

Architectural Services

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Coronavirus Update

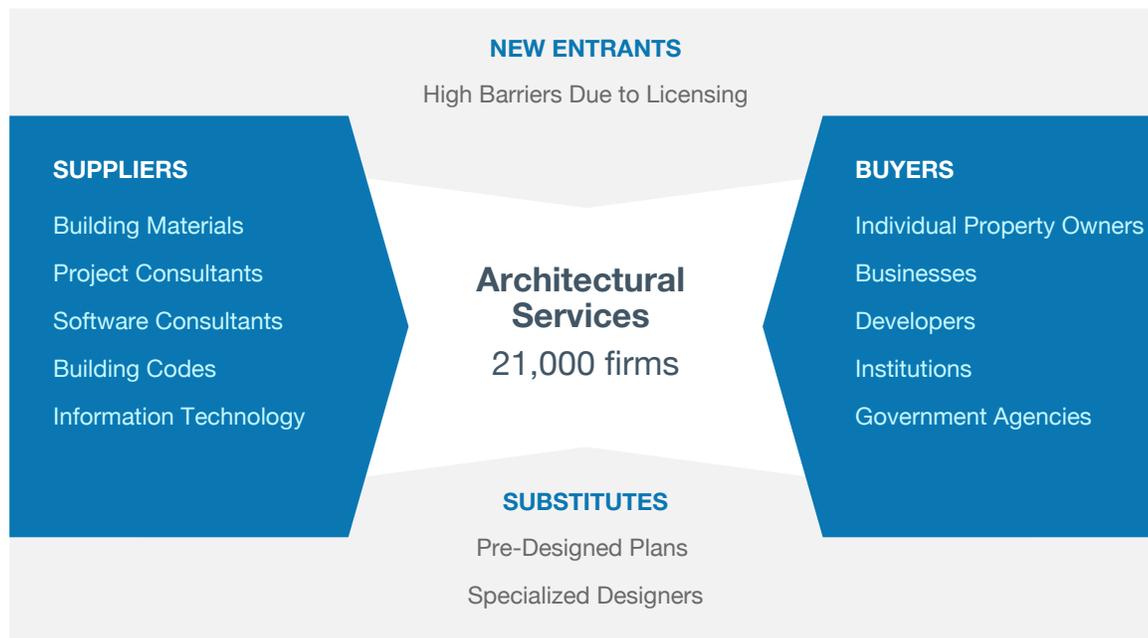
Feb 1, 2022 -- Non-residential Construction Rebound Expected

- Non-residential construction will lead the industry in 2022 as a reopened economy and a fiscal infrastructure spending splurge will support the outlook, according to multinational banking and financial services corporation ING. The non-residential construction sector has had a very different pandemic than the residential sector. Workers stayed away from offices, towns and cities emptied, foot traffic in commercial districts dropped sharply, and commuting stopped. Hotel demand collapsed, schools closed, and recreation activities were scaled back. Given uncertainty over how long this situation would last, plans for repair, renovation, and new construction were delayed or cancelled and as legacy building work ceased it wasn't replaced with new projects. Gross domestic product has rebounded above pre-pandemic levels, however, and the economy is expected to expand by around 6% in 2022 and 4% in 2023, according to ING. A major backlog of repair work and deferred projects will be reinstated as a result. The prospect of major government infrastructure investment will further fuel growth.
- The coronavirus pandemic has impacted salaries, at small architecture firms, according to the American Institute of Architects Small Firm Compensation Report. Firm leaders saw the steepest compensation decreases, most notably solo architects, who saw average annual losses of 6.5% if they were sole proprietors, and annual losses of 7.3% if they were not sole proprietors. Firm principals who are sole proprietors also saw losses, for an average annual decrease of 3.8% from 2019 to 2021, while salaries remained basically flat for firm principals who are not sole practitioners, rising by 0.1% annually. Average small firm revenue decreased 20%, falling from \$510,000 in 2018 to \$410,000 in 2020. The share of small firms with annual revenue of \$1,000,000 or more decreased from 10% of firms in 2018 to 8% of firms in 2020.
- One of the most notable changes that occurred during the coronavirus pandemic is a population migration out of larger cities like New York and Los Angeles to smaller cities like Denver and Miami. Population losses during 2020 were largest for New York, Los Angeles, and San Francisco, according to analytics firm CoreLogic. Experts say that the shift will have far-reaching impacts on cities both big and small - and on architecture firms therein - when it comes to urban development, real estate prices, and traffic flow.
- The initial trend during the coronavirus pandemic was for people to move away from urban cores toward single-family-style living arrangements, but some experts say that, as people return to work, families are on the lookout for a good condominium deal in more dense areas. Architecture firms are responding with family-centric designs that recognize the importance of smart space planning, flexibility, and adaptability, according to Matt Duggan, project manager at The Architectural Team. Units that have more social and activity spaces, such as media rooms, children's rooms, or studies, have been in high demand lately. So-called "flex spaces" are particularly popular, according to Nancy Ruddy, founding principal & executive director of interior design at CetraRuddy Architects. These small rooms, located adjacent to the main living space, can be used as a work area, exercise room, or infant room, among other uses, depending on family-specific parameters. With hybrid working and learning situations still common, acoustical privacy has also gained increased attention, according to Ruddy. The use of acoustical materials on the floor and walls can help isolate the room so that higher levels of intellectual concentration can be achieved for those inside.
- Some businesses that took PPP loans in 2020 but don't apply for forgiveness soon will need to start making payments on the loan plus interest. The PPP loans will automatically convert to a standard loan at 1% interest if a small business does not apply to the SBA for forgiveness within 10 months of the end of the covered period under which they had to spend the money. For some businesses that received a loan when the PPP launched in April 2020, there was an eight-week covered period, which would put the forgiveness application deadline in the middle of July. For most loans operating under the more popular 24-week covered period, that meant a deadline in September 2021.
- Architecture firms are being asked to renovate buildings because millions of Americans are expected to continue working from home for years. The lack of workers returning to the office on a consistent basis means that rows of office cubicles will likely be phased out, according to NBC News. Spaces will also be designed with a focus on flexibility, so areas can be easily transformed to fit the specific needs of the day, whether that includes a small brainstorming meeting, medium-sized collaboration session, or a large gathering. Redesigned work stations will be more versatile and will feature a strong focus on access to fresh air.
- Architecture firms are getting many requests to upgrade HVAC systems. High-density filtration is a common request from office building owners, as are ion technology and UV lighting in HVAC systems. Clients are also requesting a change from inoperable windows to operable ones to access outdoor fresh air, and installation of more hands-free technologies for doors, sinks, toilets,

etc. Much of the work is being done when building leases turn, which happens every 5, 7, or 10 years, depending on the contract.

- Employment in the architectural services industry increased 6.4% year over year in November 2021 but was up just 1.1% from the pre-pandemic level of November 2019, according to the US Bureau of Labor Statistics.
- Total construction spending increased 0.2% in value month over month on an adjusted basis and 8.83% in value year over year on an unadjusted basis in December 2021, according to the US Census Bureau. Residential construction spending increased 1.1% month over month and 14% year over year in December. Nonresidential construction spending decreased 0.7% month over month but increased 4.4% year over year in December.
- Many industry experts say that the coronavirus outbreak may slow or reverse the development of high-density housing. Transportation and denser housing have been critical for cities struggling with a severe affordable housing shortage. "I wouldn't make any big development decisions right now," said Dr. Jackson, a former officer in the Epidemic Intelligence Service at the Centers for Disease Control and Prevention. The era of a single architect designing buildings is over, Dr. Jackson added. Transit-oriented development will need to bring in the best minds from design, health, and transit to create living spaces that are conducive to community but also the well-being of residents.

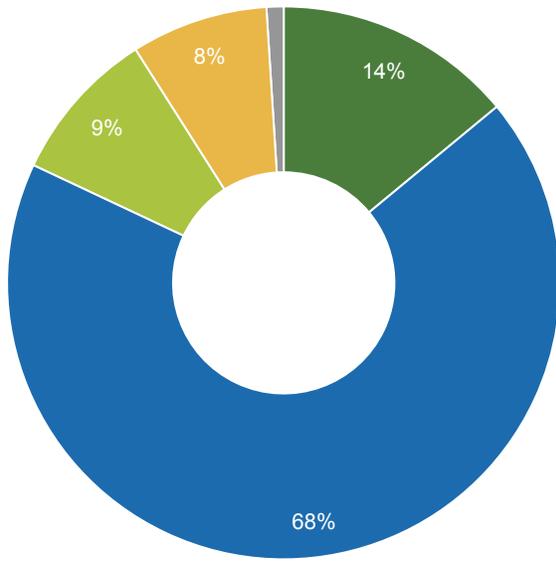
Industry Structure



The average architectural firm has about 9 employees and generates \$2 million in annual revenue.

