we will not disclose the names or positions of those interviewed.

In lieu of extensive interviewing of construction workers, which would have been prohibitively expensive, particularly considering our work was conducted during the outset of the Covid19 crisis, the report utilizes material drawn from the many thousands of posts on construction-oriented internet discussion boards, where workers in every trade post their questions, answers, comments and insights into every aspect of their trades. This material provides valuable insight beyond mere statistics into how the trades operate, providing something of an anthropology of the industry. While many of the posts were not written by Chicago workers, we selected the posts utilized in this study for their face validity – the trades workers are speaking to what we observe in the statistics. Additionally, in ways that even in-person interviews might not, fellow posters often call other posters to account for their opinions, or repeatedly endorse them, thus validating the reliability of opinions expressed. In that way, many discussion “threads” function the way a focus group typically does. We are satisfied that the material used for this report communicates important truths about how the industry operates. All posts cited herein were accessed August 23, 2020.

2. The Construction Industry in the Chicago Region

Occupational Totals and Employment Forecast

Chicago Area Employment by Trade and Projections

We begin by considering employment in the Chicago area as it constitutes a single laborshed where supply and demand for workers crosses county boundaries and workers, employers and projects are mobile across them. The Chicago area, for this calculation comprised of Cook, DuPage and Lake counties, has approximately 99,000 construction trade workers according to the Illinois Department of Employment Security.

Leading numbers of workers by trade are:

Laborers	21,573
Carpenters	19,488
Electricians	12,814
Plumbers	10,606
Painters	7,597
Operating Engineers	6,101

IDES calculates that this region needs about 10,800 new construction trades workers each year. IDES calculated this by adding the number of annual exits from the workforce, the number of persons transferring from a job in the trade to a different job outside the trade, and the estimated growth of the number of persons who would work in the trade.

For individual trades, leading estimated annual recruitment needs are:

Laborers	2,429
Carpenters	1,893
Electricians	1,547
Plumbers	1,317
Operating Engineers	740
Painters	657

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Table 1.1 Illinois Department of Employment Security Employment Projections for Construction Occupations, Cook, Lake and DuPage Counties

	2016 Tot	2026 Est	Change	Annual Exit From Labor Force	Annual Transfer to Other Occup	Annual Indust Growth	Annual Total Needed
Construction & Extraction Occupations	118,615	127,389	8,774	4,301	7,929	878	13,108
Supervisors, Construction & Extraction	6,925	7,524	599	231	457	60	748
1st-Line Spvrs/Mgrs Const/Extraction	6,925	7,524	599	231	457	60	748
Construction Trades Workers	99,279	106,604	7,325	3,541	6,568	733	10,842
Construction Laborers	21,573	23,270	1,697	782	1,478	169	2,429
Carpenters	19,488	20,458	970	687	1,110	96	1,893
Electricians	12,814	13,773	959	463	988	96	1,547
Plumbers, Pipefitters & Steamfitters	10,606	12,084	1,478	411	758	148	1,317
Painters, Construction & Maintenance	7,597	7,732	135	261	382	14	657
Operating Enginrs/Const.EquipOperators	6,101	6,613	512	242	446	52	740
Roofers	3,612	3,931	319	109	255	32	396
Cement Masons & Concrete Finishers	2,700	2,946	246	108	192	25	325
Sheet Metal Workers	2,577	2,803	226	93	185	24	302
Brickmasons & Blockmasons	2,177	2,332	155	66	125	15	206
Structural Iron & Steel Workers	1,681	1,842	161	50	133	16	199
Tile & Marble Setters	1,391	1,495	104	46	74	12	132
Carpet Installers	1,309	1,427	118	44	71	11	126
Drywall & Ceiling Tile Installers	1,267	1,234	-33	38	70	-4	104
Paving/Surfacing/Tamping Equip.Operators	657	713	56	22	47	6	75
Glaziers	626	688	62	24	51	6	81
Insulation Workers, Floor/Ceiling/Wall	454	445	-9	12	35	-1	46
Floor Layers, Ex. Carpet/Wood/Hard Tiles	402	436	34	13	21	3	37
Reinforcing Iron & Rebar Workers	358	394	36	9	28	3	40
Tapers	308	307	-1	10	18	0	28
Pipelayers	275	306	31	10	19	3	32
Insulation Workers, Mechanical	227	245	18	7	18	1	26
Plasterers & Stucco Masons	178	177	-1	6	10	0	16
Helpers, Construction Trades	1,984	2,201	217	88	202	21	311
Helpers, Construction Trades, All Other	456	500	44	20	45	4	69
Helpers-Roofers	430	477	47	19	44	6	69
Helpers-Electricians	308	335	27	13	31	1	45
Helpers-Carpenters	296	334	38	13	31	4	48
Helpers-Plumbers/Pipefitters/Steamfitters	267	310	43	12	28	4	44
Helpers-Masons & Tile/Marble Setters	163	179	16	8	18	1	27
Helpers-Painters/Paperhangers/Plasterers	64	66	2	3	7	0	10
Other Construction & Related Workers	9,758	10,350	592	420	644	59	1,123
Construction & Building Inspectors	1,810	1,934	124	92	106	12	210
Elevator Installers & Repairers	741	822	81	25	65	7	97
Hazardous Materials Removal Workers	1,074	1,188	114	45	89	12	146
Highway Maintenance Workers	3,750	3,858	108	162	218	10	390
Rail-Track Laying/Maint.Equip.Operators	613	633	20	20	41	1	62
Construction & Related Workers, All Other	869	937	68	35	59	7	101

Source: Illinois Department of Employment Security (IDES), Local Workforce Areas (LWAs), long-term (2016-2026) WIA 1 6 7 8 9 10 Lake, DuPage Cook
https://www2.illinois.gov/ides/lmi/Pages/Employment_Projections.aspx

Cook County Employment Projections

IDES estimates that about 58,000 construction trade workers live in Cook County.

IDES estimates that the number of Cook County construction workers will grow 4,126 from 2016 to 2026, averaging 413 more workers per year.

The number of new Cook County construction workers projected to be needed annually is the 413 due to industry expansion, 3,854 to replace workers shifting to a different occupation, and 2,082 who leave the workforce, totaling 6,349 per year

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**Table 1.2 Illinois Department of Employment Security Employment Projections for
Construction Occupations for Cook County**

	2016	2026 Est	Change	% Change	Annual Exit From Labor Force	Annual Transfer To Other Occup	Annual IndustG rowth	Total
Construction & Extraction Occupations	70,840	75,615	4,775	7.0	2,568	4,708	478	7,754
Supervisors, Construction & Extraction	4,177	4,512	335	8.0	139	274	34	447
Construction Trades Workers	58,451	62,577	4,126	7.1	2,082	3,854	413	6,349
Construction Laborers	12,446	13,410	964	7.8	451	852	96	1,399
Carpenters	11,968	12,561	593	5.0	422	682	59	1,163
Electricians	7,637	8,164	527	6.9	275	587	53	915
Plumbers, Pipefitters & Steamfitters	6,226	7,062	836	13.4	241	444	84	769
Painters, Construction & Maintenance	4,591	4,680	89	1.9	158	231	9	398
Operating Enginrs/Const.EquipOperators	3,443	3,699	256	7.4	136	250	26	412
Roofers	2,054	2,233	179	8.7	62	145	18	225
Cement Masons & Concrete Finishers	1,534	1,671	137	8.9	61	109	14	184
Sheet Metal Workers	1,482	1,608	126	8.5	53	106	13	172
Brickmasons & Blockmasons	1,260	1,348	88	6.9	38	72	9	119
Structural Iron & Steel Workers	978	1,064	86	8.9	29	77	9	115
Tile & Marble Setters	785	843	58	7.4	26	42	6	74
Carpet Installers	729	793	64	8.8	24	40	6	70
Drywall & Ceiling Tile Installers	727	709	-18	-2.5	22	40	-2	60
Paving/Surfacing/Tamping Equip.Operators	416	436	20	4.8	14	29	2	45
Glaziers	359	392	33	9.2	14	29	3	46
Insulation Workers, Floor/Ceiling/Wall	260	255	-5	-1.9	7	20	0	27
Floor Layers, Ex. Carpet/Wood/Hard Tiles	222	240	18	8.0	7	12	2	21
Reinforcing Iron & Rebar Workers	204	224	20	9.8	5	16	2	23
Tapers	180	179	-1	-1.0	6	10	0	16
Pipelayers	158	174	16	10.1	6	11	2	19
Insulation Workers, Mechanical	129	138	9	6.9	4	10	1	15
Plasterers & Stucco Masons	106	105	-1	-1.0	4	6	0	10
Helpers, Construction Trades	1,157	1,281	124	10.7	51	118	12	181
Helpers, Construction Trades, All Other	261	285	24	9.2	12	26	2	40
Helpers-Roofers	243	269	26	10.7	11	25	3	39
Helpers-Carpenters	191	217	26	14.0	9	20	3	32
Helpers-Electricians	180	194	14	7.8	8	18	1	27
Helpers-Plumbers/Pipefitters/Steamfitters	151	175	24	15.9	7	16	2	25
Helpers-Masons & Tile/Marble Setters	95	104	9	9.5	4	10	1	15
Helpers-Painters/Paperhangers/Plasterers	36	37	1	2.8	2	4	0	6
Other Construction & Related Workers	6,695	6,869	174	2.6	285	430	17	732
Construction & Building Inspectors	1,284	1,331	47	3.7	64	74	5	143
Elevator Installers & Repairers	422	466	44	10.43	14	37	4	55
Hazardous Materials Removal Workers	666	732	66	9.91	28	55	7	90
Highway Maintenance Workers	2,764	2,697	-67	-2.42	116	157	-7	266
Rail-Track Laying/Maint.Equip.Operators	417	428	11	3	13	27	1	41
Septic Servicers/Sewer Pipe Cleaners	357	373	16	4.48	18	27	2	47
Construction & Related Workers, All Other	583	622	39	6.69	24	39	4	67

Source: IDES Cook WIAs 7,8,9

State of Illinois Employment Projections

IDES estimates that about 168,000 construction trade workers live in Illinois.

Across the state, annual employment needs are estimated at 6,017 to replace workers exiting the workforce, 11,154 to replace persons transferring jobs, and 1,302 for projected annual industry growth.

Table 1.3 Illinois Department of Employment Security Employment Projections for Construction Occupations – State of Illinois

	2016 Emplt	2026 Projection	Change	Change%	Annual Exit From Labor Force	Annual Transfer To Other Occup	Annual Indust Growth	Total
Construction & Extraction Occupations	202,329	218,070	15,741	7.7	7,347	13,581	1,574	22,502
Supervisors, Construction & Extraction	11,966	13,074	1,108	9.2	401	790	111	1,302
Construction Trades Workers	168,168	181,183	13,015	7.7	6,017	11,154	1,302	18,473
Construction Laborers	37,466	40,688	3,222	8.6	1,363	2,576	322	4,261
Carpenters	33,091	34,976	1,885	5.7	1,170	1,892	188	3,250
Electricians	21,412	22,986	1,574	7.3	773	1,650	157	2,580
Plumbers, Pipefitters & Steamfitters	17,305	19,761	2,456	14.1	672	1,240	246	2,158
Painters, Construction & Maintenance	12,555	12,805	250	1.9	433	632	25	1,090
Operating Enginrs/Const.EquipOperators	11,542	12,509	967	8.3	459	843	97	1,399
Roofers	5,896	6,415	519	8.8	177	417	52	646
Cement Masons & Concrete Finishers	4,546	4,990	444	9.7	181	324	44	549
Sheet Metal Workers	4,172	4,543	371	8.8	151	299	37	487
Brickmasons & Blockmasons	3,650	3,924	274	7.5	110	210	27	347
Structural Iron & Steel Workers	2,775	3,058	283	10.2	84	219	28	331
Tile & Marble Setters	2,340	2,517	177	7.5	76	126	18	220
Carpet Installers	2,149	2,319	170	7.9	70	116	17	203
Drywall & Ceiling Tile Installers	2,085	2,042	-43	-2.0	63	115	-4	174
Paving/Surfacing/Tamping Equip.Operators	1,075	1,167	92	8.5	37	76	9	122
Glaziers	1,040	1,135	95	9.1	39	83	10	132
Insulation Workers, Floor/Ceiling/Wall	738	726	-12	-1.6	20	56	-1	75
Floor Layers, Ex. Carpet/Wood/Hard Tiles	649	698	49	7.5	21	35	5	61
Reinforcing Iron & Rebar Workers	599	663	64	10.6	16	48	6	70
Tapers	509	507	-2	-0.3	16	28	0	44
Pipelayers	461	518	57	12.3	18	33	6	57
Insulation Workers, Mechanical	377	408	31	8.2	10	30	3	43
Plasterers & Stucco Masons	296	298	2	0.6	10	17	0	27
Helpers, Construction Trades	3,245	3,622	377	11.6	145	332	38	515
Helpers, Construction Trades, All Other	750	831	81	10.8	33	76	8	117
Helpers-Roofers	695	769	74	10.6	31	71	7	109
Helpers-Electricians	500	548	48	9.6	22	51	5	78
Helpers-Carpenters	479	547	68	14.2	22	50	7	79
Helpers-Plumbers/Pipefitters/Steamfitters	445	517	72	16.1	20	46	7	73
Helpers-Masons & Tile/Marble Setters	273	304	31	11.3	12	28	3	43
Helpers-Painters/Paperhangers/Plasterers	103	106	3	2.9	4	10	0	14
Other Construction & Related Workers	16,477	17,683	1,206	7.3	712	1,089	121	1,922

Source: IDES

Most workers in the building trades work in the construction industry

The vast majority of persons reporting that they work in a building trade occupation work in the construction industry. The exceptions are boilermakers, of whom about one quarter work in manufacturing, sheet metal workers, of whom about one-third work in manufacturing, and building inspectors, most of whom work in professional services or public administration. Transportation companies employ some, although they are actually doing construction. Hazardous materials removers, while often working to prepare construction sites, work for professional services firms rather than construction firms.

Although they make up a small percentage of all workers in the trade, manufacturers hire large numbers of glaziers, and electricians often work for manufacturers, transportation companies or utilities. Many heavy equipment operators work in transportation, warehousing or for utilities.

Table 1.4 Construction Occupations Employed by Selected Industries for Chicago Area

	Constr	Mfc	Trnsp, Wrhs, Utilts	Prof Sci Admin	Educ Health Svcs	Public Admin
Boilermakers	52.9%	23.5%	5.9%	5.9%		
Brickmasons, block, stone, reinforcing iron, rebar	92.2%	1.6%	2.3%	1.6%	1.6%	
Carpenters	90.5%	1.8%	0.5%	1.3%	1.6%	0.2%
Carpet, floor, and tile installers and finishers	89.7%	0.9%				
Cement masons, concrete finishers, and terrazzo workers	96.8%		3.2%			
Construction laborers	94.5%	0.6%	1.4%	1.3%	0.4%	0.4%
Pavers	100.0%					
Constr Equipment Operators	70.5%	2.6%	9.3%	3.6%	2.1%	2.6%
Drywall installers, ceiling tile installers, and tapers	98.4%				0.8%	
Electricians	71.4%	7.7%	10.4%	1.3%	2.2%	1.4%
Glaziers	71.4%	21.4%				
Insulation workers	96.6%					3.4%
Painters	87.1%	0.3%	0.8%	2.5%	2.3%	1.0%
Pipefitters	85.7%	0.8%	6.7%	2.3%	1.7%	0.2%
Plasterers and stucco masons	100.0%					
Roofers	100.0%					
Sheet metal workers	56.9%	34.3%	4.9%	2.9%		
Structural iron and steel workers	85.3%	1.5%	4.4%	1.5%	2.9%	
Helpers, construction trades	82.6%		8.7%	4.3%		
Construction and building inspectors	21.8%			28.2%	1.3%	39.7%
Elevator installers and repairers	83.8%	10.8%	2.7%			
Fence erectors	100.0%					
Hazardous materials removal workers	26.7%		3.3%	56.7%	10.0%	3.3%
Highway maintenance workers	68.5%		23.9%	4.3%		3.3%
Rail-track laying and maintenance equipment operators	5.9%	5.9%	88.2%			
Other construction and related workers	79.5%	4.5%	6.8%	9.1%		
Total	85.9%	2.6%	3.6%	2.2%	1.3%	1.1%

Source: Bureau of the Census Public Use Micro Sample data. (PUMS) Seven county area.

Construction Industry Compensation

The earnings of workers in the building trades vary considerably based on a number of factors:

- Occupations requiring more training or expertise tend to be paid more than those that require less.
- Wages for union workers escalate through the first years of employment as an apprentice before plateauing at the journey worker wage.
- Among non-union workers, more experienced workers typically make higher wages than less experienced workers.
- Workers who choose, or who are fortunate enough, to work more hours have more earnings than workers with fewer hours.

The table below provides recent IDES estimates of average hourly wages and earnings for three broad categories: entry level workers, the occupational average for all such workers, and workers with extensive experience. The table figures include both union and non-union workers, which can be problematic for interpretation because union

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workers average substantially higher pay than non-union by their mid-career years. Workers with less than five years of experience includes many union apprentices, some of whose wages are far lower than wages of non-union workers, but will not remain so. Once they finish their apprenticeship, union workers will average about 25% higher salary on average than non-union workers.

Table 1.5 Salaries for Chicago Region Construction Occupations, 2019

	Entry Hourly	Entry Annual	Median Hourly	Median Annual	Exper Hourly	Exper Annual
Elevator Installers and Repairers	\$31.70	\$65,928	\$50.66	\$105,364	\$53.67	\$111,635
First-Line Supers of Construct Trades Extraction	\$28.23	\$58,724	\$43.87	\$91,246	\$49.40	\$102,745
Insulation Workers, Floor, Ceiling, and Wall	\$35.92	\$74,723	\$46.18	\$96,046	\$48.70	\$101,295
Reinforcing Iron and Rebar Workers	\$43.70	\$90,894	\$46.98	\$97,716	\$48.58	\$101,038
Plumbers, Pipefitters, and Steamfitters	\$22.92	\$47,667	\$42.08	\$87,526	\$48.11	\$100,075
Boilermakers	\$31.28	\$65,063	\$43.72	\$90,940	\$47.72	\$99,260
Operating Engineers, Other Const Equip Ops	\$29.54	\$61,445	\$43.80	\$91,109	\$47.48	\$98,755
Structural Iron and Steel Workers	\$28.29	\$58,839	\$42.91	\$89,245	\$45.67	\$94,997
Electricians	\$25.68	\$53,416	\$41.82	\$86,982	\$45.53	\$94,707
Sheet Metal Workers	\$21.03	\$43,742	\$42.53	\$88,455	\$45.02	\$93,635
Tapers	\$28.49	\$59,249	\$43.15	\$89,742	\$45.00	\$93,595
Pile-Driver Operators	\$35.12	\$73,053	\$43.75	\$90,993	\$44.59	\$92,750
Plasterers and Stucco Masons	\$32.06	\$66,685	\$42.50	\$88,396	\$43.99	\$91,501
Carpenters	\$17.40	\$36,197	\$40.32	\$83,876	\$43.33	\$90,135
Construction and Extraction Occupations	\$18.63	\$38,752	\$38.59	\$80,273	\$43.00	\$89,431
Cement Masons and Concrete Finishers	\$19.68	\$40,928	\$40.10	\$83,407	\$42.23	\$87,840
Brickmasons and Blockmasons	\$19.97	\$41,529	\$39.75	\$82,673	\$41.97	\$87,292
Glaziers	\$20.11	\$41,820	\$36.49	\$75,890	\$41.33	\$85,962
Construction Laborers	\$16.01	\$33,294	\$35.94	\$74,755	\$40.14	\$83,492
Roofers	\$18.86	\$39,226	\$33.74	\$70,175	\$40.04	\$83,284
Construction and Building Inspectors	\$18.71	\$38,927	\$32.53	\$67,664	\$40.02	\$83,240
Pipelayers	\$28.88	\$60,071	\$34.83	\$72,454	\$38.06	\$79,172
Paving, Surfacing, and Tamping Equip Oper	\$17.14	\$35,648	\$32.14	\$66,851	\$36.36	\$75,634
Drywall and Ceiling Tile Installers	\$16.57	\$34,457	\$19.45	\$40,448	\$34.45	\$71,652
Painters, Construction and Maintenance	\$12.82	\$26,674	\$25.31	\$52,647	\$33.22	\$69,091
Helpers, Construction Trades, All Other	\$11.07	\$23,029	\$18.43	\$38,332	\$31.68	\$65,902
Fence Erectors	\$16.28	\$33,856	\$22.09	\$45,948	\$30.01	\$62,415
Tile and Marble Setters	\$13.70	\$28,497	\$22.73	\$47,271	\$29.96	\$62,311
Floor Layers, Except Carpet, Wood, Tiles	\$12.62	\$26,242	\$20.16	\$41,936	\$27.35	\$56,878
Helpers--Roofers	\$17.15	\$35,663	\$21.99	\$45,730	\$25.71	\$53,478
Carpet Installers	\$9.13	\$18,988	\$16.62	\$34,562	\$25.54	\$53,116
Helpers--Pipelayers, Plumbers, Steamfitters	\$12.91	\$26,862	\$16.99	\$35,335	\$20.98	\$43,645
Helpers--Brick, Block, Stone, Tile, Marble	\$14.49	\$30,132	\$18.64	\$38,766	\$20.79	\$43,239
Helpers--Carpenters	\$9.32	\$19,379	\$11.22	\$23,343	\$20.01	\$41,616
Helpers--Electricians	\$11.79	\$24,525	\$14.28	\$29,702	\$17.49	\$36,388
Terrazzo Workers and Finishers	N/A	N/A	N/A	N/A	N/A	N/A
Stonemasons	N/A	N/A	N/A	N/A	N/A	N/A
Total	\$18.63	\$38,752	\$38.59	\$80,273	\$43.00	\$89,431

Source: IDES 2019 Chicago MSA Occupational Wages
https://www2.illinois.gov/ides/lmi/Pages/Occupational_Employment_Statistics.aspx

If a worker is able to work most or all of the year, in most building trades he/she will make earnings well above U.S. median wages. In many trades, an experienced worker can make \$90,000 or more annually and entry-level workers may make \$50,000 or more. These jobs also come with full health insurance and strong pensions.

The most seasonal trades are those more likely to be outdoors – heavy equipment, paving, roofing, iron, and laborer. Depending on weather and projects, workers can

work regularly except during the winter months when some projects may continue but others may be slowed or not started.

The large difference in union and non-union compensation is evident in analysis of building trades workers taking into account the skill level of the occupation and whether or not a worker held a certification. Certification is reported by Census respondents and may include licenses, certificates or other credentials. The lowest paid workers, whether high- or low-skilled, have been non-union workers lacking credentials. Credentialing somewhat distinguished low from medium and higher skilled workers, but being non-union still cost workers around \$4 to \$8 per hour compared to union. The best-paid workers have been union workers with credentials, who averaged about \$4 more per hour than union workers who lacked credentials.

Table 1.6 Average Wage by Union and Certificate Status for Construction Trades in Chicago & Metros

CPS 4 cities	Non-Union No Certificate	Non-Union Certificate	Union No Certificate	Union Certificate
High Skilled	\$18.78	\$24.15	\$28.85	\$33.58
Med Skilled	\$19.77	\$24.38	\$32.24	\$34.41
Low Skilled	\$18.98	\$19.45	\$27.05	\$29.95
Total	\$19.13	\$23.03	\$29.19	\$33.10

Source: Current Population Survey Outgoing Rotation Group (CPS)

Union worker wages are determined by contracts unions sign with contractor associations in a region, units of government, or major employers, who may or may not be part of associations. In Illinois, the Department of Labor assigns a “prevailing wage” to each county for each construction occupation. Employers must pay the prevailing wage on federal projects and other projects as may be determined by law or negotiation. The prevailing wage is the highest wage paid to workers in that county, or nearby counties, and is effectively the highest union-negotiated journey-worker wage in that county. Because wage sheets are often not available publicly, or are difficult to compare because of annual adjustments to wages and benefits for different labor contracts, the prevailing wage figures are the single most useful public record of journey worker wages in a county.

Similar to the IDES wage estimates, the prevailing wage data shows that operating engineers, iron workers, elevator constructors, boilermakers and plumbers receiving the highest wages, most around \$50 per hour. Other skilled occupations including masons, carpenters, electricians, glaziers and millwrights make around \$45 per hour, and lower skilled occupations such as fence erectors, truck drivers, road flaggers, or asbestos removers make around \$40 per hour as journey workers.

Union contracts require employers to pay not only the worker’s wage, but also substantial health care and pension expenses, which often total around \$30 per hour.

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While we have no specific data, many non-union employees lack health care, pension or both, meaning non-union workers are often hired at about half or less the cost of union workers. The table below lists prevailing wages by trade. It includes multipliers for three types of overtime, employer assessment for healthcare (H/W) and assessments to cover vacation and apprentice support (Trng).

