Permanent Modular Construction
Annual Report

Modular Construction Market Share Steadily Expands
Permanent Modular Industry Continues to Make Inroads
This Sage Policy Group, Inc. (Sage) report analyzes the market share of North America’s permanent modular construction (PMC) industry.
PMC buildings are subject to the same building codes and requirements as site-built structures, depreciate in much the same manner, and are classified as real property.

Traditional construction projects comprise five steps: design and engineering, permits and approvals, site development and foundations, building construction, and site restoration. PMC enjoys certain advantages by simultaneously allowing for site development and construction. This permits installation and site restoration to occur at a time during which a site-built project would be just initiating construction (see image 1 below). This streamlining process allows PMC to enjoy project timelines that can be 30 to 50 percent shorter. This may help explain why Marriott International, the world’s largest hotel company, recently announced that it would sign 50 hotel deals in 2017 that would incorporate prefabricated guestrooms and/or bathrooms.

A 2011 Sage report described PMC as “the stealth division of the nation’s construction industry.” At that time, PMC accounted for roughly $2 billion in annual revenues in North America. The industry has since emerged from the shadows. Five years later, industry revenues are well in excess of $3 billion and drive approximately $6 billion of construction activity.
This report provides estimates of PMC market share from 2014 to 2016 for six sub-segments that frequently utilize PMC techniques.

1. Multifamily Housing

PMC has the ability to supply condominiums, apartments, hotels, dormitories, and workforce accommodations. PMC’s primary advantages in this segment are a capacity to deliver residencies in approximately half the time of site-built construction and to intensify eco-friendliness by reducing waste through efficient in-factory processes.

2. Retail/Commercial

PMC can deliver buildings in as little as 24 hours. This accelerated pace of construction is crucial for retail establishments, restaurants, banks, golf pro shops, convenience stores, car washes, concession stands, etc., that seek to supply goods and services and generate revenues as expeditiously as possible.
3. **Education**

PMC has the capacity to deliver anything ranging from individual classrooms to complete campuses. After design approvals and permits, PMC schools can be ready for occupancy in as little as 90 days, which allows school systems to productively respond to unexpected surges in student population or to emergencies.

4. **Healthcare**

While hospitals and healthcare providers primarily turn to PMC for building components like bathroom pods and headwalls, modular construction techniques have been used to construct entire hospitals, outpatient centers, clinics, surgical centers, and dental offices.
Institutional & Assembly

From police and fire stations to prisons and churches, PMC can deliver facilities constructed to any architectural or aesthetic specification. PMC’s cost effectiveness renders it a popular option for nonprofits seeking to stretch every dollar, including those supplied by donors.

Office and Administrative

PMC has supplied corporate headquarters, satellite bureaus, administrative structures and offices for small businesses. PMC permits high degrees of customization, including in terms of conference rooms, lobbies, kitchens, restrooms, and open spaces for partition systems.
Estimating PMC Market Share

The industry’s revenue survey generates 53 total responses, while the overall modular building industry is presumed to encompass 212 firms.

By treating the survey results as a small sample from the overall industry and performing a resampling study, Sage was able to construct a confidence interval with 95 percent confidence that the average annual revenue of all modular building firms falls between $8,959,776 and $24,380,167. The average annual revenue reported by MBI firms is $15,573,888. Because the average revenue reported in the MBI survey is so close to the midpoint of our confidence interval, we conclude that survey results represent a reasonable estimate for the average annual revenue of all modular building firms.

The average annual revenue of $15,573,888 applied to the whole industry sums to $3,301,664,172 in revenue for 2016. When we scale by 1/0.55, we conclude that the total value of modular building construction projects for 2016 can be estimated as $6,003,025,767.

In 2016, PMC firms earned roughly $3.3 billion in gross revenues in North America. This represents a 61.8 percent increase from 2015. While this precipitous growth appears unfathomable for an entire industry, it should be noted that the value of construction starts in the six key markets discussed above increased 41 percent over the same period, from $173.7 billion to $244.5 billion. Because the value of construction starts can be incredibly volatile from year to year, Sage uses a three-year moving average of industry activity to estimate PMC market share.
The average annual revenue reported by MBI firms is $15,573,888.