- 83% of firms have nine or fewer employees.
- Sole employee firms tend to work from home-based offices in order to defray overhead expenses. Most other small to medium firms work from leased office space.
- The industry has 21,000 firms with \$43 billion in annual revenue and 190,900 employees.
- Non-residential services represent about 85% of firm revenue.

Industry Demographics



- Corporations (14.0%)
- S-Corporations (68.0%)
- Individual Proprietorships (9.0%)
- Partnerships (8.0%)
- Non-profit/Other (1.0%)

Source: US Census Bureau



Female Owned

20.0%



Minority Owned

18.0%



Veteran Owned

10.2%

Source: Census Bureau

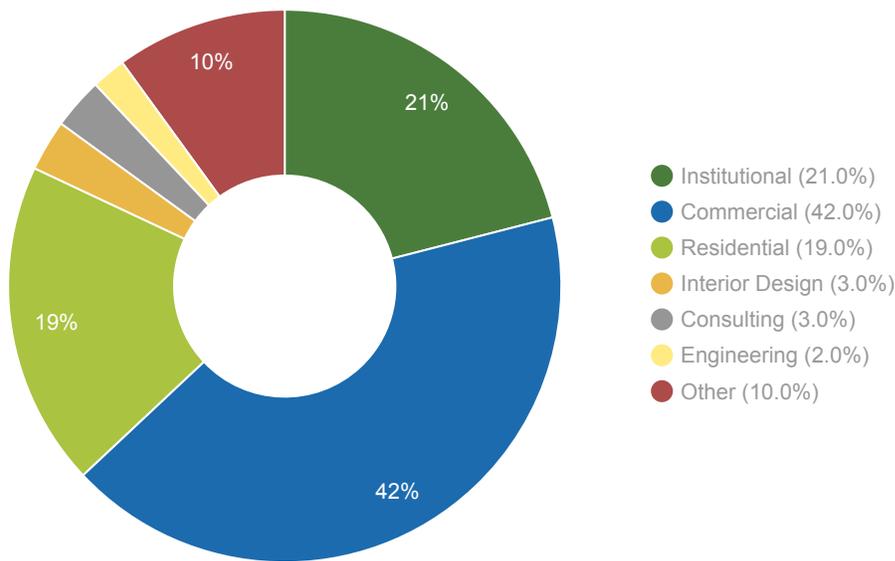
How Firms Operate

Products and Operations

Architects are responsible for designing places for people to live, work, worship, learn and play. Their designs must be not only visual, but functional.

- Of all the different types of services provided by architectural firms, each company performs their own select subset. For example, firms may provide project management services, hotel and convention center design, or retail and restaurant design. Within these, there is great overlap.
- Most firms gain a significant portion of their revenue (about 81%) from non-residential services.

Architectural Services Revenue



Source: US Census Bureau

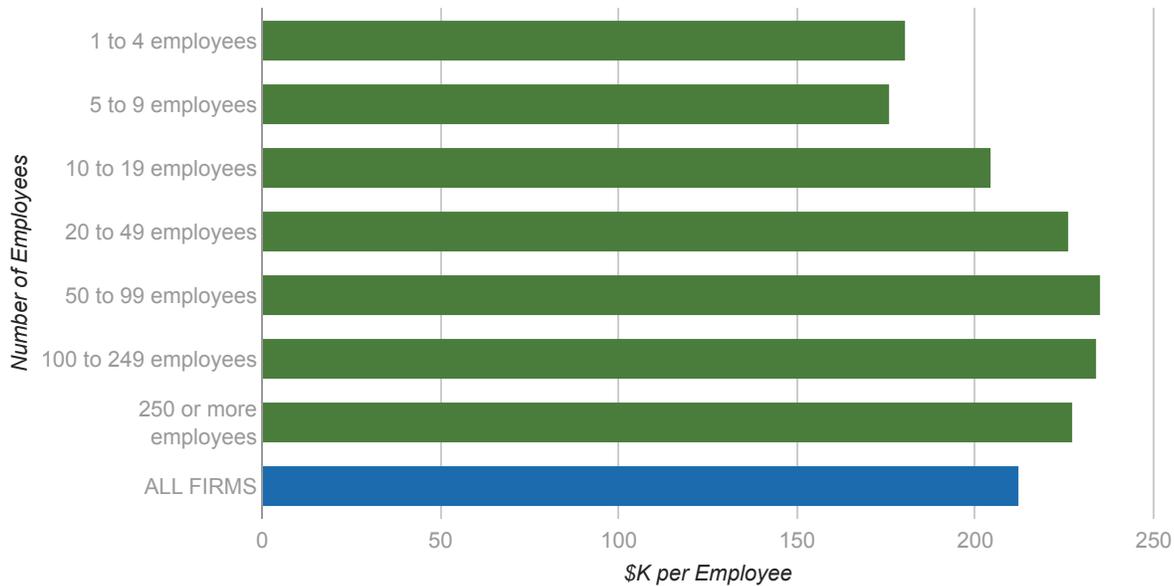
Architects focus on the design of structures for practically every use imaginable. The core of a firm is the talent of its professionals and the client projects they are able to secure. Architects must not only go through a long licensing process in order to practice, but must also abide by a myriad of national, state and local regulations such as building codes, zoning ordinances, and overall industry standards. They also must be knowledgeable about rules dictated by organizations, such as historic preservation commissions, community groups, design review boards, and other public agencies.

To become a licensed architect, one must go through a process known as “the three E’s”: education, experience and exam. The first step is to obtain a professional architecture degree, which requires graduation from a five-year bachelors program, or by obtaining a master in architecture. Then, one must have three to five years of practical training obtained by working with licensed architects. Once the first two requirements are met, one may sit for the Architect Registration Board exam. Licensing is on a state-by-state basis, with most states requiring some form of continuing education. Many architects have taken the additional step of becoming certified by the National Council of Architectural Registration Boards, which makes it easier to become licensed across states. About 55% of all architects have this certification.

Mid- to large-sized firms may have licensed architects, non-licensed graduates or interns working towards their practical requirements, as well as design professionals (engineers, interior designers, landscape architects and planners) and non-design professionals. They may also have non-billable technical (systems) and non-technical staff (administrative, financial). Efforts are made to have high utilization of billable staff and to reduce indirect or overhead expense.

Architects may also choose to be involved in all phases of a construction project beyond the concept and design phases. They may assist in pre-design services, such as feasibility and environmental impact studies, site selection, and land-use studies. They may also assist clients in selecting contractors and conducting site visits to ensure build-out is going according to plan. Finally, they may also participate in post-construction, including management of a facility. They have to coordinate and communicate with all professionals in the process, including engineers, planners, and other designers. Though they may be on-site occasionally, most of their time is spent in their office developing and communicating ideas.

Revenue per Employee by Establishment Size



Source: US Census Bureau

Profit Drivers

Higher Billing Rates

Fierce competition for new business during periods of weak demand can cause architectural services firms to lower their billing rates to the point where projects earn little or no profit. Successful firms avoid price cutting and focus on selling value to clients and developing special expertise that can command a price premium. By developing expertise and a positive track record on particular types of projects, firms get away from commodity-like services where price is the primary client consideration. It takes discipline for firms to say “no” to marginally profitable new projects when their backlog is weak.

High Billable Ratio

Architectural firms sell the expertise of their staff and seek to bill close to 100% of their time to client projects. Some unbillable time is required for internal meetings, preparing bids for new work, and vacation time, but a billable ratio of at least 65% is typically needed for a firm to be profitable. A strong project backlog is the key to achieving a high billable ratio, but accurate project planning and scheduling helps to convert the backlog into client billings.

Avoiding Cost Overruns

Cost overruns cut into the profitability of fixed price projects and lead to client dissatisfaction that may hurt follow-on business. Avoiding cost overruns begins with accurate cost estimation and a clearly defined project scope in the proposal phase. Automated cost estimation systems can help to ensure that cost assumptions are accurate and include appropriate profit margins. Strong project management is also required to avoid “scope creep” by clients without an adjustment to the project price. When client requests for additional work are received, project managers must be trained to issue a project addendum with estimated cost that the client must sign before any work begins. One survey found that 42% of firms did not have a formal process for dealing with client out-of-scope requests.