Table 1.7 2020 Cook County Prevailing Wage: Construction Trades

Trade Title *	Type	C	Base	Foreman	OT M-F	OT Sat	OT Su/Hol	H/W	Pension	Vac	Trng
Asbestos ABT-GEN	ALL		43.72	44.72	1.5	1.5	2	14.99	13.61	0	0.9
Asbestos ABT-MEC	BLD		37.88	40.38	1.5	1.5	2	13.42	12.2	0	0.72
Boilermaker	BLD		51.56	56.2	2	2	2	6.97	21.58	0	1.2
Brick Mason	BLD		46.88	51.57	1.5	1.5	2	10.85	19.31	0	0.95
Carpenter	ALL		48.55	50.55	1.5	1.5	2	11.79	21.84	0	0.73
Cement Mason	ALL		46.25	48.25	2	1.5	2	14.50	19.04	0	1.25
Ceramic Tile Finisher	BLD		40.56	40.56	1.5	1.5	2	11.00	12.8	0	0.86
Communication Electrician	BLD		44.86	47.66	1.5	1.5	2	10.22	13.48	1.25	1.15
Electric Power Equipment	ALL		53.40	58.4	1.5	1.5	2	12.36	17.72	0	3.39
Electric PWWER Grndman	ALL		41.65	58.4	1.5	1.5	2	9.64	13.82	0	2.65
Electric Power Lineman	ALL		53.40	58.4	1.5	1.5	2	12.36	17.72	0	3.39
Electrician	ALL		49.35	52.35	1.5	1.5	2	15.69	17.02	1.25	1.48
Elevator Constructor	BLD		56.61	63.69	2	2	2	15.58	17.51	4.53	0.62
Fence Erector	ALL		42.88	44.88	1.5	1.5	2	13.64	14.89	0	0.65
Glazier	BLD		44.85	46.35	1.5	2	2	14.49	22.29	0	0.94
Heat/Frost Insulator	BLD		50.50	53	1.5	1.5	2	13.42	13.66	0	0.72
Laborer	ALL		43.72	44.47	1.5	1.5	2	14.99	13.61	0	0.9
Lather	ALL		48.55	50.55	1.5	1.5	2	11.79	21.84	0	0.73
Machinist	BLD		48.93	51.43	1.5	1.5	2	7.68	8.95	1.85	1.32
Marble Finisher	ALL		35.15	48.33	1.5	1.5	2	10.85	17.66	0	0.52
Marble Mason	BLD		46.03	50.63	1.5	1.5	2	10.85	18.78	0	0.64
Material Tester I	ALL		33.72		1.5	1.5	2	14.99	13.61	0	0.9
Material Tester II	ALL		38.72		1.5	1.5	2	14.99	13.61	0	0.9
Millwright	ALL		48.55	50.55	1.5	1.5	2	11.79	21.84	0	0.73
Operating Engineer	BLD	1	51.10	55.1	2	2	2	20.50	16.85	2	1.65
Operating Engineer	BLD	2	49.80	55.1	2	2	2	20.50	16.85	2	1.65
Operating Engineer	BLD	3	47.25	55.1	2	2	2	20.50	16.85	2	1.65
Operating Engineer	BLD	4	45.50	55.1	2	2	2	20.50	16.85	2	1.65
Operating Engineer	BLD	5	54.85	55.1	2	2	2	20.50	16.85	2	1.65
Operating Engineer	BLD	6	52.10	55.1	2	2	2	20.50	16.85	2	1.65
Operating Engineer	BLD	7	54.10	55.1	2	2	2	20.50	16.85	2	1.65
Operating Engineer	FLT	1	58.20	58.2	1.5	1.5	2	19.65	15.10	2	1.4
Operating Engineer	FLT	2	56.70	58.2	1.5	1.5	2	19.65	15.10	2	1.4
Operating Engineer	FLT	3	50.45	58.2	1.5	1.5	2	19.65	15.10	2	1.4
Operating Engineer	FLT	4	41.95	58.2	1.5	1.5	2	19.65	15.10	2	1.4
Operating Engineer	FLT	5	59.70	58.2	1.5	1.5	2	19.65	15.10	2	1.4
Operating Engineer	FLT	6	38.00	58.2	1.5	1.5	2	19.65	15.10	2	1.4
Operating Engineer	HWY	1	49.30	53.3	1.5	1.5	2	20.50	16.85	2	1.65
Operating Engineer	HWY	2	48.75	53.3	1.5	1.5	2	20.50	16.85	2	1.65
Operating Engineer	HWY	3	46.70	53.3	1.5	1.5	2	20.50	16.85	2	1.65
Operating Engineer	HWY	4	45.30	53.3	1.5	1.5	2	20.50	16.85	2	1.65
Operating Engineer	HWY	5	44.10	53.3	1.5	1.5	2	20.50	16.85	2	1.65
Operating Engineer	HWY	6	52.30	53.3	1.5	1.5	2	20.50	16.85	2	1.65
Operating Engineer	HWY	7	50.30	53.3	1.5	1.5	2	20.50	16.85	2	1.65
Ornamental Iron	ALL		50.05	52.55	2	2	2	14.14	21.13	0	1.25
Painter	ALL		47.30	53.21	1.5	1.5	1.5/2	12.01	12.74	0	1.87
Painter Signs	BLD		39.84	44.74	1.5	1.5	2	2.73	3.39	0	0
Piledriver	ALL		48.55	50.55	1.5	1.5	2	11.79	21.84	0	0.73
Pipefitter	BLD		49.60	52.6	1.5	1.5	2	10.75	19.85	0	2.67
Plasterer	BLD		44.50	47.17	1.5	1.5	2	14.50	17.29	0	1.5
Plumber	BLD		51.00	54.05	1.5	1.5	2	15.37	14.75	0	1.35
Roofer	BLD		44.60	48.6	1.5	1.5	2	10.58	13.31	0	0.7

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Sheetmetal Worker	BLD	45.50	49.14	1.5	1.5	2	11.70	25.58	0	0.86
Sign Hanger	BLD	32.68	35.29	1.5	1.5	2	5.40	3.75	0	0
Sprinkler Fitter	BLD	50.15	52.65	1.5	1.5	2	13.50	16.60	0	0.65
Steel Erector	ALL	42.07	44.07	2	2	2	13.45	19.59	0	0.35
Stone Mason	BLD	46.88	51.57	1.5	1.5	2	10.85	19.31	0	0.95
Terrazzo Finisher	BLD	42.54	42.54	1.5	1.5	2	11.00	14.64	0	0.88
Terrazzo Mason	BLD	46.38	49.88	1.5	1.5	2	11.00	16.09	0	0.93
Tile Mason	BLD	47.50	51.5	1.5	1.5	2	11.00	16.06	0	0.93
Traffic Safety Worker	HWY	37.75	39.35	1.5	1.5	2	9.30	9.87	0	0.3
Truck Driver E	ALL 1	36.45	37.1	1.5	1.5	2	9.68	13.25	0	0.15
Truck Driver E	ALL 2	36.70	37.1	1.5	1.5	2	9.68	13.25	0	0.15
Truck Driver E	ALL 3	36.90	37.1	1.5	1.5	2	9.68	13.25	0	0.15
Truck Driver E	ALL 4	37.10	37.1	1.5	1.5	2	9.68	13.25	0	0.15
Truck Driver W	ALL 1	37.36	37.91	1.5	1.5	2	9.00	11.64	0	0.15
Truck Driver W	ALL 2	37.51	37.91	1.5	1.5	2	9.00	11.64	0	0.15
Truck Driver W	ALL 3	37.71	37.91	1.5	1.5	2	9.00	11.64	0	0.15
Truck Driver W	ALL 4	37.91	37.91	1.5	1.5	2	9.00	11.64	0	0.15
Tuckpointer	BLD	46.50	47.5	1.5	1.5	2	8.34	18.40	0	0.93

Source: Illinois Department of Labor, Current Prevailing Wage Rates, January, 2019.

<https://data.illinois.gov/dataset/idol-2018-prevailing-wage-rates/resource/0c95f063-aed9-4db7-adc3-c224acee8fc2>

* Overtime multipliers – M-F, Saturday, Sundays and Holidays; H/W – Health and Welfare; Vac – Vacation assessment; Tr – Training assessment (includes apprentice program costs)

Typical career salary trajectories assuming full hours might be as follows:

- Union: Depending on trade, will progress from \$30,000 to \$60,000 during apprenticeship and earn from \$80,000 to around \$100,000 thereafter.
- Non-Union High Skilled: Will start around \$30,000 and could gradually increase to around \$80,000 by mid-career.
- Non-Union Low Skilled: Will begin \$30,000 or less depending on availability of work and could progress to around \$50,000.
- Larger employers pay more on average than do smaller employers

As the top line of the table below shows, across the construction industry, there is a linear relationship between the size of the establishment and average annual employee earnings wherein smaller companies pay less and larger establishments pay more. Construction firms with from one to four employees, of which there are many, average about \$29,000 per year in wages. Mid-sized companies, with from 50 to 99 employees, average about \$68,000 in wages, and the largest companies average over \$90,000 in wages.

There are several reasons for this:

- Larger construction companies, many of which regularly bid on work that is either government or has government participation, are more likely to be union shops and therefore pay the higher hourly prevailing wages. Small companies,

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many of which do residential or repair work, are less likely to be union and typically pay lower wages.

- Numbers of hours tend to be more stable for workers in larger companies. Larger companies, by nature more established in their marketplaces, have larger and more regular projects. They are more likely to offer their workers more hours over the course of a year and are more likely to have permanent employees as opposed to continually circulating their workers through their hiring hall or referral process or cycles of layoff and hiring.
- In general, firms that construct buildings or infrastructure such as highways or bridges, pay more than residential builders, who are less likely to be union.
- While not uniformly true, to work non-union is to be more likely to work for a small contractor earning lower wages and experiencing more irregularity in work hours.
- Larger companies have more managers, who earn higher salaries.

Table 1.8 Average Illinois Construction Salaries by Establishment Size

	1-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000+
All Construction	29,851	39,767	49,473	60,106	67,864	70,002	73,801	69,360	92,770
Construction of buildings	49,304	62,605	72,821	81,941	70,268	50,859			
Commercial and institutional		49,236	54,447	69,505	79,405				
Heavy and civil engineering			52,885	65,096	70,685	76,885	3,068		
Highway, street, and bridge			52,536	65,000	65,392	78,267	80,849		
Industrial building construction			45,576	66,525					
New housing for-sale builders	35,429	49,403	45,903	56,120	78,510				
New single-family housing		31,290	47,939						
Oil and gas pipeline and related		74,765	52,610	53,474	65,325				
Residential remodelers	26,632	32,715	40,365	43,846					
Other building contractors	49,911	53,475	69,293	76,750	95,171	86,219	78,925		
Other building finishing	27,639		51,046	48,127	57,407	37,943			
Other foundation, structure, exterior		40,751	57,689	86,793					
Other heavy and civil engineering			45,051	75,720	53,356				
All other specialty trade contractors	26,932	36,828	49,193	62,450	71,051				
Drywall and insulation contractors	42,077	45,435	58,161	72,676					
Electrical contractors and other wiring	35,121		53,414	67,679	78,615	67,862			
Finish carpentry	28,856	43,188	51,155	49,800					
Flooring contractors	28,192		40,588	60,200	62,982				
Framing contractors	23,375			46,389	45,176				
Glass and glazing contractors		39,649	57,576	45,951	68,432				
Masonry contractors	25,905		47,099	53,615	64,422				
Painting and wall covering contractors	30,772	37,439	35,615	51,595	51,067				
Plumbing, heating, air condition cntrc	31,381	42,659	54,121	65,833	71,498	80,839	82,935		
Poured foundation, structure cntracts	26,024	26,635	43,451	40,395	64,357	53,184			
Power and com line, related structures			41,976	58,058	47,943	70,048	76,521		
Roofing contractors	22,162	31,517	35,981	49,456	57,797	58,366			
Siding contractors	25,843	28,699	40,635	41,249					
Site preparation contractors	31,120	39,209	49,201	57,702	69,563	68,134	48,061		
Specialty trade contractors	29,603	39,604	49,152	58,893	68,767	66,877	72,793		
Struct steel, precast concrete contract		53,096	55,376	71,400					
Tile and terrazzo contractors	24,119	32,716	57,515	52,036	47,573				
Water and sewer line and related structures contractors		51,343	64,916	74,849	70,308				

Source: Bureau of the Census, Economic Census Core Business Statistics Series, Firm Sizes Detailed, Census 2012 <https://www.census.gov/data/tables/2012/econ/census/construction.html>

Who are the Region’s Construction Workers? Race/Ethnicity, Sex, Age and Nativity

Race/Ethnicity

Whites in the Chicago area are over-represented among construction workers. Latinx are over-represented in the trades but are somewhat under-represented among apprentices. Blacks are significantly under-represented in the construction industry, as are Asian Americans.

Table 1.9 Racial Composition of Chicago Area Construction Workers and Apprentices Compared to Working Age Population

Chicago Area	White	Latinx	Black	Asian	Other
Working Age population	51%	23%	17%	8%	2%
Building Trades	55%	35%	8%	1%	1%
Apprenticeship	65%	21%	12%	1%	1%

Sources: PUMS, DOL RAPIDS

As the table below shows, Whites continue to be the majority of workers in most trades, although Latinx have clearly made major gains in many occupations. However, most of these occupations are the lowest paying and are largely non-union: carpet, floor and tile installers; construction laborers; drywall installers; painters; plasterers; and roofers.

Blacks continue to have disproportionately low representation in most trades. They are best represented among helpers and track-layers, the latter largely public sector work.

Table 1.10 Race/Ethnicity of Construction Trades Workers, Chicago Area

	Black	Asian	Latinx	White	Other
First-line supervisors of construction trades and extraction workers	8.3%	1.0%	30.3%	57.5%	2.8%
Boilermakers			21.0%	79.0%	
Brickmasons, blockmasons, stonemasons, reinforcing iron and rebar	7.4%	2.5%	29.7%	60.4%	
Carpenters	7.5%	1.9%	34.3%	55.3%	1.0%
Carpet, floor, and tile installers and finishers	5.5%	1.2%	66.0%	25.9%	1.4%
Cement masons, concrete finishers, and terrazzo workers	8.8%	2.0%	33.7%	55.5%	
Construction laborers	12.9%	1.3%	49.2%	35.8%	0.8%
Crain and Tower			3.6%	96.4%	
Industrial Truck and Tractor	20%		66%	13.9%	
Paving			100.0%		
Operating Engineers and Equipment	8.4%	5.4%	17.1%	66.7%	2.3%
Drywall installers, ceiling tile installers, and tapers	15.7%		76.6%	6.1%	1.6%
Electricians	14.3%	1.5%	24.2%	59.6%	0.3%
Glaziers	7.2%		17.5%	75.3%	
Insulation workers			72.4%	27.6%	
Painters	9.0%	0.6%	43.3%	46.1%	1.0%
Pipelayers , plumbers	13.7%	0.8%	24.0%	60.9%	0.6%
Plasterers and stucco masons	4.9%		44.5%	50.5%	
Roofers	9.0%	1.7%	64.3%	24.3%	0.7%
Sheet metal workers	9.9%	6.6%	19.2%	64.3%	
Structural iron and steel workers	16.9%		27.6%	55.5%	
Helpers, construction trades	36.0%		21.2%	42.7%	
Construction and building inspectors	23.9%	13.3%	7.9%	53.5%	1.4%
Elevator installers and repairers	12.0%		24.4%	63.7%	

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Fence erectors	6.3%		53.5%	40.2%	
Hazardous materials removal workers	14.4%	3.5%	63.5%	15.3%	3.3%
Highway maintenance workers	8.9%		36.8%	52.9%	1.4%
Rail-track laying and maintenance equipment operators	55.1%		27.2%	17.8%	
Total	8.0%	1.0%	35.0%	55.0%	1.0%

Source: U.S. Bureau of the Census PUMS

Gender

Women continue to have low representation in all trades, about 5%, but seem to have made significant gains in roofing and plaster.

Table 1.11 Gender of Chicago Area Construction Workers

	Male	Female
Boilermakers	96.8%	3.2%
Brickmasons, blockmasons, stonemasons, reinforcing iron, rebar	95.8%	4.2%
Carpenters	100%	
Carpet, floor, and tile installers and finishers	94.8%	5.2%
Cement masons, concrete finishers, and terrazzo workers	99.2%	0.8%
Construction laborers	97.9%	2.1%
Crain and Tower	96.1%	
Industrial Truck and Tractor	100%	
Paving operators	100%	
Construction equipment operators	96.6%	3.4%
Drywall installers, ceiling tile installers, and tapers	95.2%	4.8%
Electricians	99.4%	0.6%
Glaziers	100%	
Insulation workers	98.6%	1.4%
Plumbers, pipefitters	99.0%	1.0%
Painters	94.1%	5.9%
Plasterers and stucco masons	82.6%	17.4%
Roofers	89.7%	10.3%
Sheet metal workers	100%	
Structural iron and steel workers	100%	
Helpers, construction trades	96.7%	3.3%
Construction and building inspectors	97.8%	2.2%
Elevator installers and repairers	100%	
Fence erectors	97.7%	2.3%
Hazardous materials removal workers	96.8%	3.2%
Highway maintenance workers	95.8%	4.2%
Rail-track laying and maintenance equipment operators	100%	
Other construction and related workers	94.8%	5.2%
Total	97.5%	2.5%

Source: U.S. Bureau of the Census PUMS

Nativity

American building trades have a long history of European immigrant participation and in recent decades, in Chicago, Latinx immigrants have built on that history. Foreign-born construction trade workers largely work in the most low-skilled occupations, which are fairly easily accessed without apprenticeship or licensing, and tend to be more non-union. About 26% of construction workers are non-citizens. Among the foreign-born, the vast majority is from Mexico, and substantial numbers are from Poland.

Table 1.12 Percent Foreign Born by Construction Trade, Chicago and Upper Midwest Metros

	Percent Foreign Born
Paving, Surfacing, and Tamping Equipment Operators	61%
Drywall Installers, Ceiling Tile Installers, and Tapers	60%
Plasterers and Stucco Masons	48%
Brickmasons, Blockmasons, and Stonemasons	41%
Rail-Track Laying and Maintenance Equipment Operators	40%
Roofers	35%
Carpet, Floor, and Tile Installers and Finishers	31%
Construction Laborers	30%
Construction Workers	30%
Painters, Construction and Maintenance	29%
Hazardous Materials Removal Workers	29%
Fence Erectors	25%
Carpenters	22%
Sheet Metal Workers, metal-working	17%
Insulation Workers	15%
Cement Masons, Concrete Finishers, and Terrazzo Workers	14%
Pipelayers, Plumbers, Pipefitters, and Steamfitters	12%
Glaziers	12%
Helpers, Construction Trades	11%
Construction and Building Inspectors	10%
Highway Maintenance Workers	8%
Electricians	8%
Boilermakers	7%
Construct equip ops except paving, surfacing, tamping equip	6%
Total	39%

Source: Current Population Survey

Age

Several of our interviewees observed that the construction workforce is aging and that apprentices are also older than they once were. Few construction workers begin before age 25.

To some degree, the progression of workers from low-skilled to skilled can be observed in the age cohorts. Almost 35% of helpers, where many trades workers begin, are age 18 to 24, compared to less than 10% for most other trades. Laborers, highway maintenance, fence erectors and some types of iron workers average around 10% age 18 to 24 and are mostly less skilled. Most trades also show a decline in representation among the oldest age cohort. The effective figures for older workers are probably lower than the data suggests because older workers may choose, or be forced, to work fewer hours.

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Table 1.13 Chicago Area Construction Workers by Age

	18-24	25-34	35-44	45-54	55-65
Boilermakers		23.5%	23.5%	17.6%	35.3%
Brickmasons, blockmasons, stonemasons, and reinforcing iron and rebar workers	2.3%	15.5%	31.8%	29.5%	20.9%
Carpenters	5.4%	17.4%	29.2%	30.6%	17.3%
Carpet, floor, and tile installers and finishers	3.4%	25.0%	37.1%	25.9%	8.6%
Cement masons, concrete finishers, and terrazzo workers	4.8%	9.7%	29.0%	32.3%	24.2%
Construction laborers	10.7%	21.9%	28.7%	27.1%	11.6%
Crane and Tower	0%	14.1%	39.2%	25.7%	21.0%
Industrial Truck and Tractor	7.2%	14.6%	22.7%	17.6%	37.9%
Paving, surfacing operators	14.3%	28.6%	42.9%	14.3%	
Operating engineers, construction equip	1.6%	13.5%	21.2%	41.5%	22.3%
Drywall installers, ceiling tile installers, and tapers	6.3%	30.5%	27.3%	28.9%	7.0%
Electricians	3.8%	17.0%	23.8%	36.2%	19.3%
Glaziers	7.1%	17.9%	17.9%	35.7%	21.4%
Insulation workers	3.4%	34.5%	24.1%	20.7%	17.2%
Painters and paper hangers	10.1%	22.0%	24.8%	29.1%	13.9%
Plumbers, pipefitters	6.5%	23.9%	28.5%	27.3%	13.8%
Plasterers and stucco masons			26.7%	60.0%	13.3%
Roofers	10.0%	28.7%	26.3%	23.0%	12.0%
Sheet metal workers	7.8%	11.8%	31.4%	32.4%	16.7%
Structural iron and steel workers	10.3%	20.6%	25.0%	26.5%	17.6%
Helpers, construction trades	34.8%	8.7%	26.1%	17.4%	13.0%
Construction and building inspectors	2.6%	23.1%	19.2%	25.6%	29.5%
Elevator installers and repairers	2.7%	24.3%	18.9%	37.8%	16.2%
Fence erectors	12.1%	48.5%	15.2%	18.2%	6.1%
Hazardous materials removal workers	20.0%	26.7%	16.7%	30.0%	6.7%
Highway maintenance workers	13.0%	10.9%	13.0%	30.4%	32.6%
Rail-track laying and maintenance equipment operators		23.5%	35.3%	11.8%	29.4%
Other construction and related workers	15.9%	25.0%	18.2%	36.4%	4.5%

Source: U.S. Census PUMS

Construction workers are most likely to work full-time while they are age 25 to 40. Younger and older workers are much more likely to work part-time hours. Only about half of the youngest and the oldest workers report working full-time most of the time. Young workers are particularly likely to work part-time. Despite the data being collected during a period of low general unemployment, the late 2010s, over 10% of building trade workers said they were currently unemployed and seeking full-time work. This high figure results from the structural unemployment inherent to an occupation with frequent job changes and seasonality.

Table 1.14 Construction Worker Status by Age, Chicago and Upper Midwest Metros

	18-24	25-40	41-55	55-65
Full-time hours (35+), usually full-time	50.6%	64.8%	61.5%	57.5%
Part-time for non-economic reasons, usually full-time	2.8%	4.7%	6.4%	5.8%
Not at work, usually full-time	2.0%	1.7%	3.6%	3.7%
Full-time hours, usually part-time for economic reasons	0.8%	0.2%	0.2%	0.8%
Full-time hours, usually part-time for non-economic reasons	0.7%	0.1%	0.2%	0.5%
Part-time for economic reasons, usually full-time	3.7%	4.2%	3.3%	3.1%
Part-time hours, usually part-time for economic reasons	6.7%	3.9%	5.4%	4.2%
Part-time hours, usually part-time for non-economic reasons	8.5%	2.7%	1.7%	3.3%
Not at work, usually part-time	1.9%	0.4%	1.0%	1.4%
Unemployed, seeking full-time work	11.7%	14.4%	14.4%	11.1%
Unemployed, seeking part-time work	1.2%	1.3%	0.4%	0.4%
NIU, blank, or not in labor force	9.2%	1.4%	1.9%	8.0%

Source: Current Population Survey

As workers age, they are more likely to become self-employed. By the time they are between age 55 and 65, almost 30% of construction workers are self-employed. Many workers who have mastered their trades and have a personal network in the industry, enjoy the freedom to work when, where, and for whom they wish. If they are skillful, obtain contracts, and manage well, some will earn more than they would as employees. The industry also includes workers who are legally misclassified by their employers as “1099” workers, and who are therefore technically self-employed, although they should not be.

Table 1.15 Type of Construction Worker Employment by Age, Chicago and Upper Midwest Metros

	18-24	25-40	41-55	55-65
Self-employed, not incorporated	5.9%	10.7%	16.6%	21.2%
Self-employed, incorporated		4.2%	7.6%	7.4%
Private, for profit	89.7%	82.5%	71.2%	63.5%
Private, nonprofit	0.3%	0.3%	0.5%	1.6%
Federal government employee	0.2%		0.4%	0.6%
State government employee	1.0%	0.8%	0.6%	1.7%
Local government employee	2.8%	1.6%	3.2%	4.0%
Unpaid family worker				0.1%

Source: Current Population Survey

Worker wages increase with age on average, but union wages plateau when a worker becomes a journey worker, and non-union skilled workers struggle to increase their hourly wage once they reach middle age.