For the average building project using PMC technologies, the modular construction team supplies approximately 55 percent of the value. Consequently, to obtain the value of projects using PMC, those revenues have been multiplied by the ratio 1/0.55. Rendering this statistical adjustment results in an estimate that PMC technologies drove more than $6 billion in construction activity in 2016. Exhibit 1 supplies relevant statistical detail.

Based on a combination of industry survey data and data characterizing construction starts, projects using PMC technologies accounted for 3.18 percent of the value of commercial construction starts in the six key North American segments that serve as the focus of this report. This represents more than half a percentage point increase from 2015’s figure. Exhibit 2 supplies market share estimates for six construction segments for the period 2014-16.

For a number of years, modular industry stakeholders have established a five percent market share goal. In the office/administrative category, market share stood at 4.9 percent in 2016. Based on the current trend, the five percent goal will be met this year. PMC market share increased in all six segments in 2016.

Among the six segments, PMC’s smallest market share is in the healthcare sector. In that category, market share stood at 1.3 percent of activity. However, even in this segment, PMC market share has been marching higher, perhaps in part to the ongoing shift from in-patient medical care at historic medical centers to outpatient care in newly-constituted clinical settings. While PMC is often used to supply portions of hospitals/major medical centers, PMC is used more routinely to supply the entirety of outpatient facilities. Exhibit 3 supplies a visual sense of market share dynamics observable since 2014.

<table>
<thead>
<tr>
<th>Year</th>
<th>PMC Firm Revenues</th>
<th>Value of PMC Projects</th>
<th>Construction Starts Value</th>
<th>3-Year Moving Average of CSV</th>
<th>PMC Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>$2,096,719,286</td>
<td>$3,812,216,884</td>
<td>$148,579,303,469</td>
<td>$160,244,376,660</td>
<td>2.379%</td>
</tr>
<tr>
<td>2015</td>
<td>$2,040,500,000</td>
<td>$3,710,000,000</td>
<td>$173,729,905,578</td>
<td>$152,848,424,717</td>
<td>2.427%</td>
</tr>
<tr>
<td>2016</td>
<td>$3,301,664,172</td>
<td>$6,003,025,767</td>
<td>$244,509,444,333</td>
<td>$188,939,551,127</td>
<td>3.177%</td>
</tr>
</tbody>
</table>

Exhibit 1: PMC Market Shares, 2014-2016. Source: Sage, MBI, Construct Connect
Among the six segments, PMC’s largest market share is in the office/administrative category sector.

Exhibit 2: PMC Market Share by subsector, 2014-2016. Source: Sage, MBI, Construct Connect

Exhibit 3: PMC Market Share by segment, 2014-2016. Source: Sage, MBI, Construct Connect
Conclusion: Permanent modular construction’s market share has expanded in recent years.

There are a number of reasons for this, including the ability of PMC to deliver projects far more quickly in an expanding number of contexts. This allows enterprises to begin providing goods and services more quickly, thereby accelerating revenue generation.

PMC also represents a potential response to growing skills shortages among the nation’s construction workforce. Many labor market entrants demonstrate a reluctance to work in contexts that can be physically uncomfortable and does not allow for flexible time. However, modular construction takes place in controlled, indoor settings – settings that can be rendered more appealing to today’s young knowledge workers.
Sage Policy Group, Inc.

Sage Policy Group, Inc., a Sub Chapter S Corporation, was established in 2004 by Anirban Basu.

Sage is an eleven-person economic and policy consulting firm specializing in economic, fiscal and legislative analysis, program evaluation, and organizational and strategic development. As of 2017, the company reported clients in more than 40 states and in six nations. The firm’s clients include money managers, law firms, energy suppliers, commercial and residential developers, business associations, an array of nonprofit organizations operating in a variety of segments and public agencies at every level of government.

Our strategy is to utilize widely accepted sources of data, transparent analytical techniques, and to communicate analytical findings as straightforwardly and succinctly as possible. It is our ability to communicate research outcomes and implications effectively that arguably represents our primary competitive advantage.

Ultimately, we exist to supply decision-makers with valid and reliable knowledge upon which to base operational and strategic judgments. Sage specializes in a number of industry segments, including construction/real estate, healthcare, energy, portfolio management, and hospitality.