Global Perspective

Global Market Size

The global architectural services industry was expected to experience a compound annual growth rate (CAGR) of 4.5% through 2025, according to Mordor Intelligence. However, the coronavirus pandemic is likely to put downward pressure on demand for architectural services in the near term.

Large Companies

COMPANY	HOME COUNTRY
Aecom	US
Aedas	China
DP Architects	Singapore
Foster + Partners	UK
Gensler	US
HDR	US
IBI Group	Canada
Nikken Sekkei Ltd.	Japan
Perkins & Will	US
Woods Bagot	Australia

Key Global Trends

High Unemployment – High worldwide unemployment levels brought on by the pandemic are projected to drive housing demand and prices lower as many consumers postpone major financial decisions. In June 2020, a Reuters poll of housing analysts suggested housing prices in 2020 would drop about 5% in most markets under a worst-case scenario. Under such a scenario, the US would see a 1.2% drop in prices in 2020. The outlook said the harder-hit countries would include India (with a 12% drop in prices), the UK (-11%), Australia (-10%), and Canada (-8%).

Weaker Construction Spending – Global construction activity, a key driver of architectural services demand, has been significantly challenged by the COVID-19 crisis. Projects were halted or postponed, closed borders and factories disrupted supply chains, and materials shortages drove prices higher. While infrastructure spending packages by the governments of individual countries are expected to eventually stimulate construction spending, many firms expect the number of projects to drop as private investment weakens.

Asia-Pacific Growth – Asia-Pacific, especially China, is expected to be the top regional growth market. Amid the pandemic-related slowdown, China's central government hopes to jumpstart growth with stimulus spending on the local level. At the behest of the central government, local governments in China are expected to issue \$550 billion in bonds by the end of October 2020 according to Bloomberg. About 30% of the funds raised are to be spent on industrial parks and town construction which may help drive demand for architectural services.

Industry Trends

Trends are affected by the COVID-19 pandemic.

Changes in revenue, employment, business practices, trade and forecasts are occurring rapidly and data reporting by the government lags the changes. We are tracking changes in the “Coronavirus Update” chapter.

Turning to Consolidation

Companies have been diversifying and consolidating. Traditionally, the industry has been highly fragmented, with a large number of small firms (less than 5 employees). However, increased competition, fueled by technological advances, has led larger firms to acquire or combine with smaller firms in order to gain a presence in multiple regions. Such consolidation allows firms to diversify into other market segments without having to invest in building the requisite skills. Consolidation also has helped firms take advantage of international opportunities. Meanwhile, international firms have begun to vie for US projects, with success.

Green Building Supports New Development

The government has helped fuel the green building surge by providing a variety of incentives for firms and contractors who build with energy efficiency and use renewable energy. Energy efficiency tax deductions support retrofit and new build opportunities. This trend has also helped increase project opportunities for those who have acquired green building training; projects are increasingly requiring “green” as a standard. LEED, or Leadership in Energy and Environmental Design, is an internationally- recognized green building certification program. It provides owners and developers measurable green building design, construction, operations and maintenance standards. Application can be made to qualify a building project for one of four levels of LEED certification. Industry professionals may also become LEED accredited by passing a series of certification exams.

Technology Levels the Playing Field

Building Information Modeling, or BIM, has become the industry standard for projects of all sizes, because it facilitates the communication of design and construction plans across all project participants. The platform also allows clients who may have had difficulties understanding 2D drawings or CAD images to see scaled 3D and 4D models in detail. BIM integrates and supports a number of software and product offerings that allow changes by one professional to be quickly incorporated into the plans held by other professionals. Though entire systems can be cost prohibitive for smaller firms, providers are now offering tailored licensing arrangements or consulting services to help these firms control their related expenses. Since access to BIM is now available to firms of any size, small firms can compete more effectively with large firms.

Designs Incorporating New Technologies

Built structures typically create rigid rectangular spaces. However, continuing advances in design technology and materials are making it easier to create more complex designs. The application of nanotechnology in building materials allows greater weight-to-strength ratios, offering the opportunity for longer spans of steel or thinner shells of concrete to be used in a project. Materials manufacturers and designers are creating ways to develop self-cleaning and color-changing walls, light-on-demand anywhere in a room, and dynamic heating and cooling where needed. Some of these developments are still in the design phase while others are quickly becoming marketable.

Collaboration Not Individualism

Architects have been groomed in a tradition of individualism and competition. Projects of the past focused attention on the design talent of one or a small group of designers. However, the growing complexity of design and the need for more specialized expertise is teaching upcoming architects that collaboration is the key to success. Firms are now shifting towards more team-oriented work among internal and external designers, as well as with other professionals in the design-to-construction continuum. BIM, green building requirements, and globalization of the industry both facilitate and mandate this shift in industry culture.

Aligning Goals and Project Outcomes

Due to the increasing complexity of building projects, architects are using integrated project delivery (IPD) to collaborate with engineers, contractors, and owners. IPD can help firms meet deadline, budget, efficiency, and sustainability goals by creating a contract and information sharing platform to keep the stages of design-build on track and members communicating. The contract is designed to align the business interests of all parties and tie stakeholders' success to the project's success.

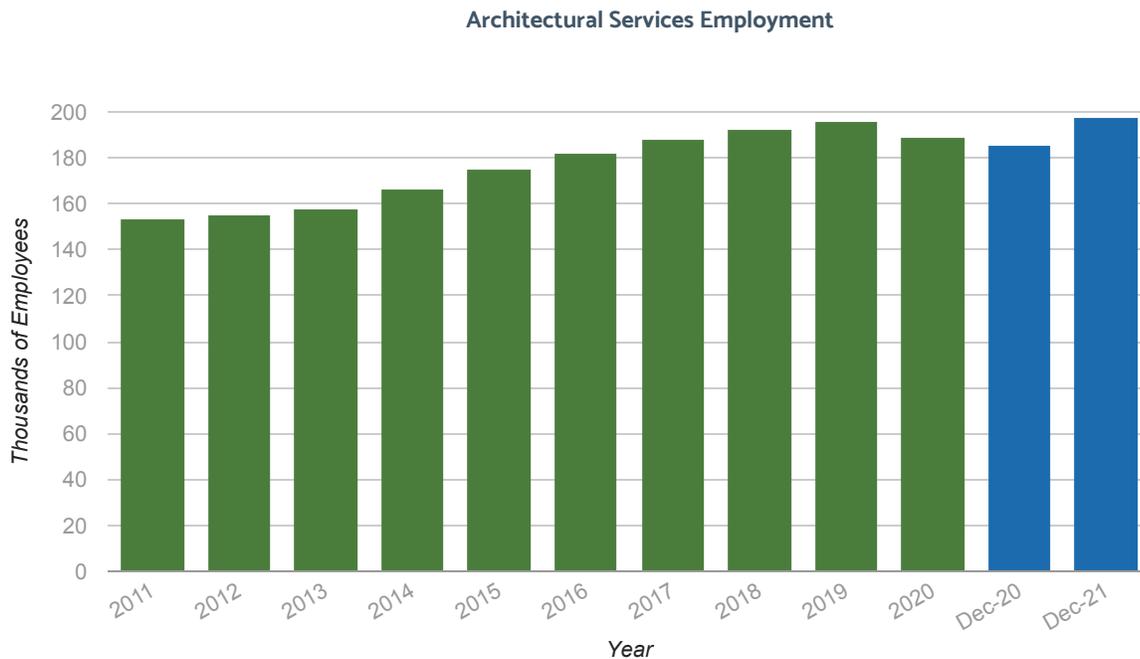
Designing for Disposability

The concept of recycling has reached the world of architecture. As the population grows and becomes more global, people are moving back to cities. City populations have shifted from 10% of the total population in 1900 to 54% in 2014, with 66% of the population projected to live in cities by 2050. While most cities already have significantly developed spaces, and the greenest alternative is to keep what is already in place, retrofitting old structures to new codes (including green standards) is cost prohibitive. Most developers therefore choose to tear down and rebuild. Given the rapid development of technology, what is in today will be out-moded in just a few years. Therefore, designers are working to design structures to easily adapt to future standards. Disposable or recyclable building design emphasizes the end of a building's life as well as its beginning. Design is centered on facilitating physical redesign as well as lowering a building's environmental impact throughout its life cycle. For example, components that are easily exchanged, such as pre-fabricated walls, are being chosen over traditional site-built.