Table 1.16 Average Wages by Age, Chicago & Metros

	Wage
18-24	14.03
25-40	22.54
41-55	26.76
55-65	28.18

Source: Current Population Survey

Types of Employment

Work in the construction trades is structured in a variety of possible ways.

Permanent employment with a company

The majority of construction workers are employed by construction companies varying in size. Mid-sized and larger construction companies typically have full-time employees who spend many years with a single company. Smaller companies experience more turnover. Companies may be either union or non-union shops. The advantages of working for a larger company include less concern about job security and regularity of work, more uniformity in work assignments, and generally more pay than work for a

very small company. However, for some workers, larger companies can result in less pay per hour overall if the individual would have been able to negotiate better compensation on a particular job on their own. Additionally, some workers like the freedom that comes from less structured work settings, which is more common to small companies.

Union hall/referral

The union hiring hall or “referral” is a traditional method of allocating work among union members. Fewer unions operate them but they continue to exist for some trades in Chicago. Halls allow their members to operate somewhat independently, receiving their work assignments from union hiring halls. In a hall, workers “bid”, now electronically, on employment opportunities that may be long-term, short-term, or covered under a specific union contract with an employer. Workers generally have the opportunity to accept or reject particular jobs, but typically can reject only two without being dropped to the end of the hiring hall queue. While the hiring process is ostensibly designed to select workers objectively, some workers believe that hall managers will favor some workers over others, either because of relationships or because of worker quality.

Many workers who choose this option value the flexibility and variability of jobs and the opportunity to reject ones that they consider too distant, or onerous, because of weather conditions, for instance. Journey workers receive the union wage for each job. The biggest downside to hall employment is that when work is slow, workers can experience significant down-time without pay. While union workers typically have wages between \$40 and \$50 per hour in the Chicago region, that does not mean they collect those wages over a full year.

Self-employed alone

A significant portion of construction workers are skilled trades workers who work on their own, moving from one job to another who may or may not be union workers. Some, more likely non-union, are younger men beginning their careers. These workers may visit job sites looking for an opportunity, continually move from one company to another, or from one job to another, based on their occupational network. Some are middle-aged workers who did not like corporate structure or the union hiring hall.

Self-employment with employees

In many trades, and commonly in painting, masonry, roofing, and carpentry, journey workers who are confident in their ability to generate business and don’t want the limitations imposed by a hiring hall or permanent employer, form their own businesses. These are usually the businesses with fewer than ten employees that make up half of all construction firms. Many of these are a single worker, sometimes with a helper or a

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small crew. They may sub-contract with a larger company or general contractor on a larger project, but many specialize in repair or residential work like painting a single home, installing a deck, framing a garage, paving a sidewalk or steps, replacing a single roof, or other relatively simple job. These workers may either be incorporated or unincorporated.

Table 1.17 Percent of Trades Workers Self-Employed by Type of Incorporation, Chicago and Upper Midwest Metros

	Percent of all workers self- employed and Incorporated	Percent of all workers self- employed and not Incorporated	Percent Private or Government Employer
Painters, Construction and Maintenance	26.2%	7.3%	66.5%
Carpet, Floor, and Tile Installers and Finishers	23.7%	7.7%	68.6%
Carpenters	22.2%	8.3%	69.5%
Drywall Installers, Ceiling Tile Installers, and Tapers	21.2%	3.0%	75.8%
Construction Laborers	15.7%	3.5%	80.8%
Fence Erectors	0	16.7%	83.3%
Construction and Building Inspectors	6.3%	9.8%	83.9%
Pipelayers, Plumbers, Pipefitters, and Steamfitters	7.7%	7.8%	84.5%
Roofers	10.2%	3.8%	86.0%
Plasterers and Stucco Masons	0	13.4%	86.6%
Construction workers, nec	3.7%	8.9%	87.4%
Electricians	7.2%	5.1%	87.7%
Brickmasons, Blockmasons, and Stonemasons	11.2%	0.8%	88.0%
Glaziers	6.3%	5.5%	88.2%
Helpers, Construction Trades	0	10.9%	89.1%
Highway Maintenance Workers	5.0%	3.1%	91.9%
Hazardous Materials Removal Workers	0	7.3%	92.7%
Structural Iron and Steel Workers	3.5%	3.7%	82.8%
Cement Masons, Concrete Finishers, and Terrazzo Workers	2.7%	2.1%	95.2%
Construction equip ops except paving, surfacing, tamping equip	2.7%	1.8%	95.5%
Insulation Workers	3.6%	0	96.4%
Sheet Metal Workers, metal-working	0	1.0%	99.0%
Boilermakers	0	0	100%
Paving, Surfacing, and Tamping Equipment Operators	0	0	100%
Elevator Installers and Repairers	0	0	100%
Total	14.3%	5.5%	80.2%

Source: Current Population Survey

A savvy, well-networked journey worker with strong negotiating skills can do very well financially on their own, essentially keeping for him or herself the overhead that would have gone to a company he/she might have worked for. Some like the ability to select, or even sometimes reject, projects and work with a friend or relative. On the other hand, small contractors have to continually find business and do not have a larger company's support system for legal, accounting, billing, or sometimes trade-related needs. An unexpected problem such as a painter encountering a carpentry problem, or an excavator encountering unexposed wiring or plumbing, can be a problem. Union members are prohibited from infringing on other workers' trades, although it is a problem that is sometimes negotiated on the work site. Persons starting their own company sometimes want to grow it, and sometimes do not care to, and appear to be typically in their mid-thirties to forties, although they may be younger if they have extensive family experience.

Self-employed semi- or low-skilled

The Chicago construction industry employs large numbers of workers who work for temp agencies, are recruited each early morning from parking lots of construction supply stores, or who utilize kinship or acquaintance networks to hire on as semi- or low-skilled labor. Typically they move often from one job or small company to another doing roofing, painting, drywall, concrete labor or other low-skilled tasks. Workers make minimum wage, and sometimes probably less. Many may be undocumented and many are Latinx. Regulation has become more rigorous in Illinois where these workers have frequently been misclassified as 1099 independent subcontractors when in reality, and legally, they are employees.

3. Entering the Building Trades

Paths into the construction trades careers can be categorized as follows:

- Registered apprenticeship
- Trade school or community college education
- Informal mentorship
- Permanently low-skilled

Initiation

The path to working in a building trade typically begins before a future trade worker embarks on a formal course of study. Basic skills are often learned as early as the early teen years from helping a father who works in the trades, working in a family business, or doing odd-jobs that have a trade application, such as painting, simple carpentry, or driving farm equipment. This process favors kids who grow up in single family homes, in rural areas, and have a father or adult male mentor in the household. Some students enroll in high school classes that teach the basics of a trade.

Once a young person reaches employment age, future trades workers tend to follow one of two paths. If the person has developed some skill in a particular trade and/or is connected to a company through friends, family or school, they might begin working in that trade in an unlicensed capacity. The successful ones will learn by doing, from co-workers or supervisors, who will give them increasingly advanced tasks to perform.

Another common path is getting a job with a non-union construction company as a helper. Depending on the trade, the helper might carry and distribute shingles, carry tools and equipment, prepare a wall for painting, clean the work site, carry bricks, beams, rebar or wood, and/or assist journeymen in low-skilled tasks. The work provides an orientation to the field and lines on their resume. Helpers often move from one company to another seeking steady work, more skilled work, or higher wages. Helper positions are typical first jobs for people seeking an apprenticeship and often the first year or two of an apprenticeship are spent doing largely helper tasks. Enterprising helpers display energy, make themselves available to do more advanced work when called upon or a situation arises, pay close attention to how experienced workers work, and ask as many questions as journey workers are willing and have time to answer.

Registered Apprenticeship Path

The most widely valued path into a trade career is a U.S. Department of Labor registered union apprenticeship. In Illinois, most construction apprenticeships are U.S. DOL registered and operated by unions, who work in collaboration with their contractors. Apprenticeships consist of from three to five years of near full-time paid work experience combined with extensive schooling completed concurrently with the work

experience during the first two years. Apprentices can receive credit for previous work experience in the trade through presentation of pay stubs or letters from previous employers attesting to work and hours. Sometimes this can amount to as much as a year, but is usually less.

Union apprentices typically begin at 50% of the journey worker salary with annual or semi-annual raises to journey worker salary at completion. Union apprentices receive their work experience from union employers, most of whom are private sector.

While they vary by trade, there is a fairly uniform admissions process to union apprenticeships.

- 1) Complete an application to the apprenticeship program during the enrollment period, which occurs for about one month once per year, providing evidence of high school or GED completion and driver's license.
- 2) Complete an aptitude test that typically includes questions on simple algebra, mechanical reasoning, and reading comprehension
- 3) Applicants passing the test are interviewed with an emphasis primarily on attitude and relevant experience.
- 4) Demonstrate physical fitness for the position.
- 5) Those selected following the interview are referred to a union contractor for hire in an apprenticeship or provided a list of union contractors and told to secure apprentice employment with one of them.
- 6) Those hired by the union contractor are either indentured at that point or given a trial period followed by an indenture if the employer is satisfied.
- 7) Drug tests are administered during the process and can result in termination.

Unions assign points to tests and interviews and rank applicants. While the aptitude examination appears objective, the interview score is subjective and like interviews in any field, is subject to the biases of the interviewer(s). Some applicants could receive low interview scores because they are culturally different from the interviewers.

Unions limit the number of applicants accepted annually for apprenticeships, attempting to manage the number of union trades workers in their local's jurisdiction so as to assure sufficient work for their members, immediate work for the apprentices, and support wage levels through worker supply. Only a small percentage of applicants receive apprenticeships. Some unions may have as many as 5,000 annual applicants for an eventual few-hundred apprentice positions. Many applicants will fail the mechanical aptitude test, find construction work too strenuous, or fail the drug test. Our interviews suggested some unions are becoming conflicted regarding drug test failures for marijuana, in part because of its growing presence, in part because of cultural change, and in part because the failures cost them otherwise qualified applicants. But the drug test remains a part of the apprentice application process.

For most trades, a registered union apprenticeship is the best path into the profession, evidenced both by observation and by construction board postings. The exceptions seem to be laborers, painting and roofing, where the majority of workers do not need to be highly skilled and workers are not licensed.

The union apprentice receives a combination of classroom instruction and on-the-job experience with most classroom work completed in evening classes during the first two years. Upon completion, they have the journey worker title, receive full union membership, and receive the full union hourly wage. A journey worker can decide at that point whether he/she wishes to work union or non-union.

Employment at the point of application for apprenticeship can be helpful for some unions. Previous job experience is helpful for the apprentice interview and indicates that the applicant understands the career path they are entering and has some aptitude for it. The applicant may receive credit for trade work done prior to the apprenticeship shortening the apprenticeship by several months. The consensus of workers posting to internet discussion boards is the union apprenticeship is the best path into a trade:

Mason

Most brickmasons, blockmasons, and stonemasons pick up their skills informally, observing and learning from experienced workers. Others like myself received initial training from industry-based programs like a union apprenticeship. Not knocking any residential guys I have found some of them to be the fastest best brickies I've ever worked with. However IMO an apprenticeship program generally provides the most thorough training.²

Carpenter

Being in Chicagoland especially, to hear my wife talk about it, the unions are all over everything anyhow, you might consider the union route and get into a more structured pay/benefit system in which you can advance. I have an uncle up here that is a framer with a union crew and says he is far better off than when he was working in the private sector and the union jobs around here anyhow seem to be larger projects so the work is quite consistent.³

Mason

Best bet is through a union apprenticeship program, or by hiring on with a non-union masonry contractor that has a department of labor certified in house apprenticeship training. prevailing wage projects, roads, schools, hospitals, powerhouses, etc. With the costs of today's equipment and the liability concerns, no one's turning over a \$300,000 piece of equipment over to a 20-year-old guy who has played around at the training center with one. It's got to be done right,

² Crosby 9-22-2009 Becoming a Brickie <https://www.contractortalk.com/f48/becoming-brickie-64949/>

³ Longacre 7-31-2005 Am I Underpaid?... <https://www.contractortalk.com/f3/am-i-underpaid-3857/>

and done fast. The best training centers I've seen are union ones, but there's no training that's going to be like 15 years of running an excavator, be it for a union or non-union company. That's why the union contractors bring on guys that are 40 years old with a bunch of experience, because they are actually worth the wages and benefits that they have to pay.⁴

Heavy Equipment Operator

I would say join up and use that training program. Any more you won't get on a lot of equipment without that card saying you know how to run a crane, etc. We have an IUOE training ground nearby and it's amazing what they have for equipment to train on. Almost makes me want to go back and start over.⁵

Plumbing

Try to get into the apprenticeship if you can. . . . The course of study along with the working hours will teach you the trade. But be prepared because apprentices oftentimes get the worst work at first until you prove yourself to be a good worker and a good sport.⁶

Plumber

Get your name in the list for new apprentices with the local plumbers' union. And yes, private plumbing companies will take you as an entry level apprentice...I myself got hired yesterday as an entry level and I have no previous experience plus they hired me on the spot. I'm also 23 my friend, and it took various construction jobs before I realized what I really wanted to do.⁷

Trade School Path

Another route to the trades is through post-high school educational programs. Broadly speaking, there are two types: Proprietary trade schools, where activity focuses entirely on learning a specific trade, and two-year colleges, where most activity is focused on the trade but the instructional course is typically a little beyond that. Most provide the option of a basic certificate, advanced certificate, or associate's degree. Students may be in these programs from one semester to three years, sometimes taking a full course load; other times taking as many courses as they may have time or money for. The most common trade school and community college programming includes preparation for welding, plumbing, electrician, carpentry, and masonry. Training in painting, roofing, and operating equipment appears harder to find near Chicago.

⁴ Fishindude 2-23-2018 Brick Laying Trade School <https://www.contractortalk.com/f48/brick-laying-trade-school-386674-print/>

⁵ RZucker 1-12-2020 General Industry Questions <https://www.heavyequipmentforums.com/threads/join-operators-union-to-start-career.80708/>

⁶ Jmh40 5-03-2009 Plumber no experience <https://www.contractortalk.com/f9/plumber-no-experience-57988-print/>

⁷ Alienofwar 4-26-2005 Career Advice <https://www.contractortalk.com/f9/career-advice-3144/>

Students often work while taking courses and, in some cases, schoolwork may substitute for the classroom component of a registered apprenticeship.

Opinion about the value of school-based education is divided among leaders we interviewed and commentary found on the internet. One school of thinking is that actual work in the trade is much more valuable than classroom learning and that nothing substitutes for watching a journey worker and being in the field working on authentic jobs. Those would argue that most, if not everything, learned in a classroom can be learned better on the job site actually dealing with the unanticipated challenges that arise. They also argue that contractors who hire value on-the-job experience far more than classroom learning. And if a worker does decide on the apprentice route later, they will likely be required to re-take the classroom learning in the union training center.

Others argue that the “theory” of construction trades, particularly in the fields of electrical and plumbing, lends itself to the classroom more than the worksite. Many graduates of school-based training feel their time was well-spent, that they left their programs prepared to work, and that they knew what they needed to know to begin. These workers agree that actual experience is essential and that much learning is on-site, but feel that classroom and work-site learning are complementary. Holding a certificate in a trade or specialty can be useful for being hired. Workers who decide to start their own business, either with or without employees, may benefit from the broader education that a full Associates program may provide. In larger construction companies, most of the top managers have some type of four-year college degree along with construction experience.

Following their education, whether a degree, a certificate, or just classes, workers must still pursue an apprenticeship if they wish to become a union journey worker, although they might get some credit for the classroom time. Others may continue work with their current company or on their own, or apply for work with a non-union company. Some schools can help with the job search. The major trade schools and the Chicago City Colleges have strong relationships, and in some cases cooperative training programs, with some unions, such as IBEW, or utilities.

The consensus on the discussion boards is that trade school education can be valuable, but largely for getting a job or apprenticeship. Workers commenting almost uniformly valued highly the on-the-job experience.

Carpenter

*Depending on what's in your area, trade school is an option. A year or two of that, and you'll have a great base of knowledge to build on. You'll make a little more initially at your first job, but not by much.*⁸

Carpenter

*I had 5 people with me this summer. All 5 were graduates from trade schools. I taught them as much as my business will allow. The best one of the 5 is 20 years old. Took just about every paycheck he got and purchased tools. At 20 he has a compressor, nailers, a brand new Makita slider, full set of cordless Makita drills, drivers and saws, etc. As my season ran to a close, I found him a job at a very good renovation/custom woodwork company. He got a raise after day 2. He is now, (after a month) leading a crew on small jobs.*⁹

Electrician

*Your AA puts you at an advantage vs. the rest of the no experience crowd.*¹⁰

Electrician

*School teaches you the book stuff that you rarely ever use and a few minor hands-on projects. You could work part time for a couple months and learn more than you could in school for a year full time. Bottom line is, you can never "just learn a little". That will get you killed or burn your house down.*¹¹

Electrician

*You can be book smart and ace tests all day long but working in the field is totally different. The field requires a good amount of common sense and understanding of plumbing, carpentry, insulation, flooring, cabinetry, etc. You will run into all of this down the road when wiring whether it is residential, commercial and even industrial.*¹²

Mason

I took masonry/construction classes for 2 years and I am so happy I did that. That was a very stable foundation for me to begin in the world of masonry. My masonry professor was with over 30 years of experience in the masonry business and I learned from him not only how to BUILD but also to be safe on the job and be a businessman. ... I got hired from the first guy I asked for a job and I told him

⁸ Defenestrated 3-28-2019 17 Year Old Need Help Deciding! <https://www.contractortalk.com/f3/17-year-old-need-help-deciding-417403/#post7512577>

⁹ Chris G 12-05-2010 Training Carpenters <https://www.contractortalk.com/f3/training-carpenters-88311/index3/>

¹⁰ JamesNLA 9-22-2007 Looking to Become An Electrician <https://www.contractortalk.com/f5/looking-become-electrician-27067/>

¹¹ Jcalvin 4-23-2008 How To Learn Electrical <https://www.contractortalk.com/f5/how-learn-electrical-38342/>

¹² Woodchuck2 4-23-2008 How To Learn Electrical <https://www.contractortalk.com/f5/how-learn-electrical-38342/>

*that I took masonry classes. I started on the line cuz I already learned how to "mix mud" from school so I was already one step ahead. I was slow at the beginning but my work was leveled and plumbed and my joints were consistent. By the way I learned that in school too. It did not take much time for me to pick up speed and produce decent in a day so I can make some money for the guy who hired me.*¹³

Heavy Equipment Operator

*I think it all depends on the student attending the school. One guy could go through coasting along only interested in getting some seat time, then thinking as soon as he gets out of school he'll get hired on as a big shot operator. While another might go through the training taking in everything he can, knowing that the school will get his foot in the door as an operator, and teach him some very valuable information not just on moving joysticks, but reading plans, being able to visualize what you are trying to accomplish, etc, working safely, etc. ...*¹⁴

Ironworker

*The completion of a degree "can" help to trim time off of an established apprenticeship. How much time is entirely up to the particular union that you have applied to and also in many cases will be determined by the value that they place on the education that you have received from a particular school.*¹⁵

Plumber

*I'd say go for the schooling. You'll be way ahead with some structured training under your belt. It will be hit or miss working for somebody else with no experience because you'll most likely be just as likely to be taught a sh*t load of bad habits from somebody as good stuff.*¹⁶

Informal Training Path

About half of Illinois construction workers are union members and about half are not. Construction trade workers who do not complete apprenticeships or join unions begin their careers as described above and then develop their own career path based on whether they operate independently or work for a company. In either case, the principal ways of learning are assisting skilled trades workers, asking questions, observing, and performing progressively more advanced work assignments. How a worker progresses depends on persistence, assertiveness, and the luck of having

¹³ BG-Mason 11-23-2009 Finding Masons <https://www.contractortalk.com/f48/finding-masons-68546/>

¹⁴ Tylermckee 8-13-2006 Hands on experience versus school
<https://www.heavyequipmentforums.com/threads/the-schools.1702/>

¹⁵ Aevald 2-21-08 Union vs Non-Union American Welding Society Forum
https://app.aws.org/forum/topic_show.pl?tid=14846

¹⁶ Mike Finley 5-3-2009 Plumber no experience <https://www.contractortalk.com/f9/plumber-no-experience-57988-print/>

opportunities come one's way or to be exposed to good mentors. Young workers often change companies if they don't feel they are progressing as they want to.

Informally trained workers may still take examinations for licenses or certificates, earn certificates through taking an occasional class, some of which are available on-line, become fully licensed and perform work indistinguishable from a union journey worker.

Data shows that the average construction union worker makes more per year and per hour than the average non-union worker, but that is not always the case. Union journey workers usually make more per hour than non-union – their wage is prescribed by a contract with a company, a contractor's association or a unit of government. However, they do not control their flow of work. Union workers operating through a hiring hall or referral process have most of their opportunities determined by their place in the queue as the union cycles work through its membership. Independent workers, on the other hand, while not guaranteed an eventual job through a hall, and required to find their own opportunities, also do not have to wait in line and sometimes have the opportunity to work more hours.

In some fields, large numbers of workers never become highly skilled. This group includes, for instance, large numbers of undocumented workers, workers who never finish apprenticeships, and persons with limited capability and/or motivation for journey-level employment. The roofing, painting, and dry-wall trades have the largest proportions of low-educated, and presumably low-skilled, workers. Standards for painting and roofing are notoriously low for the laborers. Of all of the construction trades, painting and roofing discussion boards have the most posts discussing undocumented workers and workers often illegally classified as "1099" workers, or independent contractors when they are not.

Many painting and roofing workers have weak connections to companies and work minimum wage or close to it without health or retirement benefits. Many are recruited daily at construction and building supply parking lots or through temporary labor companies.

Carpenter

The alternative [to trade school] is just finding a good tradesman to work under and learn from. Be patient. Understand that you're not going to learn everything all at once. As someone else mentioned, folks hire young people based on attitude and work ethic. Understand that you aren't going to make a ton of money until you start your own business, and even then, some make bank and some don't.¹⁷

¹⁷ Defenestrated 3-28-2019 17 year old need help deciding <https://www.contractortalk.com/f3/17-year-old-need-help-deciding-417403-print/>

Carpenter

I started as a carpenter's helper for a good, clean general contractor. Wouldn't have it any other way. I got to meet and work with every other trade and learn how my job interacted with theirs. Most importantly, I learned that the most important things were to simply show up every single day (on time) and listen and work. That's it. Don't make a big deal out of this. If you like it, just keep showing up on time and doing what you're told, to the best of your ability. Within a couple years you'll have figured out if it's for you. 17 is impossibly young. You'll find out just how young it is when you're a little older.¹⁸

Carpenter

I tell everyone to get hired on with the best builder in your area and learn everything you can. Then go to a different top builder.¹⁹

Carpenter

There aren't a lot of people looking to hire rookies, so you kind of have to "fake it till you make it" in a lot of professions sadly. Hell, I asked my boss if I could work with him finishing some drywall because I'd like to get better at it, but he told me he "didn't have time to pay me to learn."