Employment and Wage Trends

Employment by architectural services firms increases

Overall employment by architectural services firms changed 6.5% in December compared to a year ago, according to the latest data from the Bureau of Labor Statistics.

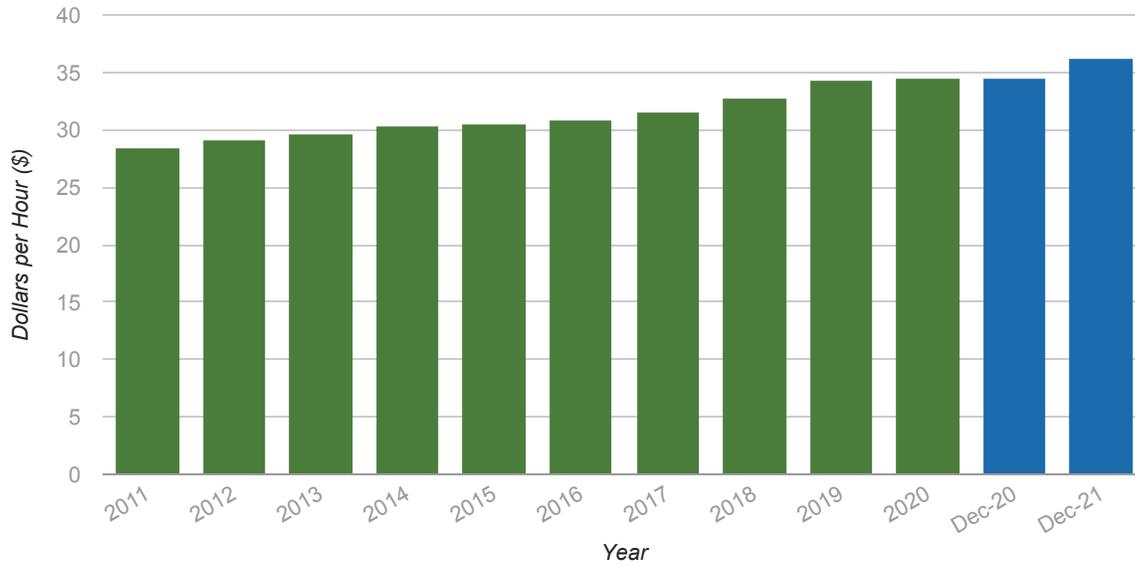


Source: Bureau of Labor Statistics

Wages at architectural services firms rise

Average wages for nonsupervisory employees at architectural services firms were \$36.13 per hour in December, a 4.8% change compared to a year ago.

Average Wages for Nonsupervisory Employees



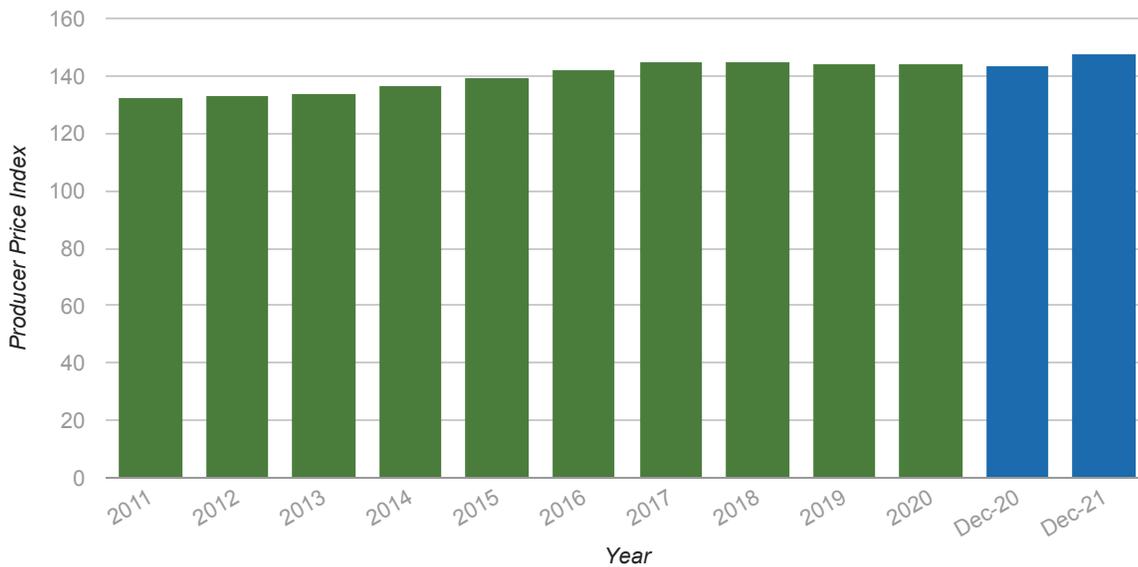
Source: Bureau of Labor Statistics

Price Trends

Producer Prices for architectural services firms rise

The Producer Price Index for architectural services firms changed 2.90% in December compared to a year ago, according to the latest data from the Bureau of Labor Statistics.

Producer Price Index for architectural services firms



Source: Bureau of Labor Statistics

Credit Underwriting and Risks



Business Exit Rates:	5.5	Comparable to US average for all businesses
Cyclical Sensitivity:	7.0	High sensitivity
Barriers to Entry:	4.4	Low initial capital; high regulatory/technical barriers; low concentration
External Risk:	6.1	High external risk
Industry Outlook:	5.8	Lower than GDP; high cyclical risk
Financial Summary:	3.5	High margins; high liquidity; low leverage

Key Metrics

METRIC	VALUE	COMPARISON
Performance During 2007–2009 Recession	-19.6%	0.0% GDP
Business Exit Rate 2019–2020	9.93%	9.0% All Industries
Compound Annual Growth Forecast (2020–2025)	5.99%	6.1% GDP
SBA 7(a) Default Rate by Number of Loans (2010–2019)	2.44%	3.82% All Industries
SBA 7(a) Default Rate by Gross Loan Amount (2010–2019)	0.90%	1.21% All Industries

Underwriting Considerations

- Evaluate the company's liability insurance costs as a percentage of total operating expenses and as a percentage of revenues.
- How do you manage cash shortfalls due to project delays? Is the Line of Credit level needed and sufficient?
- Is their sufficient eligible AR to support the proposed Line of Credit?

Industry Risks

Dependence on Construction Activity

During the economic recession of 2008-2009, construction across all market segments declined. The Architecture Billing Index (ABI), which is a 9- to 12-month leading indicator for the construction industry, hovered around 50 during this period. An index of 50 or more indicates an increase in billings or demand for design services. Municipalities, a significant source of new projects, have significantly cut budgets so that only the most necessary capital projects are considered. However, the project inquiry index is high, indicating that there is significant interest in starting new projects. Therefore, with loosening in the credit markets, project inquiries can be turned into billable work. In the private sector, billings and inquiries for new residential and non-residential construction are rising due to improvements in the economy and low interest rates.

Increased Competition

In a slowing economy, firms tend to diversify outside of their traditional market segment niches. For example, a firm that specializes in educational facilities might start seeking projects in the healthcare market, as well. Also, larger firms, which tend to offer a broader range of services and would ordinarily seek projects of a particular size, have begun to compete with smaller firms for lower cost projects in order to maintain solvency. Technology has also made it easier for firms in other states and other countries to compete effectively for the same projects. The increase in competition is making it harder for small firms to compete and is even forcing some of them out of business.

Supply of Licensed Architects

In slow markets, firms tend to lay off human talent, including interns/students and non-licensed graduates. Unemployment among architects during the most recent recession was as high as 35%. Such downsizing is enabled by technology that has made hand-created 2-D work obsolete, and by the contracting out of this work to other firms, including those overseas. This trend can have a negative long-term affect: Pre-licensees must have at least three years of practical training before they can sit for the licensing exam, and when faced with a lack of prospects in their area of expertise, both pre-licensed and licensed architects tend to leave the industry. Most never return. As the economy recovers and construction activity increases, there may be a shortage of qualified architects to fill the demands of the industry.