Carpenter

My first boss (I was 19 at the time) said, "I know you aren't getting paid enough for what you will be doing, However you will leave here knowing how to frame. I will tell you what to do--If you mess it up, I'll tell you what you did wrong--how to do it right---then you will do it over. " He was good for his word---I was made helper for the only real carpenter on the crew---Never an angry word on that site---Every one there was learning from the best teacher I have ever worked for.²⁰

Carpenter

I had an offer to work in a shop right out of H.S. so when I was sweeping floors and cleaning the shop at 18 I knew it would take time to move up. By the time I was 25 I was well on my way and was super motivated to keep on learning and would always look to work with the older carpenters, they had more patience to teach me the tricks of the trade.²¹

¹⁸ Easy Gibson 3-31-2019 17 year old need help deciding <https://www.contractortalk.com/f3/17-year-old-need-help-deciding-417403-print/>

¹⁹ Hdavis 2-25-2019 Another new guy with career questions <https://www.contractortalk.com/f3/another-new-guy-career-questions-414971-print/>

²⁰ Mikeswoods 12-20-2010 Training Carpenters <https://www.contractortalk.com/f3/training-carpenters-88311/index4/>

²¹ Eaglei 6-16-2013 What Options Are There For Low Skilled Labourers. <https://www.contractortalk.com/f3/what-options-there-low-skilled-labourers-136287/>

Carpenter

I started off the first week just scraping and oiling concrete forms. Then it was sweeping and packing icfs, and making up anchor bolt sets and keeping tidy. That was a year ago. Today for instance I did siding. Last week was trim. Week before that framing. I had to put in that I love this job so much I'd stand there all day and spray lumber as much as I hated that, I acted like it was a great day. After awhile I got to put the forms in and scrape them.²²

Carpenter

I started out on a roofing crew at 16, carried shingles, tear- off and cleaned up. The guys would say that when all the shingles were up, I can learn to nail. I don't think I nailed a shingle till my third year because those guys would use them up as fast as I could carry. I even started to carry two at a time in hopes of an opportunity to nail. The magic day did come eventually and the rest is history!²³

Carpenter

When I started I made \$7.50/hr I was 17. I wasn't able to read a tape or even install a door knob. I am 26 & I am practically the lead carpenter with experience in just about every field of residential construction with only on the job experience. My advice to you is to be on the ball. Watch what everyone is doing and ask questions. Go online every night and come on these forums and ask questions. READ READ READ !!! Order books on amazon.com about the type of work that is currently going on at your job and read your ass off.²⁴

Mason Chicago

Get ready to push a wheelbarrow for a while to show your dedication and ambition before the boss will throw you on a wall. I don't think I ever met a bricklayer that didn't start out by pushing a barrel first. If you don't want to start as a grunt labor then your only chance will be through a union apprenticeship or a dedicated trade school but there aren't many of them around.²⁵

Ironworker

I needed a job and quick. Went to a weld/machine shop and knocked on the door looking for work. The owner said; "sure come in kid and warm up with stuff in the scrap bucket while I put your weld test together "The scrap bucket had beer cans in it. So I welded two of them together while waiting for him to shear

²² <https://www.contractortalk.com/f3/what-options-there-low-skilled-labourers-136287/index2/#post1791618>
hillbilly512 06-17-2013 Contractor Talk What Options Are There for Low Skilled Laborers

²³ Fourcornerhome 6-30-2013 What Options Are There For Low Skilled Labourers.

<https://www.contractortalk.com/f3/what-options-there-low-skilled-labourers-136287/index3/>

²⁴ Livingsouldie 6-20-2013 What Options Are There for Low Skilled Labourers.

<https://www.contractortalk.com/f3/what-options-there-low-skilled-labourers-136287/index3/>

²⁵ Windycity 2-23-2018 Brick Laying Trade School <https://www.contractortalk.com/f48/brick-laying-trade-school-386674/>

the coupons. When he came back and saw the cans he threw the coupons on the floor and said; "get to work boy, and make me a few more of those can things" It was a short lived gig, but it's funny what will do the trick sometimes :)"²⁶

Plumber

If I were you I would try the general labor route first, as you would be paid something, and if you are working around plumbers you will see if you like it & if it is what you want to do. Courses are good but you pay for them & usually don't get paid while you're taking them & you don't really get the "in the field experience" which is really needed."²⁷

Obstacles and Advantages to Entering the Construction Industry "It's not for everyone."

Every occupation rewards different skill sets, affinities, personalities, individual circumstances or characteristics. The building trades are no different.

A scan of industry message boards across trades finds any number of contractors bemoaning their problems hiring, the lack of quality employees, and how hard it is to find young workers with the requisite work ethics.

Carpenter

Teaching 20 year olds now is tough, there almost all smart asses and don't want to wade through the s to learn the trade. I don't have time to baby sit, and my company is not goal oriented on training, if the kid wants to learn it and is capable I'll teach them but I'm not beating my head against a wall."²⁸

Carpenter

Today's baseball hat on sideways potato sack pants texting generation wants no part of a trade. Learning a trade is what was scolded upon us by our parents 2 generations ago. Today there are no dreams of being something that requires any physical movement other than fingers on a keyboard."²⁹

While it is easy to argue that these contractors may not be taking advantage of existing institutions such as schools or job placement organizations that could be helping them, or that they are too bound by traditional ideas about what makes a good construction worker, it is not that simple for a number of reasons.

²⁶ Lawrence 08-05-2016 Welding School https://app.aws.org/forum/topic_show.pl?tid=35921

²⁷ Mrmike 4-30-2009 Plumber No Experience <https://www.contractortalk.com/f9/plumber-no-experience-57988/>

²⁸ Chris@Sunrise 12-04-2010 Training Carpenters <https://www.contractortalk.com/f3/training-carpenters-88311-print/index2/>

²⁹ Jimmy Cabinet 12-04-2010 Training Carpenters <https://www.contractortalk.com/f3/training-carpenters-88311-print/index2/>

Most contractors have no training in hiring and personnel administration. Contractors' work schedules are extremely erratic, characterized by intense business when they are on jobs, but also extended periods, particularly in the winter, when work is slacker. The unevenness makes it difficult to have permanent employees in trades that do much or most of their work outside. Time to attend to hiring may not align well with when contractors are busy. Often when a contractor needs an employee, they need them immediately and lack the time to conduct an extensive hiring process that might include recruiting a diverse set of candidates.

Construction work, while not highly intellectual, is often not uniform and can be complex. Accordingly, for inexperienced employees individual supervision can be very important and the ability to relate well with co-workers in a heavily male environment is highly valued. While some trades workers such as electricians and plumbers often work alone or with a single helper, larger carpentry projects, roofing, building steel structures, and heavy machinery usually involve collaborative efforts.

Contractors appear to be looking for a combination of "book learning" that might be acquired in school, on-the-job experience, however menial, and a very strong can-do attitude. While they often settle for some combination of the three, a lot of turnover seems to be attributable to the lack of all three.

Math Tests and Drug Tests

Carpenter

I had 5 guys this summer, not one was apprentice material. How does anyone graduate high school and not know how to convert a decimal to a fraction? It was all they could do to fill out their time sheets properly.³⁰

Most, if not all, of the union interviewees we spoke with told us that lack of mathematics skills and failure to pass drug tests, primarily for marijuana, were serious impediments to becoming apprentices. Some interviewees implied that this was a reason that more people of color did not matriculate through apprenticeships. All of the construction trades employ drug tests, and most require either algebra or demonstration of at least rudimentary mathematical reasoning and process skills.

A cursory analysis of Chicago Public Schools and Chicago drug surveillance data is consistent with the assertion. The State of Illinois aggregates student test scores into four categories, the lowest of which is "Partially" meeting standards in mathematics on the SAT. Given that the SAT math section tests students only on moderately difficult algebra and geometry problems, it is fair to say that most students in the "Partially"

³⁰ Katoman 12-04-2010 *Training Carpenters* <https://www.contractortalk.com/f3/training-carpenters-88311-print/index2/>

category probably struggle with basic algebra and geometry, and may do poorly in a test environment.

In the 2019 SAT testing in the CPS, 58% of Black students, 38% of Latinx students, but only 15% of White students scored in the lowest category in mathematics. Given that only 13% of Black students meet or exceed math standards, and that most of those students probably pursue a college-oriented career path rather than a trade, it is likely that Black construction apprentice applicants are drawn from the lower achievement categories.

The most recent NDEWS surveys on drug use cover 2013, when about a quarter to one-third of high school students surveyed reported using marijuana within the past month. For persons 18 to 25, the figure was 21%. These findings preceded marijuana legalization in Illinois and the policy change is generally considered to have raised marijuana use somewhat, although not remarkably.

Utilizing these two sets of findings, we can make a simple probability calculation that there is a reasonable chance that 71% of Black applicants, 56% of Latinx applicants, and 35% of White apprentice applicants have either poor math skills, use marijuana, or both. Even if this estimate is substantially off, it validates much of what we heard from union representatives about the problem.

Table 2.1 2019 Grade 11 Mathematics SAT Chicago Public Schools

	Partially	Approaching	Meets	Exceeds
White	15%	24%	37%	25%
African American	58%	29%	12%	1%
Latinx	39%	35%	23%	4%

Source: Illinois School Report Card District 299 SAT

Table 2.2 Percent of Chicago High School Students and Young Adults Using Marijuana in Past Month by Race

	Percent
White	24.5%
African American	31.4%
Latinx	27.8%
All, Age 18-25	21.4%

Source: National Drug Early Warning System Marijuana, 2013, p. 27, 28.

Physical Demands

Our interviews and construction trade internet discussion board posts make clear how physically demanding construction work of every type can be. All of the trades

minimally require physical activity for most of the workday. Judging from how tradespeople describe their work, probably the least physical jobs are painting, laying tile and indoor electrical. But even these often require continuous motions in physically cramped, crouched, stretched, or contorted positions. Plumbers often work long stretches in difficult positions and must have strong upper bodies. Painters and electrical workers often work from ladders. Roofing, concrete, bricklaying and iron work are highly physically demanding, often requiring continual lifting of heavy tools and material. This work often must be carried out during hot summer days or cold winter days. Outside workers must be willing to work in rain.

Beyond the everyday physical exertion required, some occupations entail persistent dangers and require significant safety precautions.³¹ The most challenging of these is commercial iron working, where installation of beams and welding is conducted at extreme heights, sometimes many hundreds of feet above ground, and often in difficult physical positions. Carpenters and sheet metal workers report numerous cuts and other injuries to their hands. Carpenters, roofers, masons, and painters routinely work from ladders and scaffolding and while ladders and scaffold are safe if used properly, workers are endangered when they are not.

Trades workers rarely work steadily in their sixties and report the cumulative toll of lifting and awkward physical position on their bodies. A number of discussion board posters recommend ongoing conditioning regimens and exercise outside of the job to stay in the requisite physical condition to perform their jobs over multiple decades and avoid chronic and/or permanent injury. Common problems are chronic injuries to shoulders, hips and knees, as well as back strain and injury. It is not clear how many trades workers actually do this. The City Colleges curriculum for most trades requires three courses of Vocational Physical Training and one of Construction Safety to earn a certificate. Injuries, always problematic, are more so for non-union workers who are much less likely to have strong health insurance and pensions.

Working in the construction trades requires of anyone that they be physically fit, patient, and willing and able to follow rules closely if they are to advance beyond the relatively easy helper jobs that mostly involve manually moving material, cleaning, painting preparation, or low-skilled painting.

While we detect some bravado in the quotes cited below, we think they nevertheless convey a truth that the trades entail physical work, can be uncomfortable at times, and require more physical fitness than many other jobs, and also communicate something of the culture of the more physically demanding of the trades.

³¹ Welch, Laura A., Hunting, Katherine L. and Murawaki, Judith Anderson. 2005. "Occupational injuries among construction workers treated in a major metropolitan emergency department in the United States" *Scandinavian Journal of Work, Environment & Health*, Vol. 31, Supplement 2. Construction workers and occupational health care pp. 11-21.

Electrician

*Your mileage may vary depending on what type of work you do, and how careless you are with your body. I for one was pretty f***n careless as a 20 something journeyman and I had to bow out of construction gracefully at 35. . . . The skills I learned as a JW will be with me always but I didn't want to be one of those old timers hobbling around on a full knee or hip replacement with a few slipped discs at 60.³²*

Iron Worker

First off, the height issue. It's high. As a friend put it, it's not the heights its the widths. I suppose it takes a certain personality to do it. If you can hang from a one inch wide strap, literally dangling from a piece of angle iron, dancing to the music playing on your headset (yes, dancing and singing) while welding at heights of over 200 feet or more then you might be a good tower welder. If you can be up there while the tower is wobbling in the wind and you're being blown around, then you might be a good tower welder. You will have odd side effects at times. Standing on the ground and get the wobbles, guy I worked with said it was almost like PTSD (he was prior Army with tours in the sandbox). It's not a "man" thing, are you man enough. If you have something to prove or a tough guy complex then maybe you should save the guys a rescue or a death. If you cannot get relaxed up there and are constantly thinking about your current position above the earth? Again, save them the time of a rescue and walk away.³³

Electrician

Have you ever worked in construction??? Or done any hard, physical manual labor (not just once or twice - but on regular basis)?? Have you ever sweat like a freakin pig from working??³⁴

Carpenter

When I was in the carpenter's union the rule was 20° [coldest people were expected to work in]. The contractors didn't agree to that because they were great humanitarians. Production drops dramatically, and it's difficult to make complex choices/decisions when you are really cold. Heavy clothes present inherent safety challenges.³⁵

³² Theloop82 4-20-2020 What is the average career length in the IBEW?

https://www.reddit.com/r/IBEW/comments/g4f4n1/what_is_the_average_career_length_in_the_ibew/

³³ Cumminsguy71 2-05-2013 So you want to climb and weld? American Welding Society Forum

https://app.aws.org/forum/topic_show.pl?tid=31703

³⁴ Dirt diggler 11-15-2007 A Little Hesitant <https://www.contractortalk.com/f5/little-hesitant-29339/index3/>

³⁵ Neolithic 02-01-2008 How Cold Will You Work? <https://www.contractortalk.com/f3/how-cold-will-you-work-33469/>

Mason

Most normal people require a few years to fully develop their muscles, tendons and skeleton to handle the daily loads imposed on production block and bricklayers without constant injury and pain.³⁶

Ironworker

Rebar is like serving hard time for little money. Erection work is very hard and dangerous but it's a great experience building structures and erecting them is way cool but as the man says it'll make you old real fast. All you really need to know is one bolt per hole and don't get caught walking the steel unless you are tied off. Not saying that you shouldn't walk the steel while not being tied off just don't get caught. Big lifts, solving problems, walking the steel, all very enjoyable but hard hard work. You'll meet some great people out in the field. Worth the adventure while you are young. what you have to consider is are you willing to feel 40 when you're 30 and 60 when you're 40. If you could focus on your arc skills and achieve moderate to great skill you'll be farther ahead when you retire than walking the steel until you are broken down.³⁷

Ironworker

As for iron and steel it's like this; Everything is heavy. Everything is sharp. Everything is 3rd degree burn hot or frostbite cold. Everything you do is loud, hot, heavy, and in some weird place you need to be an acrobat to get to. Everything is your fault. Add high iron to the mix and now along with everything else you've got to be a monkey on the steel while hauling around many many lbs of tools. You're usually down in a nasty pit or up just high enough to be fatal when if you fall.³⁸

Ironworker

I think I understand why the hazing. If you are 30 stories up, walking a 6" wide steel beam, you want to know what the guy you are working with is made of. If he is unreliable, on drugs, drunk, or a hothead, let him find a job on the ground where his mistakes won't be so likely to get you both killed.³⁹

Ironworker

It takes a hell of a lot of talent, skill, fortitude and just plain old cahones to "stick a spud In a hole and put a bolt in it", setting on a four inch beam one hundred

³⁶ FourthGeneration 2-23-2018 Brick Laying Trade School <https://www.contractortalk.com/f48/brick-laying-trade-school-386674/>

³⁷ Darren 12-01-2007 ironworker apprenticeship, any advice? American Welding Society Forum https://app.aws.org/forum/topic_show.pl?tid=13635

³⁸ App-ironworks 3-30-2011 Is Ironwork One Of The Most Physically Demanding Jobs Out There? <https://www.contractortalk.com/f86/ironwork-one-most-physically-demanding-jobs-out-there-95762/>

³⁹ Jrichker 6-16-2006 anyone here a union ironworker? StangNet.com Forums <https://www.stangnet.com/mustang-forums/threads/off-topic-anyone-here-a-union-ironworker.643145/>

*and twenty feet off the ground, just as I know that welding is a very tough and demanding job. Ironworker connectors do both . . .*⁴⁰

These examples should not be taken to discourage anyone who wants a career in the trades from pursuing one, but it is to acknowledge some of the challenges that can present. As the Chicago Women in Trades publication, *You Can Do It: A Woman's Guide to Construction Careers* points out, there is a high degree of mechanization in much of today's construction work, lessening the need for physical strength, OSHA regulations are helpful, and many women are sufficiently strong to do construction tasks. But as we observed above, a building trade is physical work.

Mental Demands

For some workers, an advantage of less skilled trades such as roofers, laborers, drywall, masonry and equipment operators is that they make fewer mental demands than do many other professions. This can be useful for people with less education or those who simply prefer a career that is more hands-on and physical. But many of the skilled trades, particularly carpenters, electricians, and plumbers, can require significant mental capability. Take, for instance, the set of calculations below that a journeyman carpenter posted on a discussion board in answer to a less experienced carpenter's question:

Carpenter

*Looking at it in plan view, a 22.5 degree angle, for every inch of common run, you will have 1.0823" of hip run and .4142" of fascia. That's a cheat sheet I made for myself. Now, taking a 6" span, divided in half, leaves you a 3" common run, 3.2469" of hip run and 1.2426 " of fascia from centerline, or 2.4852" overall, hip to hip. With a 12/12 common pitch and 3" run/3" rise your overall length from fascia, (assuming no overhang) will be 4.2426" to the tip of the roof. Your fascia width remains the same, at 2.4852". Now using the hip run of 3.2469 and rise of 3" (constant), the length of the hip will be 4.420" . . . I make a cheat sheet for every funky roof I do, it makes it easy to calculate overhangs on hips/valleys.*⁴¹

At the journey worker level, carpenters, plumbers and electricians should have mastered various calculations. Tile setters must be able to calculate how to lay tiles so as to provide proper symmetries to a wall or floor and roofers can have similar needs. Carpenters, plumbers, electricians, and ornamental ironworkers commonly must calculate angles and their impact on distances to make proper cuts. Electricians in particular often must follow complex blueprints exactly correctly.

⁴⁰ Irnwkr 2-20-2008 Union vs Non-Union https://app.aws.org/forum/topic_show.pl?tid=1484

⁴¹ Loneframer 8-18-2010 Teach Me A Little Trig Please <https://www.contractortalk.com/f3/teach-me-little-trig-please-83024/>

The discussion boards suggest that workers who are less adept at mathematics can get the information they need on the job from others, but that is not ideal. The depth of knowledge needed is defined to some extent by whether one is working alone, as is often the case in residential or repair work, or with a team, which is more common on commercial construction. Electrician apprentice requirements include algebra and some geometry.

Journey-level electricians, welders, plumbers and heavy equipment operators in particular, must understand how the systems they work on operate as some of their errors have the potential to be mortally dangerous to others. These trades workers in particular must know how to do their task correctly, but also recognize if a task has been done incorrectly by someone else, or when conditions are unsafe to continue to work.

Securing most union apprenticeships requires passing tests with some combination of basic math, spatial, and mechanical reasoning. The math entails understanding decimals, fractions, measures, weights, and their various conversions, or manipulating sequences of numbers or speeds. Tests may include the ability to arrange shapes and patterns and reason the results of mechanical processes such as multiple gears, pulleys or pressures.

Motivation really matters

Roofer

It could take you years to become a roofer or you could become one in months. It all depends on "you" and your desire. Skill can be acquired, but professionalism is a direct result of your personal character.⁴²

Because construction work can be demanding in many ways because of physical requirements and irregular employment, and because the academic barrier to entry is fairly low and so much of what is learned is learned on the job, an individual's ability to persevere, motivation to succeed, and ability to self-motivate are extremely important. Job sites and co-workers continually change as a worker moves from one construction project to another. Virtually without exception posters on construction boards agree that learning on the job is essential to working in the industry beyond the simplest helper tasks. Unless one works for a large company, of which there are relatively few in the industry, job changes can be frequent and this involves the willingness to job search. Union workers operating independently may depend on hiring halls where work comes in cycles and periods without work occur.

Electrician

I'll take an uneducated kid who hustles and tries hard and appreciates what he's learning before I'll take a book learned snot that feels he's better than drilling

⁴² 2ndGen 8-05-2007 Getting Started <https://www.contractortalk.com/f15/getting-started-25191/>

*hole, after hole, after hole, after hole. The construction industry isn't easy. . . . As a greenhorn you should go home tired and asking yourself why! Book learned knowledge will help, but respect is earned.*⁴³

Mason

*I can tell you it's really hard to find good guys and when I find one I keep him working. Get out there, call your local union hall, call some brick contractors and tell them what your all about. Tell them what you want to do and you will do whatever it takes to get there. Once you get your shot and you will, if you work hard and your a good guy people will help you. One other thing show up every day rain or shine and don't be late!!*⁴⁴

Plumber

*On time means you're there 15 minutes before starting time. If you don't have a pencil, a rule, a pair of channel locks, and a hardhat when you get there don't bother showing up. It would be a plus if you know how to actually read the rule, if you do I will give you a torpedo level and show you how to use it. Leave your phone, your jewelry, and your attitude in the car, I don't have time to deal with any of them.*⁴⁵

Transportation

Another potential obstacle for aspiring construction workers is every day access to a car. Most apprentice programs require a driver's license because job sites can be anywhere in the Chicago region and often are not accessible to public transportation. Most young people have a driver's license, but are less likely to have their own car. Also, during the first year or two of the apprenticeship, apprentices must be able to move quickly between a job site located in one part of the area, and the union training center located somewhere else.

Many of the union training centers are located in the suburbs. The Boilermakers, Carpenters, Electricians, Laborers, Painters, Pipefitters and Plumbers train at sites in Chicago. However, other trades train in Broadview, Elmhurst, Bellwood, Chicago Ridge, Tinley Park, Lyons, Countryside, Alsip, Oak Brook, Hillside, Forest Park and Mokena. When a union trains at a single site, wherever it is, the site will be a significant distance for many students and they will need a car.

Education

⁴³ WNYCarpenter 11-14-2007 A Little Hesitant <https://www.contractortalk.com/f5/little-hesitant-29339/index2/>

⁴⁴ Crosby 9-20-2009 Becoming a Brickie <https://www.contractortalk.com/f48/becoming-brickie-64949/>

⁴⁵ KillerToiletSpider 12-14-2011 What do you want to see or hear from an apprentice?
<https://www.contractortalk.com/f9/what-do-you-want-hear-see-apprentice-109238/>

Pathways in the Chicago-Area Building Trades

One of the advantages of the construction industry as an avenue for advancement for person with less formal education is that very few positions within the industry require college, and few workers in the industry completed college. Most union construction positions require either a high school degree or GED for apprenticeship, but non-union employers do not necessarily require it. The vast majority of construction workers, 81%, have only a high school diploma. In many trades, 20% or more of recent apprentices have less than a high school degree and may have completed a GED. A few trades do not have an educational requirement.

Table 2.3 Construction Trades by Level of Education, Chicago and Metros

	LT HS	HS/GED	Some Col	Assoc/Voc	Assoc/Acad	BA+
Construction and Building Inspectors	0%	28%	29%	9%	11%	23%
Structural Iron and Steel Workers	5%	26%	33%	13%	9%	13%
Electricians	2%	33%	26%	20%	8%	12%
Helpers, Construction Trades	11%	35%	40%	0%	0%	13%
Pipelayers, Plumbers, Pipefitters, and Steamfitters	7%	43%	26%	12%	5%	7%
Elevator Installers and Repairers	0%	53%	30%	0%	10%	8%
Boilermakers	7%	46%	35%	11%	0%	0%
Sheet Metal Workers, metal-working	6%	47%	17%	10%	10%	9%
Carpenters	13%	44%	25%	5%	4%	10%
Painters, Construction and Maintenance	17%	41%	26%	3%	4%	9%
Construct equip except paving, surfacing, tamping equip	11%	48%	29%	8%	3%	1%
Highway Maintenance Workers	8%	53%	24%	1%	4%	10%
Hazardous Materials Removal Workers	0%	61%	32%	0%	0%	7%
Rail-Track Laying and Maintenance Equipment Oper	0%	63%	37%	0%	0%	0%
Brickmasons, Blockmasons, and Stonemasons	25%	40%	26%	1%	0%	8%
Construction Laborers	22%	45%	19%	2%	2%	10%
Glaziers	15%	57%	11%	6%	12%	0%
Insulation Workers	13%	60%	9%	6%	0%	12%
Fence Erectors	29%	47%	5%	6%	7%	6%
Drywall Installers, Ceiling Tile Installers, and Tapers	36%	40%	15%	4%	1%	4%
Construction workers, nec	24%	54%	22%	0%	0%	0%
Roofers	27%	53%	13%	2%	0%	5%
Cement Masons, Concrete Finishers, Terrazzo Workers	27%	54%	9%	3%	2%	5%
Carpet, Floor, and Tile Installers and Finishers	23%	60%	11%	2%	1%	4%
Paving, Surfacing, and Tamping Equipment Operators	100%	0%	0%	0%	0%	0%
Total	14.2%	43.8%	22.5%	6.5%	3.9%	9.1%

Source: Current Population Survey

Data for Chicago-area apprentices indicate similar percentages of participants with less than a high school degree, although many of these may have GEDs.