Project Liability

Architects are involved in practically every aspect of a building project, from conception and design through post-construction and interiors. Because architects are considered masters of planning, when problems arise, most blame reverts back to the architect. Over time, claims of negligence from clients, developers and contractors have risen against architects. As a result, liability insurance premiums have been going up. There is also more scrutiny from insurers on the types of projects they will insure. Architects attempt to mitigate this risk by choosing their clients wisely and writing clear contracts that clarify roles, responsibilities and expectations.

Company Risks

Market Niche Focus

Small- to medium-sized firms tend to focus on particular architectural market segments such as office, institutional or multi-family in order to differentiate themselves. However, this focus exposes them to risk if their market niche suffers from a decline in project activity. For example, residential construction, though a small part of the overall picture, can be greatly affected by a down economy. However, design of institutional spaces, like schools and hospitals, are less affected by economic fluctuations. Many firms try to mitigate this risk by gaining reciprocity in other states to broaden their opportunities both in their chosen niches and new market segments.

Geographic Project Risk

Projects are also geographically sensitive. Demand for specific types of buildings such as office, correctional facilities, and hospitals vary by region. The ABI or Architect Billings Index may be higher in the Midwest than the Northeast or southern and western US. Firms that specialize, particularly in more complex structures such as airports, may need to broaden their reach by gaining reciprocity in other states.

Cash Management

Almost all of a firm's revenue is generated from client billings. As the majority of firms have less than 5 employees, many lack the systems and expertise necessary for effective cash management. Someone must be dedicated to developing contracts that ensure milestones are structured to allow accounts receivable to be billed in coordination with anticipated disbursements. Attentiveness to collections is paramount to ensuring receivables are quickly turned to cash. The average firm carries less than 35 days of working capital and payables are over 40 days.

Lack of Detailed Partnership Agreement

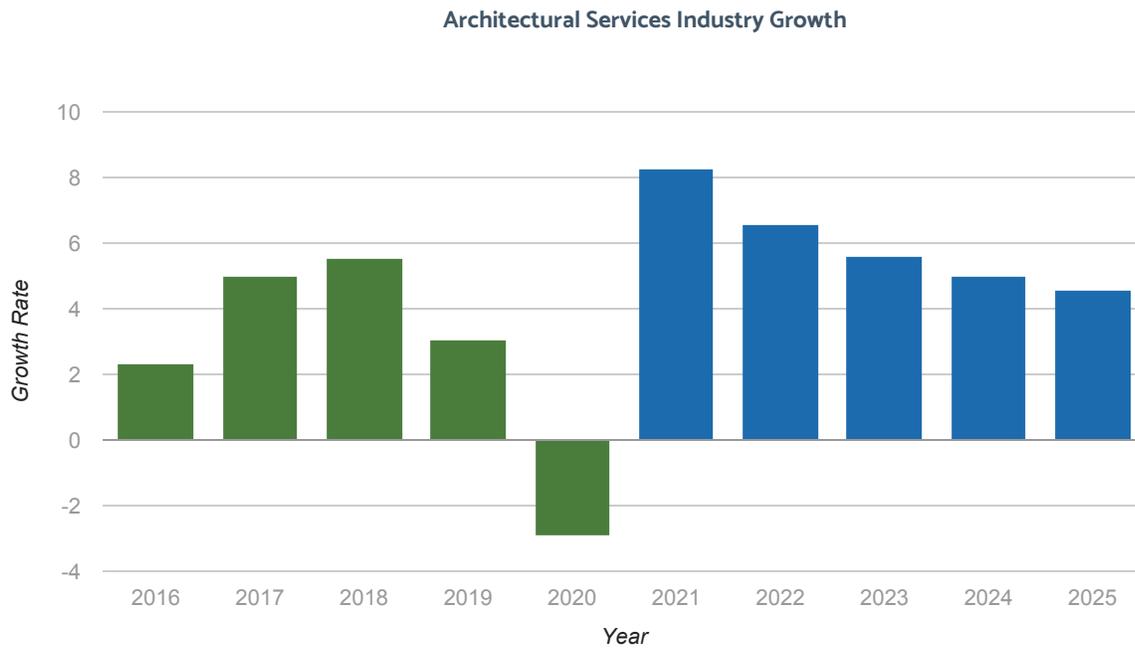
Small architecture firms are frequently partnerships owned by the principal architects. In these cases, a detailed partnership agreement is needed that spells out how partners exit the firm and how new partners enter. Many small firms lack a clear transition plan when the founding architects decide to retire, putting the future of the firm at risk.

Industry Forecast

Sales for the US architectural services industry are forecast to grow at a 5.99% compounded annual rate from 2020 to 2025, comparable to the growth of the overall economy.

Vertical IQ forecasts are based on the Inforum inter-industry economic model of the US economy. Inforum forecasts were prepared by the Interindustry Economic Research Fund, Inc.

Last Update: August 2021



Source: Interindustry Economic Research Fund, Inc.

Working Capital

Sell and invoice

Architectural services firms rely primarily on client billings for revenue. Firms are built on the quality of clients and their projects, as well as the talent of the architects employed. Business can be generated in a number of ways, including: submissions to requests for proposals (RFPs) from private, commercial, government or institutional entities; participating in design competitions through which a jury awards a contract; and through word of mouth. Some architects generate their own projects and invite developers and contractors to participate. Marketing efforts tend to center on displaying former projects in magazines and other publications in order to extend the client base. Networking throughout the community and becoming involved in public projects also helps to build name recognition.

44% of engineering and architectural services said they go to their accountant or bookkeeper for cash flow advice, while 4% turn to their banker, 8% turn to a colleague, and 53% do not seek advice, according to a survey of small businesses by Barlow Research Associates.

Source: Barlow Research Associates.

Collect

Design to construction times average nine to 12 months and can be longer for particularly large or complex projects. As client billings represent the lion's share of revenue, firms must be particularly skilled at charging profitable rates, converting work-in-process to accounts receivable, and receivables into cash in order to keep the business solvent. Firms typically use an hourly billing rate at least three times direct salaries in order to cover overhead and other expenses. Accounts receivable average about 66 to 79 days and are about 40% of total assets.

Manage Cash

Revenue can be predicted based on the backlog of projects, but the backlog fluctuates based on economic conditions, competition and availability of projects. Firms may need to rely on lines of credit to stay afloat during slow periods. They may also try to manage disbursements during times of cash flow shortfalls. Accounts payable are typically around 41-43 days.

Pay

Consultant fees, the major category in the cost of sales, can be as high as 40% of revenue, depending on the breadth of services a firm may contract. Consultants can provide pre-design, design, technology management and other services to aid in the design process. Efforts are made to bill expenses directly to specific projects while minimizing indirect expenses or overhead. Payroll averages about 22-24% of revenue; rent, about 2%. Insurance has become more significant as liability claims against architects have increased.

Report

Keen attention is given to a firm's Billable Ratio, which is billable labor hours divided by total labor hours. A ratio in excess of 65% and close to 100% is desirable. After-tax net profit averages 6-9% of sales.

Cash Management Challenges

Cash Shortfalls Due To Project Delays

Large design and construction projects can take over 12 months to complete and are subject to delays due to weather, materials availability, spec changes, and subcontractor scheduling. Delays in achieving project milestones can prevent firms from billing clients, even though project expenses have already been incurred. Major schedule delays or disputes over acceptance of work by the client can

result in short-term cash shortfalls for firms.

Weak Demand Due To Construction Cycles

Architectural services firms are dependent on new construction projects for much of their work and construction activity can be cyclical. During periods of weak demand, firms struggle to achieve enough billable hours for staff to maintain profitability. Increased competition for fewer new projects can result in lowering of billing rates, which impacts profit margins for firms.

Timely Billing And Collections

Small firms often lack administrative and financial staff for billing and collections. They rely on principals or project managers to initiate the billing process when milestones are met, but this “paperwork” may take a backseat to dealing with project tasks and issues. As a result, delays in submitting bills to clients can occur. Once billed, firms may lack the resources to follow up with clients who are late to pay.

Capital Financing

The core asset of an architectural services firm is its human talent. Firms rely on the creativity and knowledge of their designers and the ability of staff to successfully implement large, complex projects. However, technological advancements are simplifying the design and project management process. In addition to any physical assets, such as buildings, many firms have invested in some level of computer-based modeling and process management systems.