Table 2.4 Percent of Apprentices Reporting Less than High School Diploma, 2012/2013

Trade	Percent Less Than High School Diploma	Trade	Percent Less Than High School Diploma
Pavement Striper	50.0%	Landscape Technician	11.1%
Plasterer	50.0%	Architectural & Ornamental Iron	10.5%
Tuckpointer, Cleaner, Caulker	40.6%	Operating Engineer	8.8%
Tile Finisher	37.5%	Heating, Ventilation, Air Conditioning	7.7%
Fence Erector	36.4%	Glazier	7.1%
Form Builder	34.0%	Electrician	6.4%
Bricklayer	33.9%	Insulation Worker	6.3%
Cabinetmaker	33.3%	Plumber	5.3%

Pathways in the Chicago-Area Building Trades

Drywall Finisher	33.3%	Pipe Fitter	3.8%
Taper	33.3%	Operating Engineer	2.3%
Painter (Const)	32.2%	Line Maintainer	1.2%
Floor Layer & Cover	31.3%	Carpenter, Piledriver	0.0%
Cement Mason	28.6%	Cement Mason	0.0%
Tile Setter	25.9%	Dry-Wall Applicator	0.0%
Floor Layer	25.0%	Electrician, Maintenance	0.0%
Tool And Die Maker	25.0%	Elevator Constructor	0.0%
Carpenter	24.0%	Inspector, Building	0.0%
Construction Craft Laborer	23.4%	Marble Setter	0.0%
Millwright	22.2%	Mold Maker, Die-Cast & Plaster	0.0%
Roofer	21.5%	Repairer, Heavy	0.0%
Sheet Metal Worker	21.5%	Residential Carpenter	0.0%
Maintenance Repairer, Build	21.1%	Structural Steel Worker	0.0%
Rigger	18.2%	Terrazzo Finisher	0.0%
Boilermaker I	17.1%	Truck Driver, Heavy	0.0%
Painter, Hand (Any Ind)	12.0%	Total	16.0%

Source: U.S. DOL RAPIDS

Race/Ethnicity and Construction Hiring

Historically, the vast majority of workers in the Chicago-area construction industry have been White males and, as the first section of this report showed, that remains true today among the higher-paying trades. Blacks are under-represented in the Chicago-area construction industry and among building trades apprentices compared to their population in the Chicago area. Latinx work in construction in proportion to their overall Chicago area population, but are over-represented among the low-wage, low-skilled jobs, and under-represented among the high-wage, high skilled jobs. Women remain extremely under-represented compared to their 50% representation across the population, but it must be acknowledged that relatively few women express interest in working in the building trades or apply for apprenticeships.

The under-representation of Blacks and Latinx among contractors has long been a matter of concern among advocates for equal racial/ethnic representation in public contracting such as the Chicago Urban League, HACIA, Black Contractors United, Chicago Black United Communities and others. Governmental jurisdictions, including the State of Illinois, City of Chicago, Cook County, Chicago Board of Education, and the Metropolitan Pier and Exposition Authority, have long operated affirmative action programs aimed at remediating the effects of past discrimination. But it is important to emphasize that, for the most part, these programs are aimed at redressing discrimination in contracting, not hiring, legally speaking. Because employment in the construction industry is highly segregated racially, corresponding strongly to the racial ownership of the firm, to redress contracting is to a large degree to redress hiring. Not only for Chicago, but nationally, patterns of hiring based on employer race needs to be much more extensively researched in order to eventually dress economic disparities and create effective interventions.

The legal requirement that affirmative action programs be narrowly tailored to address the effects of current or recently past discrimination has resulted in drafting of periodic

disparity studies that document to varying degrees the under-representation of women-, Black-, Latinx- and Asian-American-owned businesses, particularly in the construction industry. These disparity studies of contracting generally attribute disproportionality to capital requirements to start, build and sustain businesses, delays in payment by government to their contractors, history of exclusion from markets, and ongoing discrimination, usually inferred from statistical tests, as opposed to direct evidence of wrongdoing by persons. Studies often attribute a portion of contracting disparity to operation of an “old-boy” system wherein contracts have been steered towards friends of government officials, ostensibly confidential bid information may be shared with favored competitors, or contract specifications are written so as to favor certain companies or types of companies. The result has tended to be exclusion of newer, less influential, and minority-owned firms that tend to have less capital and less connection to establishment interests.

A similar “old-boy” system may have operated in private construction as in public, and possibly even more so. Public systems are subject to much greater scrutiny. General contractors, that manage most large construction projects, are rarely publicly owned and so are not subject to the oversight of boards of directors or public filings. General contractors are less vulnerable to interests of public officials, many of whom are minorities elected from majority-minority districts, although public officials do exert strong influence over them when contractors are managing public projects.

Government affirmative action affects private general contractors because they are the firms that actually bid on public projects and then execute them. When they contract to perform government work for jurisdictions that have minority contracting or hiring goals, they assume responsibility for attaining those goals. Private contractors may also have minority contracting goals for projects created by private developers, sometimes because execution of complex projects necessitates a private-public partnership that thereby gives leverage to elected officials and their constituents to assert the need for minority contractor or worker participation. And some private contractors and construction companies have developed internal minority sub-contractor and hiring goals of their own. However, only rarely, if ever, are the actual goals publicized, or are companies publicly accountable for their achievement. Most smaller majority-owned companies and unions do not have goals for minority hiring.

Developing actionable and effective remedies for the problem of racial/ethnic and gender segmentation of the construction industry is hindered by the use of the seemingly catch-all term, “old boys’ network” to describe how exclusion, and sometimes discrimination, occurs. Our research for this project suggests that the problem is complex in that while racial or gender discrimination is a portion of the problem, the structure of the industry and its conventional race- and gender-neutral hiring practices is also a problem. Race and gender discrimination have been much discussed in the history of unions and the construction industry. Almost unexplored is

how the industry's structure and sociology contribute to, or could even cause, the segmentation problem.⁴⁶

One of the obstacles to diversity may be that much of the industry is made up of small, often non-union, independently owned business units whose owners tend to hire locally and among their friends, neighbors, relatives and ethnic group. Many of them do this not to intentionally exclude anyone; rather, they do most of their hiring on the basis of convenience and reciprocity, which, like most small business owners, they would likely consider a good thing. However, this practice produces a form of systemic discrimination against persons outside those social networks.

The construction industry is a set of small companies and sole proprietors who often work independently on jobs, such as building a home backyard deck, repairing a leaky foundation, re-roofing a house or small building, painting rooms or the like. For larger projects, from building a house to constructing a large building, a general contractor hires sub-contractors from across the construction trades to complete the project. One company is hired to excavate the foundation, another to frame the foundation, a third to pour the concrete, another to construct the plumbing, another to install the wiring, and so forth. These companies may have permanent employees, but they also recruit for particular jobs from union halls, self-employed "1099s", or from smaller crews that operate independently, moving from job to job.

As the table below shows, 69% of Illinois construction companies have from only 1 to 4 employees. Another 15% have only 5 to 9 employees. Only 3% have as many as 100 or more. Over 80% of companies employ from 1-4 employees in residential remodelers (88%), finish carpentry (82%) and flooring contractors (84%). 76% of painting contractors and 77% of masonry contractors are very small.

No construction trade is organized principally around large companies. The trades that have the fewest very small companies, largely because of the needs for expensive equipment, are road builders, foundation and exteriors, glass and power and communications. But even with these, few firms have as many as 50 employees.

If a worker is looking for a job, the vast majority of companies they can choose from are small ones with fewer than ten employees. Although there is some evidence that the industry is consolidating, and that there is a growing number of national companies, that consolidation appears to be occurring mostly among the larger companies.

⁴⁶ Lippard, Cameron D., 2006 *Building Inequality: A Case Study of White, Black, and Latino Contractors in the Atlanta Construction Industry*. Doctoral Dissertation, Georgia State University.

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Table 2.5 Percent of Illinois Construction Companies by Number of Employees

	Establ	1-4	5-9	10-19	20-49	50-99	100-249	250 or More
Construction	25,051	69%	15%	8%	5%	2%	1%	2%
Construction of buildings	6,583	78%	12%	6%	3%	1%	1%	1%
Commercial and Institutional building construction	1,103	49%	18%	17%	11%	3%	2%	1%
Heavy and civil engineering construction	1,064	43%	18%	16%	12%	6%	4%	1%
Highway, street, and bridge construction	307	19%	24%	13%	26%	10%	6%	1%
Industrial building construction	126	67%	6%	15%	7%			
New housing for-sale builders	487	81%	13%	3%	3%	1%		
New multi-family housing construction	68	63%	9%	19%	7%			
New single-family housing construction	698	66%	26%	6%	1%			
Oil and gas pipeline and related construction	40	40%	15%	10%	13%	18%		
Residential remodelers	4,100	88%	8%	3%	1%	1%		
Other heavy and civil engineering construction	118	50%	14%	23%	3%	4%	3%	
Other building contractors	319	51%	16%	13%	12%	5%	2%	1%
Other building finishing contractors	296	70%	7%	17%	10%	5%	5%	
Other foundation, structure, building exterior	83	36%	42%	14%	5%			
All other specialty trade contractors	956	56%	25%	12%	6%	1%	1%	
Drywall and insulation contractors	734	66%	16%	7%	7%	2%	1%	
Electrical contractors and other wiring, installation	2,597	69%	12%	9%	7%	2%	1%	1%
Finish carpentry	1,531	82%	11%	4%	3%	1%		
Flooring contractors	666	84%	2%	10%	3%	1%		
Framing contractors	267	75%	14%	5%	3%	5%		
Glass and glazing contractors	200	55%	26%	14%	5%			
Masonry contractors	751	77%	11%	6%	5%	1%		
Painting and wall covering contractors	1,245	76%	12%	8%	3%	1%	1%	
Plumbing, heating and air conditioning contractors	3,661	64%	17%	10%	6%	2%	1%	1%
Poured concrete foundation and structure contractors	887	46%	34%	8%	9%	2%	1%	
Power and communication line and related structures	190	49%	22%	13%	6%	6%	3%	
Roofing contractors	775	64%	14%	13%	7%	2%	1%	

Source: Economic Census

As the table below shows, 62% of workers for construction industry firms work for establishments with fewer than 50 employees. The first panel in the table is companies that often complete entire projects, such as housing or highway construction, and may, therefore, hire workers in multiple trades. These companies vary in the extent to which they employ tradespeople themselves versus subcontracting with independents or other trade contractors. Many of these companies are architects, developers, or general contractors who may not employ any trade workers. The lower panel is companies that tend to hire workers of a single trade, such as carpenters, framers, electricians or roofers.

Table 2.6 Percent of Workers By Number of Employees in the Company, Illinois

	Estblsh ments	Pct LT 10	Pct 10-49	Pct 50+
All Construction	25,051	28%	34%	38%
Construction of buildings	6,583	40%	32%	28%
Commercial and Institutional building construction	1,103	16%	42%	42%
Heavy and civil engineering construction	1,064	8%	22%	70%
Highway, street, and bridge construction	307	5%	27%	68%
Industrial building construction	126	8%	17%	75%
New housing for-sale builders	487	56%	25%	19%
New multi-family housing construction	68	11%	43%	46%
New single-family housing construction	698	68%	30%	2%
Oil and gas pipeline and related construction	40	5%	19%	76%
Residential remodelers	4,100	69%	25%	6%
Other heavy and civil engineering construction	118	8%	14%	78%
Other building contractors	319	13%	34%	53%
Other building finishing contractors	296	16%	29%	55%
Other foundation, structure, building exterior	83	8%	14%	78%
Drywall and insulation contractors	734	24%	36%	40%
Electrical contractors and other wiring, installation	2,597	22%	34%	44%

Pathways in the Chicago-Area Building Trades

Finish carpentry	1,531	56%	33%	11%
Flooring contractors	666	33%	48%	19%
Framing contractors	267	43%	46%	11%
Glass and glazing contractors	200	43%	46%	11%
Masonry contractors	751	37%	41%	22%
Painting and wall covering contractors	1,245	38%	35%	27%
Plumbing, heating and air conditioning contractors	3,661	27%	33%	40%
Poured concrete foundation, structure contractors	887	33%	40%	27%
Power and comm line and related structures	190	11%	24%	65%
Roofing contractors	775	28%	52%	20%
All other specialty trade contractors	956	34%	42%	24%

Source: Economic Census

Informal Hiring

Painter

*I really like to hire guys that I know where they are coming from, a referral.*⁴⁷

Because personnel needs are generally dictated by the flow of work, and individual proprietors and companies are constantly moving from one job to another, adding and laying-off workers, small employers like to have established relationships with workers wherein they can add them to a job on an almost 24-hour basis rather than having to go through a lengthy search process every time they need someone quickly.

Unions have formal processes that structure apprenticeship applications and our union interviewees insisted that there was no bias in the process, but other interviewees felt that personal influence, and cultural bias, can still matter. While the comments quoted below are not a randomly drawn sample of workers, enough workers commented in similar ways on discussion boards that it seems likely that family and connections continue to influence some apprentice and union election decisions.

An iron worker presents what sounds like a balanced view of how influence might operate in union selection. Influence helps some applicants get in, but it does not necessarily prevent others from getting in.

Iron worker

*Yes, there is a certain amount of father and sons in the trades. They come thru the program like everyone else. Do they have a leg up. Maybe. They know when the door is open and apply when they need apprentices. By and large the vast majority of the apprentices come in off the street. Stay informed, make yourself known, and you will get in when the door opens.*⁴⁸

⁴⁷ Dave Mac 9-28-2008 Hiring Employees—Experienced or Not <https://www.painttalk.com/f2/hiring-employees-experienced-not-3182/>

⁴⁸ Old-iron-habit 7-18-2016 Help in joining the Local 825 <https://www.heavyequipmentforums.com/threads/help-on-joining-the-local-825.60426/>

Regarding hiring and contracting at the ground level, and particularly with the small companies that comprise so much of the construction industry, the “old boy” network consists of any number of different types of relationships between friends and relatives that provide flexibility and a degree of security. Many construction companies operate like family restaurants, with husbands, wives, older kids, and relatives pitching in as needed and depending on their availability. Because they don’t typically hire from a large pool, a recent study of minority hiring on Los Angeles construction projects found that small contractors consistently had a more difficult time meeting local hiring requirements established by PLAs than did large contractors. (Pacific Gateway, 17) This was especially true for apprentices.

As the quotes below from internet boards attest, sometimes the loose set of relationships functions extremely well; at other times it can be dysfunctional. The networks can be hard to break into intentionally. Because they are often based on family and childhood acquaintances, they are inherently local and in a society where housing and schools remain highly segregated by race and ethnicity, the locally-derived employment networks will tend to be as well.⁴⁹ State and federal equal employment opportunity law does not apply to companies with fewer than 15 employees and so does not apply to the vast majority of construction companies.

It could be a friend:

Electrician

[For an apprenticeship interview] often times its easier if you know someone at one of the companies because they probably know the person interviewing you.⁵⁰

Plumber

My friend is a plumber and may be able to get me a job as a general laborer and hopefully have that lead to an apprenticeship.⁵¹

⁴⁹ Elliott, James R. 2001. “Referral Hiring and Ethnically Homogeneous Jobs: How Prevalent Is the Connection and for Whom?” *Social Science Research* 30, 401–425; Marion, Justin. 2009. “Firm racial segregation and affirmative action in the highway construction industry”. *Small Business Economics* 33:441–453. Clawson, Laura. 2005. “ ‘Everybody knows him’ Social networks in the life of a small contractor in Alabama” *Ethnography*, Vol. 6, No. 2 pp. 237-264.

⁵⁰ Young Shurima 4-15-2020 Question Regarding Apprenticeship
https://www.reddit.com/r/IBEW/comments/g1ygcc/question_regarding_apprenticeship/

⁵¹ Jay1974 4-30-2009 Plumber No Experience <https://www.contractortalk.com/f9/plumber-no-experience-57988/>

It could be a relative:

Mason

*The last masons we trained were Mario and his 2 brother-n-laws. They labored for 4 or 5 years before they made what I would call a good mason. They started at the very bottom at \$10 an hour toting brick and making mud.*⁵²

Mason

*I'm a young 18 year old father who is currently a tile setter helper working for my uncle who's a private contractor and pays me \$9 per hour, although lately I've been helping my other uncle George who's a Journeyman and he pays me \$12.50 an hour.*⁵³

Painter

*I've been with the crew for close to a year, about 6 months of actual work, it's a family business, I'm not family, so I'm first to go when work slows down, and I "get" to do a lot of the cleaning.*⁵⁴

Both in the American mythology and in fact, children, and sons in particular, commonly grow up in their parent's business or to follow their parent in their occupation, even if not working for them directly. A recent study based on General Social Survey Data found that of the nine occupations where a father's occupation most highly predicted the occupation of the son, four were construction occupations: pipe layer/plumber 36 times more likely than average, construction manager 20 times, electrician 19 times, and carpenter 13 times.⁵⁵

The postings on construction discussion boards, and that the postings are viewed as unremarkable by fellow posters, show how common it is in the industry for workers to get their starts with parents. Three postings typical of dozens or more are below:

Painter

*I went to the family school of painting. Where the old man wore his boys out to show he did not play favorites. Where good enough for most was not good enough for his sons. Where you worked holidays, nights, long hours, heat, cold and generally any adverse condition you could think of. If you complained you may get a butt whoopin. The job went home with you and you woke up with it.*⁵⁶

⁵² Brickhook 2-24-2018 Brick Laying Trade School <https://www.contractortalk.com/f48/brick-laying-trade-school-386674/>

⁵³ Oskar 12-24-2012 Masonry Career Advice <https://www.contractortalk.com/f48/masonry-career-advice-128048-print/>

⁵⁴ Greensboro84 2-20-2008 Do you love to paint? <https://www.painttalk.com/f2/do-you-love-paint-1122-print/index2/>

⁵⁵ Kopf, Dan July 17, 2017 "Americans are Most Likely to Follow their Parents into these Twenty Professions" Quartz <https://qz.com/1030000/the-20-jobs-americans-are-most-likely-to-follow-their-parents-into/>

⁵⁶ Bikerboy 3-03-2009 Hiring <https://www.painttalk.com/f2/hiring-4468-print/>

Carpenter

*I worked under my father for years, and that's the only reason I know anything at all.*⁵⁷

Welder

*I have a 12 yr old who is not interested [in welding] but my 8 yr old boy who has been dubbed Minnie Me works on tractors with me and knows how to drive my forklift. Anyway he wants to be a pipeliner like his dad and has been bugging me to teach him how to weld.*⁵⁸

A lot of construction jobs come from referrals from friends: From the discussion boards, a carpenter who lived around union carpenters and learned from watching and helping a friend's father; a carpenter who heads for family and friends whenever he needs labor;

Carpenter

*I lived around union carpenters most of my Life, at the age of around 10 to 12 I was hauling shingles up a 40' ladder, hard work but I thought it was fun. I learned mostly by watching and helping my friend's father.*⁵⁹

Carpenter

*Whenever I need labor I go straight to family and friends.*⁶⁰

A lot of hiring is done through a community of people who function as a tradesperson's network, either hiring him/her, or providing the labor for his/her jobs. Entering that community could be by happenstance, and is probably mostly local. People who are in those networks clearly have an advantage in getting work.

Paver

*We sub a lot of work, and make decent money at it. The best part is that it creates a circle of friends, whereas they start or should start to throw work your way too.*⁶¹

Roofer

*We pay a couple friends to help once in awhile when they are laid off.*⁶²

⁵⁷ Remodelor 12-04-2010 Training Carpenters <https://www.contractortalk.com/f3/training-carpenters-88311-print/index3/>

⁵⁸ Hillbilly delux 8-24-2014 appropriate age to break out a kid? American Welding Society Forum https://app.aws.org/forum/topic_show.pl?tid=33775

⁵⁹ Snobnd 12-05-2010 Training Carpenters <https://www.contractortalk.com/f3/training-carpenters-88311/index3/>

⁶⁰ Rhode Island 9-15-2015 How to Hire Help? <https://www.contractortalk.com/f3/how-hire-help-223081/>

⁶¹ Asphaltman 10-28-2017 New to Paving <https://www.pavementguru.com/forum/asphalt-patching-and-repair/22-new-to-paving>

⁶² 2ndGen 11-10-2009 Be honest <https://www.contractortalk.com/f15/honest-67882-print/index2/>

Painter

I painted a house last summer and the neighbors hired another guy. He had a crew consisting of his son, and his son's friends and himself. There were a total of 5 on the crew.

The implications of this are:

- Many construction workers will work for companies that are not covered by laws prohibiting employment discrimination because they employ fewer than 15 employees. Many strategies for attaining corporate diversity that are enforced by sanctions will not apply to them. Very few construction companies are publicly traded.
- Most construction workers work for companies that do not have trained human resources or employee recruiting functions, if they have them at all. Companies will, therefore, be inclined to hire employees in the simplest ways possible, some through internet sources, often through various forms of word of mouth. They lack the capacity to review lots of resumes and engage in extensive interviewing and screening and will tend to recruit from trusted sources as much as they can. Many of those will be family or friends who are likely to be of the same race as the employer. As a result, Blacks in particular find themselves at a disadvantage in job-seeking.
- While unions structure the hiring of a majority of Chicago-area construction trades workers, the hiring hall process is gradually subsiding. To an increasing extent, individuals are becoming responsible for finding their own jobs. This puts greater pressure on a worker's personal network which, again, is likely to be people of the same race or ethnicity and therefore advantaging Whites whose families and contacts are much more likely to have grown up in the trades.
- For most workers, advancement from one job title to another comes from changing firms rather than advancing within the firm. When the company consists of a journey worker roofer, three helpers, and his truck, there is no opportunity for promotion. Learning opportunities across functions can be fewer in small firms than large since a small carpentry sub-contractor, for instance, will not usually have an electrician. When it needs one, it will simply hire one, so a carpenter who wants to learn beyond his trade, will have fewer opportunities within the company to do so.

4. Types of Training and Program Capacity

Broadly speaking, there are three types of building trades training available in the Chicago area: 1) Registered apprenticeships, 2) training provided by schools sufficient to help an applicant secure an entry-level, non-union job, and 3) basic construction training or “pre-apprentice” that is generally aimed at helping the student attain an apprenticeship.

Unions provide the vast majority of registered apprenticeships. They take from three to five years, are almost entirely funded by the unions, integrate classroom and work, and most people in the industry consider them to be the highest quality training.

School-based training is provided primarily by community colleges and trade schools, which provide certificates or their equivalents that qualify graduates for many entry-level positions. They also have partnerships with contractors for employment and apprenticeship opportunities. The Chicago Public Schools offer trade-specific training that would be sufficient to qualify students for many entry level positions. Pre-apprentice programs are delivered primarily by community-based organizations.

Apprentices

The Illinois Department of Labor reports 14,212 apprentices in construction statewide in 2020 with 11,029 in the Northeast economic development region.⁶³ This suggests that about 3,500 start per year. 2018 data from IDOL, which appears comparable, reports 13,780. Statewide, 4.1% of these are women and 19.7% are persons of color. These apprenticeships are registered with the U.S. Department of Labor, which certifies that they meet high standards and subjects them to federal affirmative action regulations.

The number of new apprenticeships opened in a year is regulated by the apprenticeship programs, the vast majority of which are operated by unions. The number is determined by how many workers in a particular trade union managers believe can be employed and by the number of qualified applicants. In recent years, the largest numbers of apprentices have been in the plumber, electrician, and carpenter trades. Apprenticeship is less important to mastering some occupations – typically occupations that require relatively little skill. These include driving, cement, masonry, fencing, and working on walls. While there are apprentice roofers and painters, many contractors in these fields are non-union and hire large numbers of low- or low-skilled workers who have and need minimal training.

⁶³ Richard, Brian and Foil, Jennifer, May, 2020. Apprenticeship and Work-Based Learning in Illinois Center for Governmental Studies, Northern Illinois University, P.8.

Utilizing 2018 state data, which we believe will be comparable to post-Covid totals, we estimate around 2,700 new apprentice starts in the Chicago region, although totals may be somewhat more or somewhat fewer. We calculate this by starting with the number of apprentices statewide for each trade, dividing that by the expected number of years in an apprenticeship, and assuming about 80% of apprenticeships are in the Chicago region.

Table 3.1 Estimated Number of New Apprentices by Trade, Chicago Region

	Total Illinois Apprentices	Estimated Entry Per Year*	Estimated Entries Northeast Illinois **
Carpenter	2,649	662	530
Electrician	2,766	553	443
Plumber/Pipefitter	2,140	428	342
Laborer	719	360	288
Multiple	1,437	359	287
Iron Worker	635	212	169
Painter	404	135	108
Sheet Metal	642	128	103
Roofer	556	111	89
Elevator Constructer	390	98	78
Tuckpointer	195	65	52
Cement Mason	191	64	51
Boilermaker	201	50	40
Electrical Power Lineman	182	36	29
Drywall Finisher/Taper	70	35	28
Glazier	101	34	27
Operating Engineer	129	32	26
Heat And Frost Insulator	146	29	23
Sprinkler fitter	122	24	20
Plasterer	51	13	10
Riggers	18	5	4
Truck Driver	12	4	3
Landscaper	1	1	1
HVAC	2	0	0
Construction Surveyor	17		0
Pavement Striper	1		0
Traffic Safety Worker	3		0
Total	13,780	3,438	2,750

Source: Illinois Department of Labor. 2018 Female Minority Apprenticeship Report. Table 8. *Calculated by dividing by typical number of years for each trade **Calculated as 80% of Illinois apprentices.

Training

The vast majority of building trades training outside of union apprenticeship is available for electricians, heating, ventilating and air conditioning (HVAC), and in welding.

Most of the region’s community colleges provide training in HVAC, welding, or both. Proprietary trade schools also focus on these fields.

Pathways in the Chicago-Area Building Trades

Community colleges offer the least expensive non-union training alternative. Trade schools have base tuition and fees that for some reach as much as around \$15,000. The trade schools, however, work hard to help secure financial aid for students.

The following table provides a list of two-year colleges and trade schools that offer training in construction trades and report their data to the Federal Department of Education. It presents the number of program completions for the 2018-19 school year and for an earlier school year, usually 2010. A few of the institutions provide most of the training in particular occupations, and a few occupations have far more trainees than others. Many trades appear to have no institutional sources of formal training such as laborers, roofers, drywall, and painters.

Table 3.2 Graduates of Public and Proprietary Schools Reporting to Federal Department of Education

	Year	Electrcn Certif	Electrician Assoc	HVAC Certif	HVAC Assoc	Welder Certif	Welder Assoc	Constr Gen Cert
Kennedy King Com Col	2018-19			61	10	3		
	2010			28	3	11		
Daley Com Col	2018-19	611	10			26		
	2015	244	20					
South Suburban College	2018-19							13
	2010							21
Moraine Valley CC	2018-19			167	32	100		
	2010			41	12	36		
College of Lake County	2018-19			159	10	28		
	2010	5		251	13	6		
College of DuPage	2018-19			19		28	9	
	2010			19		4		
Joliet Junior College	2018-19			9				3
	2010	8		3				13
Elgin Community College	2018-19			70		44	4	
	2010		2	132		42	4	
College of DuPage	2018-19				8			
	2010				8			
Harper Community Col	2018-19			40		91	20	
	2010			41		15		
Oakton Community Col	2018-19			15	2			
	2010			11				
Prairie State Com Col	2018-19	10		5		8		
	2010	10	6	21		10		
Coyne	2018-19	134		56	58			
	2010	201	31	138				
HVAC Technical Institute	2018-19	58		205				
	2015			112				
Lincoln Col of Tech Trng	2018-19	0	63					
	2010	49	124					
ETI Schl of Skilled Trads	2018-19			85		85		
	2010			195				
2018-19 Total		813	73	891	120	393	33	16
		Carpentr Certif	Lineworker Certif	Pipe Fitting Cert	Masonry Cert	Plumber	Painter	Highway Constr Careers
Kennedy King Com Col	2018-19	36	16	19	0	58		240
	2010	45	18	24	39		8	
South Suburban IDOT	2020							233

Source: U.S. Dept of Education, National Center for Educational Statistics IPEDS College Data Profile

Community Colleges of Chicago (CCC)

The CCC prepares its students for “unionized apprenticeships and other relevant trade and utility worker opportunities.” Kennedy-King College’s Dawson Technical Institute houses most of the CCC’s construction training. These include Combination Welder, Construction Carpentry, Construction Management (an AAS degree program), Construction Masonry, Overhead Electrical Line Worker, Gas Utility Worker, Highway Construction Careers Training and Plumbing and Fire Protection.⁶⁴ The Kennedy-King campus also offers training in Heating, Ventilation, Air Conditioning and Refrigeration. Daley College operates certificate and associate degree programs for electricians aimed particularly at preparation for IBEW apprenticeship.⁶⁵ Dawson also works closely with People’s Gas to train and place veterans in their apprenticeships. Other union and employer relationships are less direct. CCC also operates a grant-funded certificate in highway construction in collaboration with IDOT.

While some CCC students move directly into non-union employment, CCC construction certificate programs also informally screen students for union apprenticeships. Their programs are an inexpensive way for a person interested in a trade to begin learning about it and discover whether they are suited for construction work. Students in certificate programs usually complete their program, which consists of about ten courses, within a semester, starting early and attending school all day. The Chicago City Colleges try to maintain close relationships with unions that recruit in the fields in which the Colleges train. Some students work while in school but the programs do not have a formal work-study connection. The consensus of those interviewed was that Dawson provides strong training, but the union training centers are able to provide more depth and have superior facilities.

While program completion is important to the Dawson program, it also has a role as a low-cost way for young people to determine whether they actually want to pursue a career in a building trade. The CCC completion rate for plumbing is about 80%. Carpentry, highway construction management and welding have historically about 70% completion, but appear higher in 2020. The Peoples Gas veterans’ program has recently had 100% completion but the Overhead Electrical Line Worker (OELW) program completion rate is much lower due to the physical demands of the training.

Kennedy-King operates at or near training capacity for most construction programs. OSHA regulations require teacher-student ratios ranging from 15-1 to 30-2, depending on the trade, and most trade programs begin the semester subscribed at or near their capacity of 20 students. Classes are filled as qualified students apply and particularly in carpentry and plumbing, some qualified students are turned away. Students must be 18, have a high school diploma or GED, and score sufficiently well on placement tests.

⁶⁴ <https://www.ccc.edu/colleges/kennedy/departments/Pages/Dawson-Technical-Institute.aspx>

⁶⁵ <https://www.ccc.edu/colleges/daley/programs/Pages/Electrical-Construction-Technology-Basic-Certificate.aspx>

The curriculum includes shop math and the program is conscious of its role in assuring that its certificate graduates would be competent to pass tests to receive apprenticeships. Advanced certificate programs have more rigorous placement requirements than basic certificates, which are 16-week programs.

Construction training requires space and there is interest in expanding the program within the Kennedy King campus.

Additional Data and Non-Reporting Programs

ABC – Associated Building Contractors ABC is a non-union contractor’s organization providing apprenticeships and training in various trades. Its Illinois affiliate DOL-licensed apprentice program has grown from around 90 apprentices in 2010 to over 240 in 2015. About half are in the Elk Grove Village training center, which includes carpentry, HVAC, plumbing and electrical.⁶⁶ Manzo and Bruno, utilizing federal DOL data, found an apprenticeship completion rate under 30% from 2000 through 2011.⁶⁷ Program costs are as follows:

Table 3.3 Tuition for ABC Trades Programs

Trade	Status	Complete Tuition	Levels (years)
Carpentry	Member	\$8,800	4
	Non-Member	\$10,800	
Electrical	Member	\$10,800	4
	Non-Member	\$12,800	
Heavy Equipment Operator	Member	\$8,700	3
	Non-Member	\$10,200	
HVAC	Member	\$8,800	4
	Non-Member	\$10,800	
Laborer	Member	\$8,600	2
	Non-Member	\$9,600	
Painting, Pipefitting, Roofing, Sprinkler, Welding, Masonry		Subject to Demand	

Source: ABC Learn Your Trade Education Catalogue, Accessed August, 2020

Illinois Plumbing Consultants – Has classroom instruction and on the job training.

⁶⁶ PHCPPros. 2016 ABC Illinois chapter opens new apprenticeship training facility in suburban Chicago

⁶⁷ Manzo, Frank and Bruno, Robert. 2020 The Apprenticeship Alternative: Enrollment, Completion Rates and Earnings in Registered Apprenticeship Programs in Illinois. Illinois Economic Policy Institute and University of Illinois Labor and Employment Relations. P. 12.

Coyne College provides HVAC and electrician training. Tuition and fees are approximately \$15,000 before any financial aid based on its “net price calculator”. It places around 70% of its graduates.⁶⁸

Building and Fire Code Academy offers a four-year Plumbing Apprenticeship Education (PAE) to supplement an apprentice plumber’s on-the-job training. This education prepares Illinois apprentice plumbers for the Illinois state licensing exam, and the wide range of technical experience expected of them throughout their careers. About 10 students start per year of a 4-year program. It charges \$650 per semester.⁶⁹

ETI School of Skilled Trades ETI provides training in HVAC and welding. Tuition is about \$16,000 for a 7 month course leading to an AWS Certificate for welding. Financial aid is available. It provides about 800 hours total theory and lab, day and night classes in Willow Brook. During FY 2019, 217 students entered HVAC and 202 entered welding. 99 of these students withdrew and 154 were placed in their field of study with average starting salaries around \$30,000.⁷⁰

Primarily Pre-Apprenticeship

ABC’s Community Builders program, aimed at providing entry-level skills to construction job seekers in 10 Chicago disadvantaged communities, claims 100 students trained with a 60% employment rate with some students still in process.⁷¹

Hire360 provides pre-apprentice support and ongoing support for new apprentices with a goal of 200 apprentice placements per year.

Technology Center of DuPage provides training in welding, HVAC, and carpentry for electives programs for 24 DuPage County high schools.⁷²

ACE Amandla Charter School is a CPS charter school dedicated to the construction trades. It enrolls about 300 students per year and is located on Chicago’s South Side.⁷³

Sustainable Options for Urban Living (SOUL) is a Chicago South Side organization providing training in energy-efficient construction technology.

⁶⁸ Coyne College, Admissions, Disclosures. <https://www.coynecollege.edu/coyne-disclosures/>

⁶⁹ Building and Fire Code Academy, Training <http://www.bfccademy.com/plumbing-pae/>

⁷⁰ ETI School of Skilled Trades Campus Catalog 2019-2020 Volume 1, p. 40. <https://eticampus.edu/hvacr-program/>

⁷¹ <https://mycommunitybuilders.org/>

⁷² Technology Center of DuPage <https://www.tcdupage.org/domain/60>

⁷³ Public School Review <https://www.publicschoolreview.com/ace-technical-charter-high-school-profile> ; <https://aceamandla.org/>

Chicago Urban League has a long history placing workers in construction trades, particularly with private developers, City of Chicago, and IDOT-supported programs. It currently operates 8-week pre-apprenticeship and referral and job placement programs.⁷⁴ It maintains close union relationships.

Revolution Workshop is a community-based organization providing pre-apprentice training and entry level skills training in various trades including carpentry, electrician, and plumbing. It features a 10-12 week program, with 87% completion and 90% of completions placed. About 100 students have completed since the program began three years ago. It is located on Chicago's West Side.⁷⁵

Chicago Women in Trades provides free basic, introductory construction training. Its Technical Opportunities Program provides introductory training in construction, safety, math, resumes and job readiness to prepare women interested in construction for applications to apprenticeship or jobs, serving between 75 and 100 students per year, most of whom proceed to apprenticeships. Its welding program provides AWS certification in MIG, Stick, and TIG welding.

Illinois Works The State's Illinois Works program, beginning in January 2020, set 10% goals for apprenticeships on state public works construction projects, and provided \$25 million for support of pre-apprentice programs operated by community-based organizations.

Illinois Department of Transportation Highway Construction Careers Training Program provides a three-month training program in 10 Illinois community colleges. The program is free. Dawson Technical Institute enrolled 261, completed 240, and placed 124 in Fall, 2019. South Suburban College enrolled 348, completed 233, and placed 149 in Summer, 2019.⁷⁶

Illinois Tollway and the Chicago Cook Workforce Partnership operate **ConstructionWorks**, which uses community-based partners to train participants in basics of various construction trades for apprenticeship or employment, and offers contractors bid credits and limited pay reimbursements for hiring participants.⁷⁷

St. Paul Community Development Ministries Located on Chicago's South Side, it offers a 12-week construction pre-apprentice program and has been averaging around 10 to 15 apprentice placements annually. It has close union relationships.⁷⁸

⁷⁴ Chicago Urban League, Workforce Development Center. <https://chiul.org/program/workforce/>

⁷⁵ Revolution Workshop <https://www.revolutionworkshop.org/>

⁷⁶ IDOT Highway Construction Careers Training Program <http://idot.illinois.gov/about-idot/employment-opportunities/specialized-training/highway-construction-careers-training-program>

⁷⁷ <https://www.illinoistollway.com/doing-business/diversity-development/programs/constructionworks>

⁷⁸ St. Paul Community Development Ministries
https://www.stpaulcommunitydevelopmentministries.org/?fbclid=IwAR1y tRJBnbSOgMmPfm7IMJPVA_PWuP0yejyEKcqo-H_AN16PzBS7RpGAKO

Hispanic Americans Construction Industry Association (HACIA), a trade organization focusing on Latinx contractors, operates pre-apprentice programs for electricians and carpenters with about 4 cohorts of 15 students per year. About half of students are Black and about half Latinx, and many are women. They are trained by the Institute for Workforce Education at St. Augustine College.

Chicago High Schools

A number of Chicago high schools operate programs under the districts Career and Technical Education Program.⁷⁹ These include:

Carpentry: Chicago Vocational, Prosser, Simeon, Southside
Electricity: Prosser, Simeon
HVAC: Prosser
Welding: Simeon

Students graduating from these programs are prepared for entry-level employment in their field or for an apprenticeship.

Chapin Hall Center for Children at the University of Chicago is currently conducting an in-depth study of educational and employment outcomes of recent participants in the CPS Career and Technical Education Program. Early results suggest that CTEP participants out-perform controls for attendance, graduation and post-secondary school enrollment.⁸⁰ These findings may or may not apply to Construction program participants.

CPS also operates Chicago Builds, a two-year, off campus construction training program that is open to juniors and seniors.⁸¹ Students receive training in carpentry, electricity, welding, HVAC, and general construction. They receive OSHA 10-hour instruction and preparation for apprentice entry tests. Students attend for 2 hours per day during the school year.

Over their two years, students rotate through each of the construction fields and during their second-year work in a selected specialty area and intern. The program is advised by local unions, contractors and government. Unions appear to view the program as a pre-apprenticeship opportunity.

⁷⁹ <https://www.cps.edu/academics/career-and-technical-education/architecture-and-construction/>

⁸⁰ Career and Technical Education in Chicago Public Schools <https://www.chapinhall.org/project/career-and-technical-education-in-the-chicago-public-schools/>

⁸¹ Chicago Builds <https://www.cps.edu/academics/work-based-learning/chicago-builds/>

5. Apprenticeship Enrollment

The following table provides the basic admission requirements of most trades for DOL-certified union apprenticeship programs in the Chicago area. While programs differ in some ways, they have more in common than not:

- Programs range from 3 to 5 years.
- Most programs require either high school completion or GED.
- Most programs require taking an aptitude test that includes basic mathematics, mechanical aptitude, and reasoning.
- Most programs require an applicant to be 18 or older.
- Most programs make some assessment of an applicant's physical strength and health, and their willingness to work at heights.
- Most program selection criteria include the applicant's rank on the test, as well as how they scored on an interview with union training staff and/or leaders.
- Few programs require any previous classes or experience for acceptance, but most recommend various high school classes related to the field.
- Previous experience in some hands-on work and demonstrated affinity for working out-doors and early hours are important for all trades.

A few programs, such as the Laborers, require a contractor sponsor but most do not.

Table 4.1 Apprenticeship Admission Qualifications

Trade	Years	Ed Req'd	Test	Age	Select Criteria	Strength	Elev	Suggested Pre Classes	Prev Exper in Constr
Architectural and Ornamental Iron Worker 63	3	HS GED	Yes	18	Test rank	Yes	Yes	Shop Math Drafting	
Boilermakers Local 1	4	HS GED	Yes	18	Welders rank highest	Yes	Yes	Reading, Math, Sci, Blueprint, Mech drawing, welding	
Bricklayer- IUBAC Dist Council 1	3	HS GED	General knowledge & physical	18	30 day probation	Yes	Yes	Drafting, shop, math, constr-related	Helpful
Carpenter Regional Council	4	2 yrs HS GED	Vocab, math, reasoning	17	All into pre-apprentice meeting basic qual	Yes	Some	Algebra, geom, sketching, drafting, sci, wood shop	
Cement Mason 502	3	2 yrs HS GED		17		Yes			Wood working helpful
Ceramic Tile Finisher BAC	3	2 yrs HS GED	Yes & Interview	18	Test rank	Yes			Helpful
Ceramic Tile Layer BAC	4	Hs GED	Yes & Interview	18	Test rank	Yes		Math, geom, shp, blueprint	Helpful
Drywall Finisher (Painters Dist Council 14)	2	2 yrs HS GED	No	18				Math, blueprint	
IBEW 134	5	HS GED	Yes & Intv	17	Test rank	Yes		Algebra (required), geom, trig, drafting	Helpful
Elevator Constructor Local 2	4	HS GED	Yes	18	Ed, exper, test	Yes	Travel	Basic arithmetic, writing	Helpful
Glazier Local 27	3	HS GED	Yes	18		Yes	Yes	Math	Constr, glazing, tools
Heat and Frost Insulator Local 17	5	HS GED	Yes	18		Yes	Yes	Math, mechanical drawing, geom, computer	Helpful
Laborer - LIUNA	2	10th grade	Yes & Intv	18	Indenture process	Yes	Yes	Safety training	Helpful
Riggers 136	3	HS GED	Math & Apt	18	Intv				Teaches all
Operating Engineer or Technician 150	4	HS GED	Yes & Intv	18	Obsv, test	Yes		Shop	Equipment or labor
Painter/Decorator DC 14	3	HS GED		18	Intv	Yes	Yes	Math, art, drafting	Painting or decorating
Painter/Drywall Finisher DC 14	3	HS GED		18	intv	Yes		Math, blueprint, art, geometry	Painting or drywall
Pipefitters 597	5	HS GED	Aptitude	18	Above test cut score "eligible" for "select"		Yes	Reading, algebra, science, geometry, shop	Motor skills or equipment
Plasterers Local 5	4	HS GED		17		Yes	Yes	Math, mechanical drawing,	Helpful

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								science, shop	
Plumbers Local 130	5	HS GED	Yes	18	Multiple rank	Yes	Yes	Math, sci, chem, mech drawing, reading, indust arts, prob slving	Tools
Riggers 136	3	HS GED	Yes & Intv	18	Unstated				Not needed
Roofer & Water-proofer Local 11	5	HS GED or 6 roofer experience	Yes	18		Yes	Yes	Algebra, geometry, mechanical drawing, reading	Tools, drafting
Sheet Metal Worker	5	HS GED	Yes	17	Ed, exper, math, lang skills			Math, trig, blueprint, computer, drafting, shop	Computers, drafting
Sheet Metal HVAC Service Tech (Local 73)	5	HS GED	Yes	17	Ed, exper, math, lang skills			Math, computer, HVAC	Constr, maint repair, computer, electricity
Sheet Metal Worker (Local 73)	4	HS GED	Yes	17	Test rank		Yes	Math, drafting, computer, blueprint, shop	Mechanical, math
Sprinkler Fitter Local 281	5	HS GED	Yes & Intv	18	No info	Yes	Yes	Algebra, geom, mechanical & architect drawing, shop	Constr, pipe, welding
Bridge, Structural & Reinforcing Iron Worker (Ironworkers Local 1)	3	HS GED	Yes	18	Intv rank	Yes	Yes	Math, reading, composition	Welding, blueprint, shop
Technical Engineer (Plumbers 130)	5	HS GED, or more recmnded	Yes, esp math	18			Some	Algebra, geom, trig, reading, communicaton	Surveying
Tuckpointer (BAC Local 21)	3		Yes	17	Test, intv rank	Yes			
Teamsters Joint Coun 25	4	HS or GED	Maybe	18		Some	No	Driving	No

Sources: Union publications, CISCO, IDES summaries. See Appendix for details.

Age of Apprentices

Construction trade apprentices begin at all ages and a few as young as 17, but most begin after 21, which is to say few begin immediately out of high school. About half of entering apprentices did start by the age of 25. Our interviewees observed that new apprentices were becoming older.

Most entering apprentices have already worked for one or more years in entry-level construction positions. While this is not an absolute requirement for apprentice program acceptance, unions are investing resources in the apprentice and look for applicants who have already shown some aptitude for and interest in their proposed trade, appear likely to see through the apprenticeship, and understand and can handle the challenges many trades present. Employer recommendations are also needed for some applications.

Table 2.5 Age at Start Distribution of Chicago Area Apprentices by Trade, 2012/2013

	LT 21	21-25	26-30	31 +
Boilermaker I	9.8%	30.2%	24.7%	35.3%
Bricklayer	8.3%	13.3%	23.3%	55.0%
Cabinetmaker	10.0%	30.0%	23.3%	36.7%
Carpenter	11.2%	30.5%	23.5%	34.8%
Carpenter, Pile driver	0	50.0%	25.0%	25.0%
Cement Mason	15.7%	27.5%	31.4%	25.5%
Cement Mason Concrete Finisher	0	0	100.0%	0
Construction Craft Laborer	16.8%	41.6%	17.5%	24.1%
Dry-Wall Applicator	0	0	0	100.0%
Dry-Wall Applicator	5.0%	55.0%	20.0%	20.0%
Drywall Finisher or Taper	22.2%	33.3%	22.2%	22.2%
Electrician	4.4%	39.2%	27.3%	29.1%
Elevator Constructor	0	8.3%	25.0%	66.7%
Fence Erector	18.2%	0	27.3%	54.5%
Floor Layer	2.6%	34.2%	39.5%	23.7%
Floor Layer or Cover	10.9%	26.6%	28.1%	34.4%
Form Builder	10.2%	26.5%	32.7%	30.6%
Glazier	7.1%	35.7%	35.7%	21.4%

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Heating, Ventilation, Air Conditioning	7.7%	38.5%	53.8%	0
Inspector, Building	25.0%	25.0%	25.0%	25.0%
Landscape Technician	20.0%	30.0%	20.0%	30.0%
Line Maintainer	12.4%	27.0%	22.5%	38.2%
Maintenance Repairer, Build	0	5.6%	18.0%	76.4%
Marble Setter	0	83.3%	0	16.7%
Millwright	4.4%	33.3%	28.9%	33.3%
Operating Engineer	11.4%	25.0%	36.4%	27.3%
Heavy Construction Equipment Mechanic	10.8%	13.5%	24.3%	51.4%
Architectural & Ornamental Ironworker	0	36.8%	47.4%	15.8%
Painter - Const	7.8%	26.7%	24.4%	41.1%
Painter, Hand	10.8%	40.0%	20.8%	28.3%
Pavement Striper	12.5%	0	50.0%	37.5%
Pipe Fitter	12.5%	40.8%	35.6%	11.1%
Plasterer	9.1%	36.4%	45.5%	9.1%
Plumber	6.0%	17.9%	29.1%	47.0%
Repairer, Heavy	0	33.3%	33.3%	33.3%
Residential Carpenter	25.0%	50.0%	25.0%	0
Rigger	9.1%	22.7%	13.6%	54.5%
Roofer	10.5%	31.1%	24.1%	34.2%
Sheet Metal Worker	1.3%	36.7%	27.8%	34.2%
Ironworker or Structural Ironworker	10.0%	40.0%	30.0%	20.0%
Taper or Drywall	6.7%	36.7%	30.0%	26.7%
Terrazzo Finisher	25.0%	0	25.0%	50.0%
Tile Finisher	11.1%	55.6%	11.1%	22.2%
Tile Setter	0	0	14.8%	85.2%
Tool And Die Maker	0	62.5%	37.5%	0
Truck Driver, Heavy	0	0	0	100.0%
Tuckpointer, Cleaner, Caulker	0	31.3%	28.1%	40.6%
Total	8.7%	31.6%	26.8%	32.8%

Source: U.S. DOL RAPIDS

Black apprentices start somewhat later on average than White or Latinx apprentices. While 9% of Whites and 10% of Latinx began before turning 21, only 5% of the Black apprentices did. Black apprentices were far more likely to start at age 31 or older – 55% of them compared to just 28% of white and 35% of Latinx apprentices.

Table 2.6 Starting Age of Apprentices by Race, Chicago Area

	17 to 20	21 to 35	26 to 30	31 and over
White	9.0%	34.8%	28.1%	28.1%
Black	4.8%	18.6%	21.5%	55.1%
Latinx	10.1%	28.9%	25.9%	35.1%
Total	8.7%	31.6%	26.8%	32.8%

Source: U.S. DOL RAPIDS

A construction worker's age is highly correlated with a worker's wage. The biggest wage increase is from a worker's early years to early mid-career as low-skilled workers or apprentices begin to become skilled or journey workers. However, once a worker becomes a union journey worker, union contracts do not provide for further wage increases unless a new contract provides for higher wages.

Work Credit

Depending on the trade, apprenticeships are a three to five year commitment requiring up to 10,000 hours of on-site work experience to attain journey worker wages and status. Therefore, any significant credit for previous work experience is very valuable. Unions will ask applicants to provide pay records or letters from previous employers attesting to experience.

Data on credit hours awarded by age suggests that most apprentice applicants have had several years of experience in construction when they choose to apply, but probably not much more that was very skilled. As the table indicates, the average amount of credit increases from around 100 hours among the younger applicants, to around 700 hours, or almost half a year, among older applicants. However, the average amount does not increase beyond 700 thereafter. Those mean averages include a lot of apprentices who received 0 credit hours. To be credited, union managers must consider the work relevant to a training regimen. Some applicants may have worked in the industry for multiple years, but not advanced beyond low-skilled positions.