In the last twenty years, design and modeling has advanced from hand-made drawings and scaled 3-D models to computer-aided design (CAD and AutoCAD) and, now, building information modeling or BIM. BIM is currently the standard process management tool that architectural firms use to design and produce 3-D and 4-D images that can be shared by all participants in the design and project implementation process. BIM enables a number of advanced tools, such as ReVIt rendering software, LiDAR laser scanners, rapid prototyping and holographic imaging, to be used and shared across its platform. The software and hardware associated with BIM can be quite expensive. But having the capability is critical to working on major projects, particularly government projects, for which BIM capability is required.

Depending on the size and financial capability of a firm, products may be purchased or licensed, or services may be contracted out to firms that specialize in BIM management. BIM has been around for several years, so software standards are becoming established and costs are declining, but they can still be prohibitive for smaller firms.

Examples of Equipment Purchases



CAD Software

\$2,000 - 5,000

Computer-aided design software for architects automates the development of technical drawings, design specs, and visualizations of buildings and interior spaces.



BIM Software

\$10,000 - 75,000

Software for developing 3-D images of a project, along with cost data and detailed engineering and construction specifications. Provides an integrated model that can be used from design concepts through construction of the building.



Wide Format Printer

\$3,500 - 5,000

Ink-jet color printer capable of printing 36 to 42 inches wide to generate technical drawings or large color images of buildings or interiors.



3-D Printer

\$15,000 - 20,000

Tool for creating 3-D physical models of buildings and interior spaces.

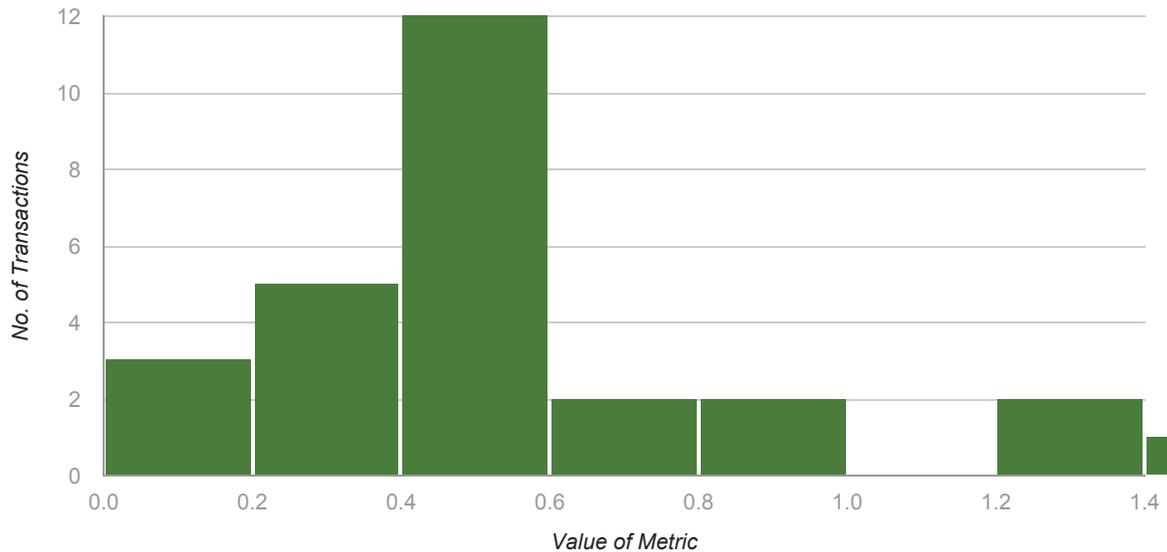
Business Valuation

This data on business valuations is supplied by DealStats, an online database with the most complete financial details on nearly 36,000 acquired companies. These companies are mostly small and medium-sized private firms.

Summary Valuation Data for Architectural Services

	MEDIAN	MEAN	# TRANSACTIONS	DATES
Price to Net Sales	0.53	0.57	27	06/19/1998–12/02/2020
Price to Gross Profits	0.58	0.85	26	06/19/1998–12/02/2020
Price to EBITDA	3.59	4.89	22	06/19/1998–12/02/2020
Price to EBIT	4.57	6.87	27	06/19/1998–12/02/2020

Click on the metric below to see a distribution of transactions for the industry:



Source: DealStats

Count: 27

Min: 0.15

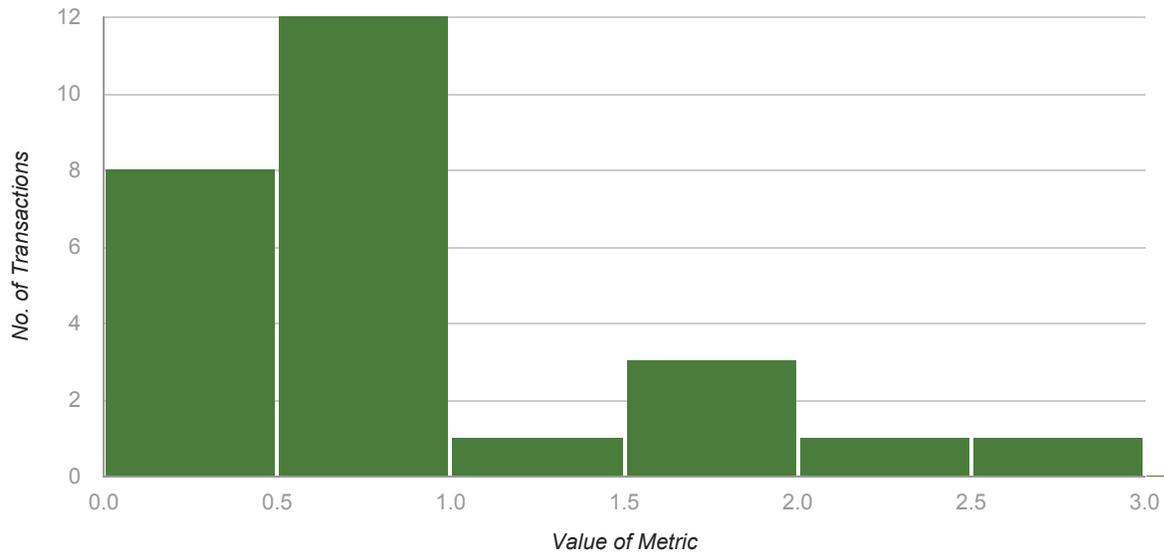
Max: 1.41

Mean: 0.57

Median: 0.53

Price to Sales = Selling Price/Net Sales

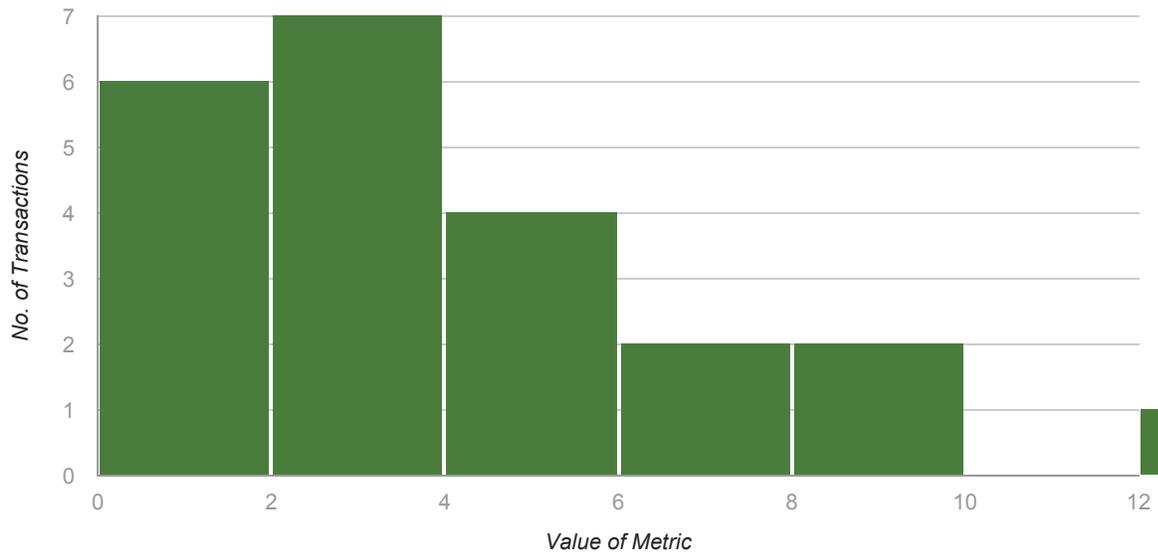
Date range: 06/19/1998 - 12/02/2020



Source: DealStats

Count: 26 **Min:** 0.15 **Max:** 2.58 **Mean:** 0.85 **Median:** 0.58

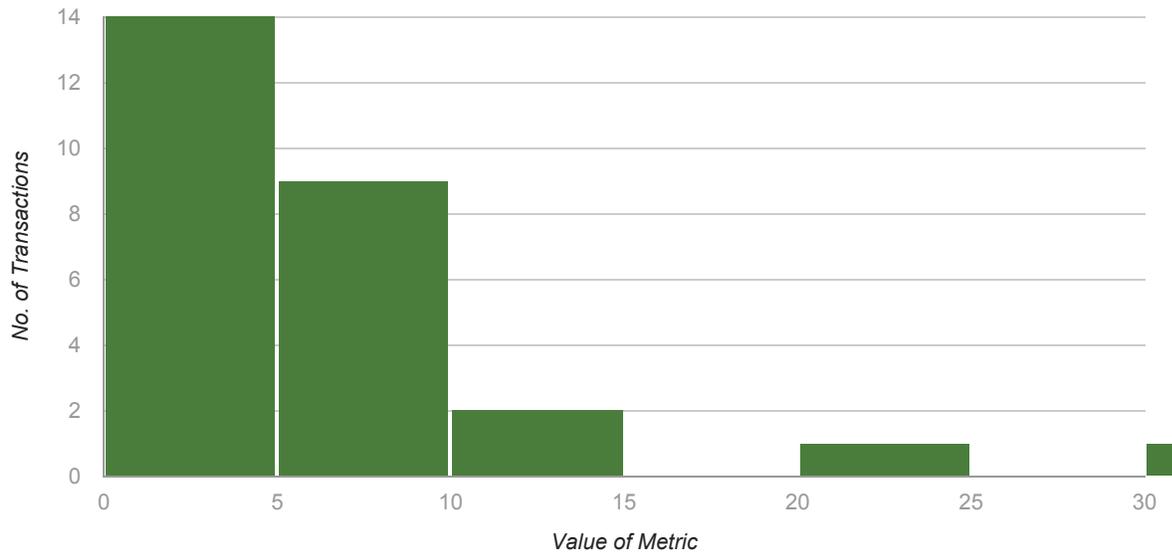
Price to Gross Profit = Selling Price/Gross Profit
Date range: 06/19/1998 - 12/02/2020



Source: DealStats

Count: 22 **Min:** 1.22 **Max:** 23.85 **Mean:** 4.89 **Median:** 3.59

Price to EBITDA = Selling Price/Operating Profit + Depreciation & Amortization
Date range: 06/19/1998 - 12/02/2020



Source: DealStats

Count: 27

Min: 1.22

Max: 32.17

Mean: 6.87

Median: 4.57

Price to EBIT = Selling Price/Operating Profit

Date range: 06/19/1998 - 12/02/2020

Selling Price, also known as MVIC (Market Value of Invested Capital) is the total consideration paid to the seller and includes any cash, notes and/or securities that were used as a form of payment plus any interest-bearing liabilities assumed by the buyer. The MVIC price includes the noncomplete value and the assumption of interest-bearing liabilities and excludes (1) the real estate value and (2) any earnouts (because they have not yet been earned, and they may not be earned) and (3) the employment/consulting agreement values. In an Asset Sale, the assumption is that all or substantially all operating assets are transferred in the sale. In an Asset Sale, the MVIC may or may not include all current assets, non-current assets and current liabilities (liabilities are typically not transferred in an asset sale).

Source: DealStats 2019 (Portland, OR; Business Valuation Resources LLC). Used with permission. DealStats is available at <https://www.bvresources.com/learn/dealstats>

Financial Benchmarks

The following financial benchmark data is based on annual financial statements submitted by member institutions of the Risk Management Association from Q2 of the first year listed through Q1 of the following year.

Financial Ratios (Architectural Services, Industry-wide)

MEASURE	2018-19	2019-20	2020-21
Current Ratio [?]	1.56	1.48	1.70
Quick Ratio [?]	1.28	1.25	1.43
Days Inventory [?]	5.11	5.5	3.97
Days Receivables [?]	79	66	75
Days Payables [?]	40.74	43.47	45.58
Pre-tax Return on Revenue [?]	5.34%	6.82%	6.38%
Pre-tax Return on Assets [?]	11.42%	17.68%	11.23%
Pre-tax Return on Net Worth [?]	30.73%	50.54%	29.71%
Interest Coverage [?]	9.69	18.58	34.51
Current Liabilities to Net Worth [?]	1.24	1.41	1.15
Long Term Liabilities to Net Worth [?]	0.45	0.45	0.5
Total Liabilities to Net Worth [?]	1.69	1.86	1.65
<i>Number of Firms Analyzed</i>	444	319	230

Income Statement (Architectural Services, Industry-wide)

ITEM	2018-19	2019-20	2020-21
Revenue	100.0%	100.0%	100.0%
Cost of Sales	46.56%	47.86%	44.96%
Gross Margin	53.44%	52.14%	55.04%
Officers Compensation	4.13%	3.24%	4.32%
Salaries-Wages	18.02%	17.26%	20.43%
Rent	2.26%	2.22%	2.19%
Taxes Paid	2.29%	2.16%	2.2%
Advertising	0.27%	0.26%	1.23%
Benefits-Pensions	3.06%	2.84%	2.66%
<i>Number of Firms Analyzed</i>	444	319	230

ITEM	2018-19	2019-20	2020-21
Repairs	0.44%	0.4%	0.39%
Bad Debt	0.14%	0.14%	0.14%
Other SG&A Expenses	11.04%	11.79%	12.74%
EBITDA	11.78%	11.83%	8.74%
Amortization-Depreciation	1.64%	1.28%	1.39%
Operating Expenses	43.29%	41.59%	47.69%
Operating Income	10.15%	10.55%	7.35%
Interest Expense	1.19%	0.82%	0.55%
Other Income	0.13%	0.31%	-1.53%
Pre-tax Net Profit	8.82%	9.42%	8.34%
Income Tax	0.22%	0.23%	0.16%
After Tax Net Profit	8.6%	9.19%	8.18%
<i>Number of Firms Analyzed</i>	444	319	230

Balance Sheet (Architectural Services, Industry-wide)

ASSETS	2018-19	2019-20	2020-21
Cash	21.04%	22.84%	31.93%
Receivables	40.36%	40.55%	33.96%
Inventory	2.06%	2.01%	1.81%
Other Current Assets	5.97%	5.94%	5.67%
Total Current Assets	69.43%	71.34%	73.37%
Net Fixed Assets	17.88%	14.83%	13.99%
Net Intangible Assets	4.28%	4.59%	4.77%
Other Non-Current Assets	8.42%	9.23%	7.86%
<i>Total Assets</i>	100.0%	100.0%	100.0%
LIABILITIES			
Accounts Payable	14.37%	14.83%	12.68%
Loans/Notes Payable	12.53%	14.17%	17.85%
Other Current Liabilities	19.63%	20.47%	18.46%
<i>Number of Firms Analyzed</i>	444	319	230

LIABILITIES

Total Current Liabilities	46.53%	49.47%	48.98%
Total Long Term Liabilities	16.81%	15.17%	24.5%
Total Liabilities	63.35%	64.64%	73.48%
Net Worth	36.65%	35.36%	26.51%
Total Liabilities & Net Worth	100.0%	100.0%	100.0%
<i>Number of Firms Analyzed</i>	<i>444</i>	<i>319</i>	<i>230</i>

Vertical IQ financial benchmark data is based on data provided by the Risk Management Association (RMA) and Powerlytics, Inc. RMA's Annual Statement Studies provide comparative industry financial benchmarks based on financial statements of small and medium business clients of RMA's member institutions. Additional detail on income statement line items is provided using Powerlytics financial benchmarks, which are based on reporting submitted to the IRS. Additional detail on these data sources can be found at [RMA](#) and [Powerlytics](#).

Bank Product Usage

Top Bank Products Used by Architectural Services

The following table provides the frequency of bank product usage by Architectural Services with less than \$10 million in annual revenue. It is provided by Barlow Research Associates, Inc., the premier market research firm in the financial services industry.