Among the major apprenticing trades, plumbers and carpenters receive the most pre-apprentice work credit.

Table 5.3 Mean Pre-Apprentice Credit Chicago Area by Trade 2012/2013

	Mean OJT		Mean OJT
Tile Setter	5,107	Glazier	143
Plumber	2,260	Painter - Construction	134
Carpenter, Piledriver	1,610	HVAC	129
Elevator Constructor	1,073	Roofer	88
Floor Layer	1,060	Sheet Metal Worker	70
Tile Finisher	842	Tuckpointer, Cleaner, Caulker	66
Cement Mason	784	Oper Engineer Heavy Equip	60
Bricklayer	758	Telecommunications Technician	42
Carpenter	622	Form Builder	38
Truck Driver, Heavy	600	Construction Craft Laborer	23
Terrazzo Finisher	563	Boilermaker I	12
Cabinetmaker	474	Cement Mason	0
Electrician	441	Dry-Wall Applicator	0
Architectural & Ornamental Ironworker	359	Fence Erector	0
Plasterer	273	Inspector, Building	0
Pipe Fitter	261	Marble Setter	0
Landscape Technician	254	Operating Engineer	0
Taper	250	Pavement Striper	0
Floor Layer	230	Residential Carpenter	0
Drywall Finisher	222	Rigger	0
Painter, Hand	214	Structural Ironworker	0
Drywall Finisher	222	Fence Erector	0
Painter, Hand	214	Inspector, Building	0
Dry-Wall Applicator	150	Marble Setter	0
	Mean		432

Source: U.S. DOL RAPIDS

Table 5.4 Mean Pre-Apprentice Work Hours Credited by Age, 2012/13

<u>Age</u>	<u>Mean OJT</u>
17	0
18	181
19	74
20	81
21	118
22	136
23	191
24	267
25	246
26	415
27	365
28	466
29	516
30	722
Over 30	769
Mean	432

Source: U.S. DOL RAPIDS

Apprentice Wages

Union apprentice wages typically begin at 50% of a journey worker’s wage in a particular trade and escalate in equal proportions over the three to five years of the apprenticeship until they reach the journey worker wage following the apprenticeship.

While we can present apprentice wage figures that are close to accurate, exact apprentice wages are difficult to document and compare precisely for a number of reasons. Some unions do not make data public. Wages may differ with different contracts within the same union such as contractor associations or units of government, and because contracts often call for wages to increase at a prescribed rate over the years of a contract. The apprentice wage levels reported below are the most current that the researchers could determine at this writing but, depending on the union, may not apply precisely to the same year, or necessarily be the most current. However, in all cases, we believe the wage we are reporting is either correct or a close approximation to what the wage is now.

Table 6.3 Approximate Hourly Wages for Selected Union Apprentices by Period of Service

Year and Month of Apprenticeship =>	Year 1 1-6	Year 1 7-12	Year 2 1-6	Year 2 7-12	Year 3 1-6	Year 3 7-12	Year 4 1-6	Year 4 7-12	Year 5 1-6	Year 5 7-12
Chi Reg Council Carp **	19.42	19.42	24.27	24.27	31.55	31.55	38.84	38.84		
Heat and Frost Insulators 17 Zone 1 **	19.42	19.42	24.27	24.27	31.55	31.55	38.84	38.84	19.42	
IBEW 134 **	21.00	23.62	26.25	28.87	31.50	34.12	36.75	39.37	42.00	47.25
Bridge, Structural and Reinforcing Ironworkers Local 1	28.40	33.13	35.50	37.86	40.23	42.60				
Millwright 1693	24.28	31.56	33.99	36.41	38.84	41.27	43.70	46.12		
Operating Engineers 150	22.50	22.50	28.15	28.15	32.50	34.65	36.80	39.00		
Plasterers Area 5	22.25	24.48	26.70	28.93	31.15	33.38	35.6	37.83		
Cement Masons 502	32.37	32.37	37.00	37.00	41.62	41.62				
Plumbers 130	17.35	18.85	22.45	22.45	25.50	25.50	33.65	33.65	38.25	43.35
Pipefitters 597	19.40	19.40	26.68	26.68	31.53	31.53	37.83	37.83		
Riggers 136 (Street Contract)**	29.40	29.40	33.60	33.60	37.80	37.80				
Bricklayers and Stone Masons 1 (BSM)	23.44	28.13	32.82	37.50	42.19	44.54				
BSM Ceramic Tile Finishers	20.28	24.34	26.36	28.39	30.42	32.45	34.48	36.50		
BSM Ceramic Tile Layers	23.75	28.50	30.88	33.25	35.63	38.00	40.38	42.75		
BSM Marble Finishers	17.58	21.97	26.36	30.76						
BSM Plasterers	23.38	28.05	32.73	37.40	42.08	44.41				
BSM Pointers Cleaners and Caulkers	23.25	27.90	32.55	37.20	41.85	44.18				
BSM Welder	24.61	29.53	34.45	39.38	44.30	46.77				
BSM Terrazzo Finishers	21.27	25.52	29.78	34.03	38.29					
BSM Terrazzo Workers	23.19	27.83	32.47	37.10	41.74	44.06				
Boilermakers 1	29.30	34.18	36.62	39.06	41.51	43.95				
Laborers LIUNA	25.63	29.90	34.18	38.45						
Painters DC 14 Locals 147 **	24.15	26.56	31.39	36.23	41.05	43.47				
Glaziers 27 **	22.43	24.66	29.15	33.64	38.12	42.60				
Sheet metal, air, rail, transp 91 SMART	16.62	18.70	20.78	22.86	26.10	28.28	30.45	32.63		
SMART Local 265 A&C Members **	19.21	21.60	24.01	26.41	28.81	31.21	33.61	36.02	38.42	40.82
Chicagoland Roofers 11	20.07	22.30	26.76	28.99	31.22	35.68				
Sprinkler Fitters 281 **	19.18	23.97	26.37		31.16		35.96		40.76	
Teamsters Joint Council 25 – Joliet 673 Group 1 **	23.56	23.56	27.49	27.49	31.42	31.42	35.34	35.34		

** Approximate – Recent journey worker wage times recent apprentice percent for time period

Source list in report appendix

Note: All figures are for most recent wage data publicly available at the time of this writing and may not represent the current year. Some figures are calculated by multiplying the apprentice year percent of journey-worker wage by the most recent journey-worker wage attainable. For some trades, there is no single figure across the region as wages are subject to particular contracts.

At the end of a successful union apprenticeship, the worker will make the full union wage, essentially the prevailing wage reported in Chapter 1. Wages will not increase beyond that level thereafter unless a union contract contains a general increase, although earnings could increase by working more hours.

Race/Ethnicity

Compared to their representation in the Chicago regional population, Blacks are under-represented in most apprenticeships, as they are among all construction workers. Among the larger apprenticeship trades, they are best represented among laborers, carpenters, building maintenance repair, and painters. In a majority of trades, almost

no Blacks are apprentices. They are particularly under-represented among the higher-paying trades.

The Latinx pattern of participation is different. As a whole, Latinx are proportionately represented to their overall population numbers and in some trades, they make up a majority of the apprentices or have substantial numbers. Most of these are trades in wall construction (taper, drywall applicator, plasterer, drywall finisher). Latinx are also disproportionately found among fence erectors, roofers, residential carpenters and some masonry trades. However, many of these trades are lower wage and many fewer Latinx are electrician, pipefitter, boilermaker, operating engineer or carpenter apprentices.

Table 4.2 Percent of Chicago-Area Apprentices Black or Latinx, 2012/13

Apprentices	Black	Latinx	Apprentices	Black	Latinx
Truck Driver, Heavy	100%	0%	Tile Setter	5.6%	38.9%
Form Builder	34.8%	28.3%	Floor Layer	4.9%	31.1%
Construction Craft Laborer	26.5%	26.5%	Rigger	4.8%	14.3%
Carpenter	25.1%	23.1%	Roofers	4.6%	53.2%
Maintenance Repairer, Build	24.2%	36.9%	Taper	3.7%	88.9%
Drywall Finisher	22.2%	44.4%	Glazier	3.6%	10.7%
Bricklayer	19.6%	29.4%	Cabinetmaker	3.4%	17.2%
Painter, Hand	18.9%	29.5%	Structural Steel Worker	3.3%	3.3%
Line Maintainer	18.2%	17.0%	Boilermaker I	3.2%	3.2%
Cement Mason	16.7%	35.4%	Floor Layer	2.9%	20.0%
Sheet Metal Worker	15.8%	18.4%	Pipe Fitter	2.7%	7.0%
Painter (Const)	15.3%	31.8%	Operating Engineer	2.6%	7.7%
Plumber	15.2%	12.5%	Dry-Wall Applicator	0%	100%
Carpenter, Piledriver	14.3%	0%	Electrician, Maintenance	0%	0%
Electrician	14.0%	15.8%	Elevator Constructor	0%	8.3%
Tile Finisher	12.5%	12.5%	Heating, Ventilation, Air Conditioning	0%	15.4%
Tuckpointer, Cleaner, Caulker	12.5%	34.4%	Inspector, Building	0%	0.00%
Fence Erector	9.1%	72.7%	Landscape Technician	0%	50.0%
Plasterer	9.1%	45.5%	Marble Setter	0%	50.0%
Op Engineer Heavy Equip	8.6%	2.9%	Pavement Striper	0%	100%
Repairer, Heavy	8.3%	16.7%	Residential Carpenter	0%	50.0%
Insulation Worker	6.3%	31.3%	Terrazzo Finisher	0%	50.0%
Architect & Ornament Iron	5.6%	11.1%	Total	12.1%	21.1%

Source: U.S. Department of Labor RAPIDS

Union leaders interviewed indicated strong interest in improving their hiring of Blacks and Latinx, and, to a lesser degree, women. Several of them stated it expressly, and some unions publicize their participation in Hire360. Non-union interviewees were mixed as to how strong they felt the union, and contractor, commitment to increasing racial, ethnic and gender diversity among construction workers is.

We do not know the level of union motivation to recruit more persons of color and women into apprenticeships and it may be different for different unions. Reasons for seeking diversity may include:

- Shortages of qualified apprentice candidates have led unions to expand outreach to Blacks, Latinx and women. However, several interviewees told us that while

there is a shortage of skilled construction workers among the non-union employers, unions have plenty of apprentice candidates.

- Times are changing, however slowly. Several interviewees asserted unprompted that there was no longer favoritism around race or family connection in the apprenticeship process. While progress is slow, broader society has seen gradual desegregation of housing, employment, and media.
- In 2016 and 2017 federal Department of Labor affirmative action regulations governing apprenticeships were updated for the first time in 30 years, requiring more detailed applicant tracking, disparity analysis, outreach and remediation plans. While affirmative action requirements for apprenticeships have existed for over 30 years, these revisions may have spurred new efforts to identify and advance people of color and/or female apprentices. One union interviewee told us that federal DOL was constantly monitoring and was “all-over” their apprentice processes.
- The City of Chicago now requires 50% city residency for workers on contracts. As Chicago’s white population decreases, contractors find it necessary to hire more people of color as employees.

However, as the apprentice and Census data attest, the industry has seen little or no increase in Black or female employment in recent decades.

Racial disparity in apprenticeships is likely a result of several factors we identified, although without data proprietary to each union, it is impossible to know to what degree each step contributes to the disparity.

In order of the process, each of the following could be problematic:

- 1) For almost all apprenticeships, applicants must have either a high school diploma or GED. Blacks and Latinx are disproportionately non-high school completers.
- 2) Most apprenticeships have a minimum math requirement, including a mathematics, and/or a mechanical reasoning aptitude test. As data above shows, among Chicago high school students, Blacks and Latinx have been testing substantially lower on average than Whites do in mathematics. Many unions rank their candidates on their test scores and then advance only the top scorers. So even if Black or Latinx candidates do sufficiently well on the test to function as an apprentice, they may find themselves too far down the call-back list to supplant White candidates who, on average, scored better.
- 3) Many apprenticeships require a formal interview with union training staff. Questions appear to be aimed at making an assessment of a candidate’s interest

in the apprenticeship, personality, ability to handle adversity, interpersonal skills and the interviewer's general assessment of the individual's suitability to the trade. These types of interviews are inherently subjective, despite the union staff's assertions otherwise, and could be sources of bias for or against candidates either intentional or unintentional.

A Los Angeles construction trades union website, for instance, lists the following as interview criteria: Motivation, Oral Responses, Confidence, Stability, and Attitude – items consistent with what we heard in union interviews. While each of these is potentially a legitimate interest for the union to inquire of, each is also highly susceptible to cultural bias that could result in exclusion of an applicant of different race, class or gender than the interviewer. Interviews might also include matters such as family, religion, or their employer, about previous jobs, participation in high school sports, motivation, toughness, heat and cold, and whether you like to get up early in the morning.

- 4) Apprentices must be hired by a union contractor to begin work as a union apprentice. Whether the contractor selected the apprentice, or the union assigned the apprentice to the contractor, the contractor makes the final determination of whether to accept the apprentice candidate as an employee. Typically there is a probationary period of a few weeks at the beginning of employment before the apprentice is formally indentured and during which the union follows-up with the contractor to address any problems that may have occurred. In some instances, contractors terminate apprentices during this period. In some instances, a rejected apprentice may receive another opportunity; in others they do not. As with the interview, either intentional or unintentional bias could enter the contractor hiring decision.

Any discrimination that happens seems more likely to occur at the interview stage than the hiring stage. Unions have close relationships with many of the contractors receiving apprentices, want the candidates they recommend to succeed, and probably have an idea of what sort of candidates perform best with various employers, or which employers are more or less open to diverse candidates. Far more "rejection" takes place at the interview and ranking stages of the process than would at the final step where the expectation of both parties is that a referred apprentice will be indentured.

- 5) Data shows that Blacks are less likely to complete their apprenticeships than Whites are. Again, we do not know why that is the case. Some possible reasons could be that:
 - a) Many construction workplaces are tough interpersonal environments and Black apprentices are typically minorities among other workers. Workers can

quit when confronted by unhelpful colleagues or language ranging from rough to abusive.

b) Union apprentices typically begin at around \$17 to \$20 per hour and gradually work their way up over several years to around \$40 per hour. However, apprentices in many trades are subject to frequent layoffs and, depending on the trade, may have much less work during winter. On average, White apprentices have more financial resources to support them through down times that occur in the earlier, lower wage, years.

c) Because there are so many more Whites in construction, White apprentices are more likely to have fathers who worked in construction, or to have grown up around relatives or friends in the building trades. This could lead to stronger support systems as they learn, and their having a better understanding of a building trades worker's life going in.

Black-owned construction companies are far more likely to hire Black workers, but are more likely to be non-union. One reason for this is that fewer Blacks become apprentices and journey-workers. For a company to be union is to risk blocking access to the majority of all Black construction workers who are not in unions. Black-owned construction companies may not want to hire through union-managed hiring halls, where the vast majority of workers would not be Black.

Black-owned companies can find themselves effectively shut out of some government business. Companies bidding on City of Chicago, Cook County, State of Illinois or most other major government-funded projects must comply with PLA agreements. These agreements require that contractors and sub-contractors on projects must comply with labor standards and pay rates negotiated by labor unions in the jurisdiction. The majority of minority-owned businesses are non-union and presumably do not normally pay union level wages but on PLA-governed projects, they would have to.

6. Training Program Completion and Outcomes

Across all apprentice trades, about two-thirds of persons who begin apprenticeships complete them. There is no clear evidence on reasons for cancellations, but reasons appear to include natural stresses of construction work, occasional lack of supportive work environments on work sites (hazing, harassment, criticism, apparently uncaring management), and changes of mind that affect many young people. Unlike with pursuit of school, apprenticeship mostly pays the participant rather than charges them. While in some trades participants need to acquire tools, boots and the like, all trades start their apprentices at approximately 50% of a full union wage and apprentices complete their program at full union wage. While irregular work schedules prevent many from maximizing their possible annual income, apprentice wages compare favorably with many other entry-level, non-college-required occupations.

Cancellation rates for Chicago area apprentices are comparable to those found in a national study covering the early 2000s. That study found cancellation rates approaching 50%. Nationally, cancellations tended to come in the first two years, and the probation period especially. People of color were more likely to cancel, as were apprentices with less education.⁸²

These rates are also typical of completion rates of other types of job training programs, most of which are far less rigorous than apprenticeships. College completion rates for both two-year and four-year institutions are also comparable, outside of the selective institutions, where completion rates are higher.

Among the large apprentice trade groups, the highest rates of completion, over 66%, are found among electricians, pipe fitters, and building maintenance/repair. Poorer completion rates of under 60% are found for construction laborers, boilermakers, painters, carpenters and roofers.

Manzo and Bruno found that joint union-employer apprentice programs had far higher completion rates than employer-only programs.⁸³

⁸² Helmer, Matt, and Altatdt David. 2013. Apprenticeship Completion and Cancellation in the Building Trades. The Aspen Institute.

⁸³ Manzo and Bruno, p.7.

Pathways in the Chicago-Area Building Trades

Table 5.1 Cancellations and Completions of Chicago Area Apprentices by Trade Starting in 2012/2013

	Cancelled	Completed
Elevator Constructor		100.0%
Glazier	7.1%	92.9%
Electrician	16.0%	84.0%
Fence Erector	18.2%	81.8%
Pipe Fitter	17.2%	81.1%
Inspector, Building	25.0%	75.0%
Operating Engineer	25.0%	75.0%
Architectural & Ornamental Ironworker	26.3%	73.7%
Ironworker Or Structural Ironworker	26.7%	73.3%
Telecommunications Technician	33.3%	66.7%
Maintenance Repairer, Build	23.6%	66.5%
Floor Layer	29.7%	64.1%
Heating, Ventilation, Air Conditioning	38.5%	61.5%
Construction Craft Laborer	40.1%	59.9%
Plumber	39.3%	59.8%
Boilermaker I	40.3%	59.7%
Floor Layer	42.1%	52.6%
Sheet Metal Worker	46.8%	51.9%
Tile Setter	40.7%	51.9%
Cabinetmaker	46.7%	50.0%
Carpenter, Piledriver	50.0%	50.0%
Taper	50.0%	50.0%
Truck Driver, Heavy	50.0%	50.0%
Painter, Hand	52.5%	47.5%
Carpenter	48.1%	47.3%
Cement Mason	51.0%	47.1%
Dry-Wall Applicator	55.0%	45.0%
Form Builder (Const)	46.9%	44.9%
Bricklayer (Construction)	61.7%	38.3%
Tuckpointer, Cleaner, Caulker	59.4%	37.5%
Marble Setter	66.7%	33.3%
Roofer	61.4%	32.9%
Painter (Const)	67.8%	32.2%
Plasterer	72.7%	27.3%
Pavement Striper	75.0%	25.0%
Residential Carpenter	75.0%	25.0%
Terrazzo Finisher	75.0%	25.0%
Insulation Worker	70.6%	23.5%
Tile Finisher	55.6%	22.2%
Rigger	86.4%	13.6%
Drywall Finisher	88.9%	11.1%
Cement Mason	100.0%	0.0%
Dry-Wall Applicator	100.0%	0.0%
Total	38.5%	61.5%

Source: U.S. DOL, RAPIDS

The low apprenticeship completion percentage for Chicago-area Blacks is a serious problem. As the table below shows, about 65% of White apprentices complete, but only about 40% of Blacks do.

Table 5.2 Percent Completing Apprenticeship by Race 2012/2013

	White	Black	Latinx
Cancelled	33.8%	55.3%	39.8%
Completed	64.6%	41.5%	56.6%

Source: DOL RAPIDS

The reason for the low Black completion is unclear. Blacks are much more likely to begin their apprenticeships when they are over 30. One can imagine that older age could be problematic as with age could come less tolerance for the low-skilled work of the beginning of most apprenticeships, or unsupportive bosses on the field. Older workers might also have more family responsibilities that could make the long work hours, combined with night schooling, difficult to sustain. Black apprentices also receive less credit on their apprenticeships for previous work experience, meaning that they have to, on average, work several hundred hours more than White or Latinx apprentices. This could be because they had less relevant or applicable pre-program construction experience. But how much to credit for experience is a subjective decision on the part of apprentice program managers so it is possible that some form of racial bias accounts for the difference in credit. Without knowing more about the types of pre-apprentice employment experiences of applicants, we cannot know the cause of the disparity.

While union apprenticeship programs are generally much cheaper than proprietary school, they can have some hidden costs and risks. Union fees and dues may be minimal, but they add up over time and if an apprentice loses employment and can't pay their dues, they can be dropped from the union, unable to rejoin until outstanding debts are cleared. Some union apprentice programs have a payment gap at the beginning. They do not start paying wages for between two to four weeks, a trial, pre-apprentice, or probationary period. Provision of a small stipend by a supportive organization can help bridge this period and improve retention.

Others have speculated that traditional construction work cultures work more against Blacks than they do Latinx.

Table 5.5 Mean Pre-Apprentice Work Hours Credited by Race 2012/2013

	Mean Hours Credited	Number of Apprentices
White	442	2,284
Black	365	414
Latinx	440	723
Total	432	3,421

Source: U.S. DOL RAPIDS

Employment of Trades Workers

Job placement rates for completing apprentices are very high – probably well over 90%. Each union sets the number of apprentices to the anticipated number of workers the local would likely be able to employ in its region. The vast majority of those completing their apprenticeship years in good standing are properly prepared to work and have surmounted the challenges of climate, attitudes, and aptitude.

Workers in fields with hiring halls are eligible to enter the hall and be referred to employers.

Trade schools report placement rates in the 90% range as well. Community colleges do not monitor their graduates sufficiently closely to know their placement rates in general, although the City Colleges report strong placement rates in their line worker and gas utility programs where they have strong relationships with the corresponding unions and public utilities.

About 80% of persons identifying as trades workers reported being employed at the time of the Census in the Chicago area. The unemployed would include persons effectively retired but not saying it, persons looking for work, persons seasonally unemployed, or persons in a union hiring queue.

Table 5.6 Percent of Adults Identifying by Occupation who are Employed

	% Employed
Industrial Truck and Tractor	100%
Rail-track laying and maintenance equipment operators	100%
Insulation workers	93.1%
Elevator installers and repairers	91.9%
Construction and building inspectors	88.5%
Electricians	86.9%
Pipe layers, Plumbers	86.6%
Sheet metal workers	86.3%
Crane and Tower Operators	86.1%
Glaziers	85.7%
Carpet, floor, and tile installers and finishers	85.3%
Equipment Operators	84.5%
Carpenters	83.2%
Structural iron and steel workers	82.4%
Brickmasons, blockmasons, stonemasons, reinforcing iron, rebar	79.1%
Painters	78.8%
Highway maintenance workers	78.3%
Other construction and related workers	77.3%
Roofers	77.0%
Fence erectors	75.8%
Cement masons, concrete finishers, and terrazzo workers	75.8%
Construction laborers	75.3%
Drywall installers, ceiling tile installers, and tapers	75.0%
Hazardous materials removal workers	73.3%
Paving Operators	71.4%
Boilermakers	70.6%
Plasterers and stucco masons	66.7%
Helpers, construction trades	56.5%
Total	80.8%

Source: PUMS

Construction work can be irregular. Across four Midwestern metropolitan areas, about 60% of trades workers reported to the Census working 35 or more hours per week.

Table 5.7 Percent of Trade Workers Working Full-Time

	Full-time hours (35+), usually full-time
Boilermakers	76.0%
Glaziers	78.7%
Electricians	78.6%
Operating Engineer, equip not paving, surfacing, tamping	73.8%
Sheet Metal Workers, metal-working	73.1%
Pipelayers, Plumbers, Pipefitters, and Steamfitters	71.7%
Construction and Building Inspectors	65.4%
Plasterers and Stucco Masons	63.8%
Brickmasons, Blockmasons, and Stonemasons	62.9%
Drywall Installers, Ceiling Tile Installers, and Tapers	61.3%
Carpet, Floor, and Tile Installers and Finishers	59.8%
Insulation Workers	58.2%
Carpenters	56.6%
Hazardous Materials Removal Workers	56.2%
Highway Maintenance Workers	55.3%
Construction workers, nec	54.8%
Elevator Installers and Repairers	54.4%
Rail-Track Laying and Maintenance Equip Operators	53.9%
Structural Iron and Steel Workers	53.2%
Construction Laborers	52.8%
Roofers	52.2%
Painters, Construction and Maintenance	51.8%
Cement Masons, Concrete Finishers, Terrazzo Workers	49.7%
Fence Erectors	44.0%
Paving, Surfacing, and Tamping Equipment Operators	39.0%
Total	56.6%

Source: Current Population Survey

Certifications and Licenses

Certifications and licenses are required for performance of some trades and tasks. These may be administered by the State of Illinois or municipalities. In general, non-certified workers can work on a task under supervision of a licensed supervisor in trades where a license is needed. A review of Census data indicating reports of certifications by respondents indicates that a large majority of construction workers are not licensed – therefore either working in trades where licenses are not required or working for a licensed trades-person.