BANK PRODUCT	% OF FIRMS
Business checking account services	100.0
Business credit card issued in your company's name (Visa, MasterCard, Amex, etc.)	79.0
Business debit card or business check card	76.0
Business savings or money market account	72.0
Overdraft protection for business checking	64.0
Point-of-sale credit card processing	61.0
Electronic payments initiated through the Internet (Bill Payment)	58.0
Automated clearing house services (ACH)	55.0
Wire transfer services	53.0
Money market mutual funds or short-term investments	36.0
Remote deposit capture (scanning checks at your office or by mobile device for electronic deposit)	32.0
Unsecured short-term loans or working capital line of credit (less than one year)	30.0
Credit lines secured by receivables, inventory, property or other assets	27.0
SBA loans	22.0
Commercial real estate mortgage	22.0
Certificates of deposit	21.0
Payroll processing	19.0
Commercial real estate mortgage (investment property)	18.0
Company sponsored 401(k), SEP, pension or profit sharing plan	18.0
Commercial real estate mortgage (company occupied building)	16.0
Account reconciliation processing (ARP)	14.0
Term loans or equipment financing (one year +)	12.0
Overnight investment or sweep accounts	9.0
Equipment leasing	7.0
International (foreign exchange, import/export letters of credit)	5.0
Accounts receivable collection (lockbox)	1.0

Barlow's Small Business Banking program is a multi-client research program sponsored by leading banks. Each quarter, a stratified random sample of businesses throughout the United States with sales between \$100,000 to \$10 million compiled from an independent list provider are invited to participate in a comprehensive banking survey of over 100 questions. The results measure channel adoption, bank satisfaction, brand power, account management, service quality, business product usage and the selling abilities of leading providers. The results in this chapter are calculated directly from the business product usage section and represent usage for the average small business (\$100K-\$10MM).

For more information on Barlow's banking research, go to <http://www.barlowresearch.com/>

Quarterly Insight

1st Quarter 2022

Unionization Efforts Reach Architecture Firms

Staffers at New York City-based architecture firm SHoP Architects announced that well over half of their eligible colleagues signed cards pledging their support for a union, which would make it the first such organizing effort at a private US architecture firm in decades. The organizers have formed an organization called Architecture Workers United and seek to join the International Association of Machinists and Aerospace Workers. Experts cite widespread dissatisfaction with working conditions as a key driver of high-profile union drives at firms in several industries. Jennifer Dorning, the president of the AFL-CIO's Department for Professional Employees, said millennials' positive attitudes toward unions and an increase in media coverage of union drives has created a "cascading effect" resulting in more union drives and workplace activism.

4th Quarter 2021

Adaptive Reuse Of Office Buildings Has Limits

Interest in adaptive reuse of vacant office buildings through conversion to residential living space has gotten considerable attention during the coronavirus pandemic, but experts say that not all office buildings are suitable. For residential purposes, office buildings dating back to the 1960s and 1970s, when floorplate sizes, a term commonly used in commercial real estate to refer to an entire floor of a building, were smaller and contained more shallow footprints, are the most ideal buildings for conversion into housing. Buildings from the 1980s and 1990s tend to have much larger floorplates. The top cities for office-to-apartment conversions in 2021, according to Yardi Matrix, are Washington, DC, with 1,091 units; Chicago, IL, with 1,020 units; Alexandria, VA, with 955 units; Los Angeles, CA, with 904 units; Cleveland, OH, with 652 units; and Philadelphia, PA, with 591 units.

3rd Quarter 2021

Office Hoteling may Boost Demand

Some employers that are embracing a hybrid model which will allow more work-from-home flexibility are considering an "office hoteling" setup. Office hoteling is the elimination of assigned seating in a workspace. It allows workers to reserve office space on a daily basis for whatever suits the type of work that they need to do. The model has gotten more popular given the increased dependency on remote working. A recent survey by global employment law firm Littler Mendelson PC found that 31% of employers were considering an office hoteling model.

2nd Quarter 2021

Office Space Conversions May Help Offset Lower Demand for New Buildings

Some industry experts expect excess office space resulting from the pandemic-driven rise in telecommuting to be converted into housing space. Likely candidates for conversion include aging, deteriorating, or functionally and technologically obsolete office buildings; buildings in overbuilt areas or neighborhoods with falling real estate values and rising vacancy rates; and buildings far from public transit. Some buildings could be adapted for mixed-use, with one portion of a building preserved for offices and residential units occupying the remaining portion. Architecture services experiencing low demand for new office space may benefit from the opportunity to convert these buildings.

1st Quarter 2021

Construction Starts Expected to Increase

Total construction starts, a driver of demand for architectural services, will increase 4% in value in 2021 to \$771 billion, according to the

Dodge Data & Analytics 2021 Dodge Construction Outlook. The dollar value residential buildings starts will increase 5% in 2021 while nonresidential buildings will gain 3%, according to the report. Only the residential sector, however, will exceed its 2019 level of starts thanks to historically low mortgage rates that boost single family housing. Warehouse construction will lead the nonresidential sector as e-commerce giants continue to build out their logistics infrastructure. Office starts will also increase due to rising demand for data centers (included in the office category) as well as renovations to existing space. Retail and hotel activity will languish.

4th Quarter 2020

Prefab Construction Demand Rises

Interest in prefabricated building has been growing in recent years, but the coronavirus pandemic has given it another boost. “So far we’ve seen a 50% increase in contracts between this year and last year,” says Steve Glenn, CEO of Plant Prefab, a Santa Monica, CA, company that works with architects to produce a large line of prefab residences. Industry experts cite the need for social distancing and quick project turnaround as key drivers of prefabricated sector growth. Kyley Harvey, head of design at Katerra, a multifamily prefab specialist based in Menlo Park, CA, says that while speed varies, his company’s structures can be built at least 10% faster than traditional construction.

3rd Quarter 2020

Construction Spending Unchanged in June

Construction spending was virtually flat year over year in June 2020, rising just 0.1% according to the US Census Bureau. Residential construction declined 0.4% during the period while non-residential construction rose 0.4%. Public safety projects led non-residential growth at 39.2%. Construction spending rose 5.7% year over year during the first five months of 2020.

2nd Quarter 2020

Billings, Employment Decline

Billings at architecture firms, as measured by the Architecture Billings Index (ABI), fell by 20.1 points to a score of 33.3 for the month of March, the latest month for which data is available. A score over 50 indicates increasing billings, a score below 50 indicates declining billings. The March ABI decline is by far the largest single month decline the index has seen in its nearly 25-year history, far surpassing the declines of 9.4 points seen at the start of the 2001 recession and 8.3 points seen at the start of the Great Recession. Architectural and engineering industry employment declined 3.5% year over year in April, according to the US Bureau of Labor Statistics. On average, architecture firms expect revenue losses of 17% during Q2, according to the American Institute of Architects.

Industry Terms

ABI – Architecture Billings Index

Measures via survey the volume of projects in process and serves as a leading indicator for construction.

AutoCAD

2D and 3D design and documentation software.

Billable Ratio

Billable hours divided by total available hours; a key metric for firm profitability.

BIM – Building Information Modeling

The latest software process for coordinating the modeling and management of projects.

DSE – Direct Salary Expense

Salary expense for billable employees.

IPD - Integrated Project Delivery

Collaborative contract and process to align design-build stakeholders' goals and steer project success.

LEED – Leadership in Energy and Environmental Design

An internationally-recognized green building certification system governed by the US Green Building Council.

Web Links

[The American Institute of Architects](#)

Primary association for pre-licensed and licensed architects. Access to multiple resources including practice help, networks, conventions and data.

[Fenestration and Glazing Industry Alliance \(FGIA\)](#)

Provides certification for and a directory of certified products used by architectural services firms. Also develops product standards for the industry.

[National Architectural Accrediting Board](#)

Provides accreditation for US architectural degree programs.

[The National Council of Architectural Registration Boards](#)

Information on the member Architectural Registration Boards in the US and its territories. Provides info to pre-licensees and licensees.

[American Society of Landscape Architects](#)

Primary association for landscape architects. Provides resources, networking, conventions and news.

[Architect Magazine](#)

Key industry magazine providing news on firms, practice of architecture, legislation and projects.

Related Profiles

Commercial Building Contractors

NAICS: 2362 SIC: 1541, 1542

Engineering Services

NAICS: 541330 SIC: 8711

Residential Building Contractors

NAICS: 2361 SIC: 1521, 1522, 1531

Sign Manufacturers

NAICS: 339950 SIC: 3993

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