Licenses do not appear to be difficult to obtain for a skilled worker or contractor and are not expensive. Assuming basic competence, they do not appear to be a barrier to working.

Table 5.8 Percent of Workers with Certifications by Trade

	Percent Certified
Rail-Track Laying and Maintenance Equipment Operators	100%
Elevator Installers and Repairers	67%
Construction and Building Inspectors	49%
Electricians	47%
Glaziers	46%
Pipelayers, Plumbers, Pipefitters, and Steamfitters	40%
Construct equip operators except paving, surfacing, and tamping equip	32%
Structural Iron and Steel Workers	29%
Hazardous Materials Removal Workers	27%
Boilermakers	23%
Construction workers, nec	22%
Highway Maintenance Workers	18%
Fence Erectors	16%
Roofers	16%
Carpenters	16%
Sheet Metal Workers, metal-working	16%
Insulation Workers	12%
Construction Laborers	10%
Brickmasons, Blockmasons, and Stonemasons	10%
Carpet, Floor, and Tile Installers and Finishers	10%
Painters, Construction and Maintenance	7%
Cement Masons, Concrete Finishers, and Terrazzo Workers	0%
Drywall Installers, Ceiling Tile Installers, and Tapers	0%
Plasterers and Stucco Masons	0%
Total	18.2%

Source: Current Population Survey

Many municipalities license contractors and some have reciprocal agreements with other municipalities. They generally require licensees to complete an apprenticeship, union or non-union, and pass a licensing examination. For example, Illinois requires licensed plumbers to pass a state exam after working under a licensed plumber as an apprentice for between 48 and 72 months and then complete annual continuing education.⁸⁴

The Chicago Department of Buildings administers trade licenses and registrations for general contractors, supervising electricians, electrical contractors, plumber's apprentices, plumbers, plumbing contractors, mason contractors, steam boiler erectors, stationary (boiler) engineers, apprentice crane operators, crane operators, supervising elevator mechanics, and elevator mechanic contractors.⁸⁵

⁸⁴ <http://www.dph.illinois.gov/topics-services/environmental-health-protection/plumbing>

⁸⁵ <https://continentaltestinginc.com/city-of-chicago/>

Table 5.9 Chicago Examination and License Fees⁸⁶

	First Time Exam	Exam Retake	Initial License
Crane Operator	\$250	\$250	\$100
Steam Boiler Erector or Repair			\$130
Plumbing Contractor			\$100
Plumber's Apprentice			\$15
Elevator Mechanic Contractor			\$35
Apprentice Crane Operator			\$50
Supervising Elevator Mechanics			\$300
Concrete Masonry Contractors	\$95	\$95	\$500
Plumber Practical		\$74.50	\$30
Plumber	\$149	\$149	
Crane Operator	\$150	\$150	\$100
Supervising Electrician (no license needed to work under SE)	\$70	\$70	\$70
Brick Masonry Contractor	\$95	\$95	\$500
Stationary Engineers (Boiler)	\$70	\$70	\$30

Table 5.10 Selected Licensing Fees⁸⁷

	Fee
Illinois Plumber's Apprentice License	\$100
Illinois Plumber's Exam Apprentice	\$175
Plumber's License Exam Retake	\$175
Plumber's License Exam Chicago	\$225
Plumbing Contractor Registration	\$150
State Contractor Licensing	
Roofing Contractor License	\$125
Residential Roofing Contractor Exam	\$226
Commercial and Industrial Roofing Contractor Exam	\$226
Combined Roofing Contractor Exam	\$277

Illinois does not require a license for painters and neither Illinois nor Chicago requires a license for carpenters, welders, ironworkers or operating engineers. No license is required for an electrician working under a Supervising Electrician.

⁸⁶ Chicago/Buildings/Trade Licensing https://www.chicago.gov/city/en/depts/bldgs/provdrs/gen_contract.html

⁸⁷ <https://www.idfpr.com/profs/roof.asp>

<https://www.dph.illinois.gov/topics-services/environmental-health-protection/plumbing>

7. Key Institutions in the Field

Role of Unions

The construction industry is one of the most highly unionized industries in Illinois. Unions play a critical role, supplying the most valued training, providing regular work for their members, establishing the top wage levels, and exerting strong influence on hiring and pay practices for government construction and large private sector projects. They provide health insurance for their members while most non-union contractors do not. They have strong relationships with the major general contractors and trade schools.

About 40% of Chicago-area construction workers are union members, similar to rates in other large Midwestern cities.⁸⁸ The census data indicates the most unionized trades are boilermakers, rail track layers, structural iron and steel, elevator installers and construction equipment operators. Two large trade groups, plumbers and electricians are about two-thirds union.

The least unionized trades are those requiring the least training, where an apprenticeship would be of the least value: pavers, fence erectors, painters, roofers, material removers, carpet installers, helpers and laborers. Like other low or semi-skilled occupations in our economy today, and historically, they are hard to organize because there is so much mobility among workers in these trades and because most workers in these fields need little training, they are easily replaced. Probably not coincidentally, the less unionized trades are also among those with the most immigrant workers.

Table 6.1 Percent of Trade Workers in Unions, Chicago & Metros

	Percent Union
Boilermakers	94%
Rail-Track Laying and Maintenance Equipment Operators	78%
Structural Iron and Steel Workers	75%
Elevator Installers and Repairers	74%
Construct equip ops except paving, surfacing tamping equip	72%
Pipelayers, Plumbers, Pipefitters, and Steamfitters	67%
Electricians	64%
Highway Maintenance Workers	63%
Drywall Installers, Ceiling Tile Installers, and Tapers	52%
Cement Masons, Concrete Finishers, and Terrazzo Workers	50%
Sheet Metal Workers, metal-working	46%
Plasterers and Stucco Masons	44%
Insulation Workers	43%
Brickmasons, Blockmasons, and Stonemasons	42%
Carpenters	40%
Glaziers	33%
Construction Laborers	29%
Construction workers, nec	25%
Helpers, Construction Trades	24%

⁸⁸ Manzo, Frank; Bruno, Robert; and Parks, Virginia. 2019. *The State of the Unions 2019: A Profile of Unionization in Chicago, in Illinois and in the United States*. University of Illinois, p.10.

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Carpet, Floor, and Tile Installers and Finishers	23%
Hazardous Materials Removal Workers	22%
Roofers	22%
Painters, Construction and Maintenance	21%
Construction and Building Inspectors	18%
Fence Erectors	6%
Paving, Surfacing, and Tamping Equipment Operators	0%
Total	43.4%

Source: Current Population Survey

The percentage of construction workers who are union members increases with age. This could be because of either, or both, of two reasons: 1) many workers may start out as non-union helpers in non-union shops or working with a sole proprietor, which is common in the industry. When they get more experience, they may enter a formal union apprenticeship where upon entry they are a union member. 2) Union membership may have been more common in earlier decades resulting in greater percentages of older workers than younger workers being union members.

Table 6.2 Union Coverage by Age, Chicago & Metros

Age	18-24	25-40	41-55	55-65
No union coverage	76.5%	59.9%	48.6%	47.2%
Member of labor union	23.5%	40.1%	51.4%	52.8%
No Prof Certificate	89.2%	81.6%	76.7%	70.4%
Prof Certificate	10.8%	18.4%	23.3%	29.6%

Source: Current Population Survey

A much less precise way of estimating union membership is to consider whether a worker has access to health insurance. All union members have health insurance through the union, but very large numbers of non-union workers do not. Thus, workers lacking health insurance are always non-union, although we cannot say that any worker with health insurance is union.

Considering workers that we know to be non-union based on their lack of health insurance, we find that in most trades, Latinx workers are much more likely than whites to be non-union. So few Blacks are in many trades that we can say little about their union representation. In general, painters, laborers, floor workers, and carpenters appear to be the least unionized, findings consistent with the Census Midwestern metro areas data.

Table 6.3 Percent of Workers Working For Non-Insurance Employer

PUMS, Employed, No Health Insurance	Black	Hispanic	White
Masons and rebar		55.9%	13.8%
Carpenters	16.7%	44.6%	18.1%
Carpet, floor and tile installers and finishers		64.0%	24.5%
Cement Masons			6.9%
Construction Laborers	14.9%	39.5%	17.1%
Drywall, ceiling tile and tapers		50.0%	
Electricians	10.6%	23.2%	4.7%
Glaziers			4.3%
Painter		51.8%	21.1%
Pipelayer	7.7%	25.5%	5.7%
Roofers		47.7%	16.7%
Equipment Operator		18.8%	3.9%
Sheet metal workers		20.0%	6.1%
Structural iron and steel workers			9.1%
Construction and building inspectors			3.7%
Elevator Installers			0.0%
Highway maintenance workers			3.1%
Total	14.6%	40.9%	12.6%

Source: PUMS Cells under 20 cases not included.

Union dues pay for training future workers and for organizing/lobbying costs and are about \$300 to \$400 per year.

Organizations Working on Construction Hiring

Improving Black participation in the trades has been a concern in the Black community for many decades and increasing Latinx and female participation a concern more recently. A wide variety of institutions and organizations conduct programming or have jurisdictional authority that is being used to varying degrees to increase race and gender diversity in the building trades.

Hire360 is a new civic organization aimed at increasing diversity in hiring in the construction industry and apprenticeships. It has strong leadership including CISCO Bricklayers, Boilermakers, Carpenters, IUEC, Heat and Frost Insulators, IBEW, Operating Engineers, LiUNA, Pipefitters, Plumbers and Tech Engineers, and Roofers and Waterproofers, as well as several general contractors. Its program provides test prep classes, outreach to recruit apprentice applicants, support for apprentices, and job preparation and placement assistance. It also pays apprentice fees and costs and refers persons to the United Way to address additional barriers. Hire 360 also provides working capital loans to around 75 minority contractors, which indirectly leads to more minority hiring.

Government

State and local governments play roles in regulating licensing of workers and contractors and indirectly hire, and set rules for hiring, large numbers of building trades workers.

U.S. Department of Labor Federal affirmative action regulations apply to apprenticeships but only mandate minority apprentice goals. They also require registered apprenticeship organizations to conduct outreach to minority communities, conduct market area disparity studies, collect monitoring data. The many small construction companies are exempt from EEO and laws against hiring discrimination because of their small size. EEO is minimally useful for large contractors because the supply of Black, Asian-American and female licensed or journey-workers is small.

The Illinois Tollway and the Chicago Cook Workforce Partnership operate **ConstructionWorks**, which uses partners to train participants in basics of various construction trades for apprenticeship or employment, and offers limited pay reimbursements for hiring participants.

The **City of Chicago** has ordinances and programs requiring local hiring, minority contractor participation, prevailing wages, and apprenticeships, and licenses many construction trades.

Illinois Works is a new state initiative that will provide \$25 million to community-based organizations for pre-apprentice programs and requiring 10% first year apprentices on state public works projects.

Illinois Department of Labor and Illinois Department of Commerce and Economic Opportunity have monitored, operated and funded various construction apprentice and training programs.

Minority, female and disadvantaged business programs and contracting targets are operated by Illinois, City of Chicago, Cook County, Chicago Public Schools, Metropolitan Pier and Exposition Authority, and other local governments in Illinois. These programs focus on increasing minority contracting with the anticipated result that minority contractors will tend to hire more minority workers.

Neighborhood benefit agreements negotiated for individual projects include local hiring or minority hiring goals. These typically involve collaboration between a community-based organization, one or more contractors, and local government. Several of the people we interviewed suggested that programs that prioritized hiring within particular zip codes encompassing, or near, a public works program are less effective than they should be. Local workers may be brought on, even at prevailing wage, but are very unlikely to retain employment with the contractors who hire them after the local project concludes. As a result, the programs provide some temporary income and job experience, but rarely advance the minority worker's career in a meaningful way.

Educational Institutions

Chicago City Colleges – Provides a wide array of construction trades training at Kennedy-King and Daley colleges. They have strong training relationships with Commonwealth Edison and People’s Gas for job/apprenticeship referral. They operate near capacity and would like to expand training capacity. Certificate programs provide pre-apprenticeship training orienting the student to the basics of their selected trade. For a person interested in a non-union career, community colleges are a good option to begin the career.

The Chicago Public Schools - Offers basic training in several trades through Chicago Builds and its Career and Technical Education program at four high schools.

Community-Based Organizations and Associations

HACIA, the Chicago Urban League, Black Contractors United, Chicago Black United Communities, African American Contractors Association and others have long worked for diverse participation in apprenticeships and minority contractor participation on public and private-sector projects. Many provide or sponsor pre-apprentice or basic training. Chicago Women in Trades advocates for women in apprenticeships and trades and operates pre-apprenticeship and training programs. Associated Building Contractors (ABC) is a leading national non-union contractors association with a local affiliate that provides non-union apprenticeships and industry lobbying.

8. Conclusion

Construction is, and will continue to be, a major industry in the Chicago area. The region will continue to grow, buildings will be built, remodeled and repaired, and the work cannot be off-shored. An estimated 10,000 new building trades workers are needed annually for the next several years to accommodate retirements, occupation changes, and industry growth. Union construction workers in particular are among the highest compensated workers who typically do not have college degrees.

A major challenge in coming years will be to increase the number of apprentices and journey workers who are Black, female and Latinx. Latinx have become a large proportion of construction workers, but tend to work in lower-paying occupations. Blacks and females are badly under-represented in comparison to their proportion of the regional population. The number of Blacks and Latinx in skilled positions needs to increase in part to provide economic opportunity to two communities that on average less income than Whites and Asian Americans, and part because as the region becomes less White, the building trades will need to recruit more people of color, particularly into skilled positions. Women will not become half of the construction workforce in the foreseeable future, but the industry would benefit from having more female talent to choose from.

Our review revealed a number of possible reasons for the low numbers of Blacks and Latinx in the more highly skilled union apprenticeships and occupations. Without access to a lot more data, we cannot order the importance of those reasons, but they include:

- Lack of awareness among young Blacks and Latinx of building trade opportunities and value resulting in fewer apprentice applications and enrollment in community colleges or other schools.
- Possible implicit or intentional discrimination in apprentice interviews.
- Possible systemic or intentional discrimination in employer hiring due to hiring practices of the multitude of small businesses and/or cultural biases.
- Lower average achievement by Blacks and Latinx on math and aptitude tests.
- Blacks and Latinx disproportionately failing to complete apprenticeships.
- Problems of apprentices lacking cars, needing child-care, or bridging initial apprenticeship expenses.
- Problems of people of color or female apprentices, or young workers, negotiating tough, sometimes unsupportive, work environments.

State and local government, unions, community-based organizations, developers and civic institutions are currently working to varying degrees to address many of these problems. We believe the more intentional unions and employers are in recruiting, preparing and hiring people of color and females into skilled positions, the stronger the industry will become.

Non-union positions also have an important place in the Chicago-area construction industry. More than half of the region's workers are non-union. While we wish these jobs came with more benefits and paid better, they are a useful way for the young or the low-skilled to gain experience in the industry, provide a career option for workers who prefer not to be union members and/or work more independently, and for immigrants who are either low-skilled or whose training was outside the United States. With their low student costs, community colleges are well-positioned to train the non-union construction workforce, as well as help prepare future apprentices.

Appendix

No single source exists listing apprentice application requirements or wages. Much, although not comprehensive, information is available from websites of each Chicago-area union, CISCO's website, the Illinois Department of Labor website, and union contracts posted in the internet. This report creates summaries of application guidelines and wages from these sources. Information was drawn from the most recent public sources ranging from 2019 through early 2021. Some wage levels and application requirements may have been updated since, and operation of apprenticeship training has been influenced by the 2021 Covid epidemic. The authors are satisfied, however, that the wage and application tables in this report generally represent the nature of each apprenticeship type.

Apprentice Requirements Sources

LIUNA! Chicagoland Laborers' District Council Training & Apprentice Fund
<https://www.chicagolaborers.org/apprentice-program>

LIUNA

Employer Referral to Apprentice Program <https://www.chicagolaborers.org/apprentice-program/employer-referral-to-apprentice-program>

Bridge, Structural & Reinforcing Iron Workers Local Union #1
<http://www.iwlocal1.com/apprenticeship.html>

Ironworkers Local 63 Apprenticeship Information
<https://iwlocal63.com/apprenticeship/default.aspx?zone=Apprenticeship-Info&pID=7634>
<https://iwlocal63.com/training.aspx?zone=training&pID=7678>

Apprenticeships Cement Masons' Apprenticeship Program & PDF <https://www.cmlocal502.com/apprenticeships/>

Plasterers' Apprenticeship Program <https://www.cmlocal502.com/apprenticeships/>

Chicago Regional Council of Carpenters Apprentice Program of
<https://www.carpentersunion.org/programs/apprentice-program>

Chicago Pipefitters Training Center Local 597 Testing
<https://www.pftf597.org/applications/testing/>
<https://www.pftf597.org/applications/programs/>
<https://www.pftf597.org/applications/>
<https://www.pftf597.org/training/star-exams/>

UA Local 130 Plumbers and Tech Engineers Apprenticeship <http://www.plumberslu130ua.com/apprenticeship.aspx>

IBEW NECA Technical Institute Electrical Apprenticeship Program
<https://www.ejatt.com/electrical-apprenticeship-program/>
<https://www.ejatt.com/2014-apprentice-registration-information/>
<https://www.ejatt.com/trainee-program/>
Preparing for the Test
<https://electricaltrainingalliance.org/SamplePage/PreparingfortheTest>

Sprinkler Fitters Local 281 Training
<http://www.sprinklerfitterchicago.org/training.aspx?zone=Training-Center&pID=2703>

Pathways in the Chicago-Area Building Trades

Local 17 Heat & Frost Insulators Apprenticeship Testing 20120 2020-Testing-Info-1.docx

55 Questions, 25 Minutes - an Accurate Simulation of the 2020 Bennett Mechanical Comprehension Test (BMCT)
<https://www.jobtestprep.com/bmct>

DC14 Apprenticeship Program Admissions Requirements <https://www.dc14apprenticeship.org/painting-decorating-application>
<https://www.dc14apprenticeship.org/careers>
<https://www.dc14apprenticeship.org/drywall-finishing-application>

BAC Trowel Trades District Council Training Apprenticeship Application Process
http://www.bac2school.org/?zone=/unionactive/view_article.cfm&HomeID=95743
Appendix D 2010.pdf

Boilermakers Local One Apprentice Sign-Up
http://www.Boilermakerslocalone.com/?zone=/unionactive/view_page.cfm&page=APPRENTICE20SIGN2DUP

Plasterer's Union Local 502
Plasterer_Apprenticeship-2.pdf

Painters District Council 14 Start a Career Painting and Decorating
<https://pdc14.com/careers/painting-and-decorating>
Drywall Finishers <https://pdc14.com/careers/drywall-finishers>
Glaziers <https://pdc14.com/careers/glaziers>

Chicago Roofers Local 11 Joint Apprenticeship & Training Program
<http://www.chicagoroofters.org/aboutprgm.html>

Riggers Local 136 Machinery Movers Machinery Erectors Apprenticeship
<https://riggerslocal136.com/apprenticeship-program/>

Glaziers 27 Apprenticeship About our Program
<https://www.glaziers27.org/aboutourprogram>

Sheet Metal Workers – Training SMART265 Apprenticeship Program
<https://www.smart265ed.org/apprenticeship>
Sheet Metal Workers' Local Union 73 Training Program
<https://www.smw73.org/training/the-program.html>
<https://www.smw73.org/training/apprenticeships.html>
Apprentice_Application-Fill.pdf

International Union of Operating Engineers Local 150
<https://www.asiocal150.org/Forms/Page.aspx?P=ProgramInfo&S=FAQ>

CISCO Apprenticeship Guide
<http://www.cisco.org/apprenticeship2/>

IDES
<https://www2.illinois.gov/ides/Pages/Boilermaker.aspx>
https://www2.illinois.gov/ides/Pages/Operating_Engineer.aspx
https://www2.illinois.gov/ides/Pages/Heat_and_Frost_Insulator.aspx

Apprentice Wage Sources

Collective Bargaining Agreement Between LiUNA! County, Municipal Employees' Supervisors and Foremen's Union and the City of Chicago [2017 through 2022]

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BU 53, 54 Laborers CBA.pdf

LiUNA Apprentice Wage Notice

<https://www.chicagolaborers.org/news/news-release/12/apprentice-wage-notice-2018>
2018_apprentice_wage_notification.pdf

UA Local 130 Plumbers and Tech Engineers

PCA/PAMCANI Alliance Wage and Fringe Benefit Package

<http://plumberslu130ua.com/plumbers-wage-rates.aspx>

Plumbers Local 130 UA Plumbing Contractors Association

2019-2020 PCA Wage Rate Sheet.pdf

Cement Mason

<https://www.cmlocal502.com/cement-mason-wages/>

Chicagojobs.com Cement Mason Apprenticeship Program

<http://cj.chicagojobs.com/job/il/chicago/cement-mason-apprenticeship-program-A8375-3N10>

Glaziers Local 27 Wages & Forms

<https://www.glaziers27.org/wages-forms-2>

Wage+06-01-2020+(1).pdf

Chicago Roofers Pay Rates as of June 1, 2020

<http://www.chicagoroofers.org/payrates.html>

Plasterers <https://www.cmlocal502.com/plasterer-wages/>

IBEW NECA Technical Institute Electrical Apprenticeship Program

<https://www.ejatt.com/electrical-apprenticeship-program/>

https://www.lu134.org/?zone=/unionactive/view_article.cfm&HomeID=735296

C sign up.pdf

Carpenters Union Local 13 Current Wage Sheet

<https://www.carpentersunionlocal13.org/members/current-wage-sheet/>

Carpenters Union Local 13 Collective Bargaining Agreements

<https://www.carpentersunionlocal13.org/resources-benefits/collective-bargaining-agreements/>

BRIDGE, STRUCTURAL and REINFORCING IRON WORKERS

LOCAL UNION #1 WAGE SCALE FOR 2017-2018ASE

ASE 6-1-2017web.pdf

http://iwlocal1.com/union_dues_pay_online.html

Iron Workers Local #1 Wage & Benefit Scale Effective June 1, 2018 through May 3, 2019

<http://iwlocal1.com/Wage%20Scale%20for%202018-2019.html>

Ironworkers Local 63 Apprenticeship Information

<https://iwlocal63.com/apprenticeship/default.aspx?zone=Apprenticeship-Info&pID=7634>

<https://iwlocal63.com/training.aspx?zone=training&pID=7678>

Boilermakers Local 169 Wage Sheets 2020 Wage Sheet

<http://www.Boilermakerslocal169.com/contractors.html>

Finishing Contractors Association of Illinois Collective Bargaining Agreements

<http://www.fcaofillinois.org/cbas>

District Council Training Center BAC Trowel Trades

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Pdfs for Bricklayers and Stone Masons, Ceramic Tile Finisher, Ceramic Tile Layers, Marble Finishers, Marble Setters, Plasterers, Pointers Cleaners & Caulkers J.A., Precast Concrete, Terrazzo Finisher, Terrazzo Worker
<http://www.bac2school.org/index.cfm?zone=/unionActive/Contract.cfm>

Sheet Metal Workers Local 91 Wage Rates Zone A, B, C
<https://www.smw91.org/wage-rates.html>

SMACNA-LU73-CBA-2016-2019-DIGITAL-FORMAT.pdf
Agreement between the SMACNA Greater Chicago and the International Association of Sheet Metal, Air, Rail and Transportation (SMART) Local No. 73 of Chicago, Cook and Lake Counties, Illinois

BU 47 Ornamental Ironworkers CBA.pdf
Collective Bargaining Agreement Between Architectural and Ornamental Ironworkers Local 63 and City of Chicago [2017-2022]

Wage Rate and Fringe Benefit Schedule [SMART 73]
2017-1ST-WAGE-SCALE-MAIN-06-08-17.pdf

<https://riggerslocal136.com/apprenticeship-program/>

MCA/LU Wage Letter Effective June 1, 2018 (Pipefitters Association)
L7020-MCA_LU597-Wage-Ltr_aa.pdf

Mid-America Regional Bargaining Association Wages & Fringe Benefits
<https://www.marba.org/wages>

IDES
<https://www2.illinois.gov/ides/Pages/Boilermaker.aspx>
https://www2.illinois.gov/ides/Pages/Operating_Engineer.aspx
https://www2.illinois.gov/ides/Pages/Heat_and_Frost_Insulator.aspx

CISCO Apprenticeship Guide
<http://www.cisco.org/apprenticeship2/>

CISCO
2018 Wage Guide Expanded.pdf

IES NCES National Center for Education Statistics College Navigator
<https://nces.ed.gov/collegenavigator/>

https://www2.illinois.gov/ides/Pages/Operating_Engineer.aspx