



for the Built Environment

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






Construction Outlook and Emerging Trends

November 6, 2019

Predicting the Next U.S. Recession

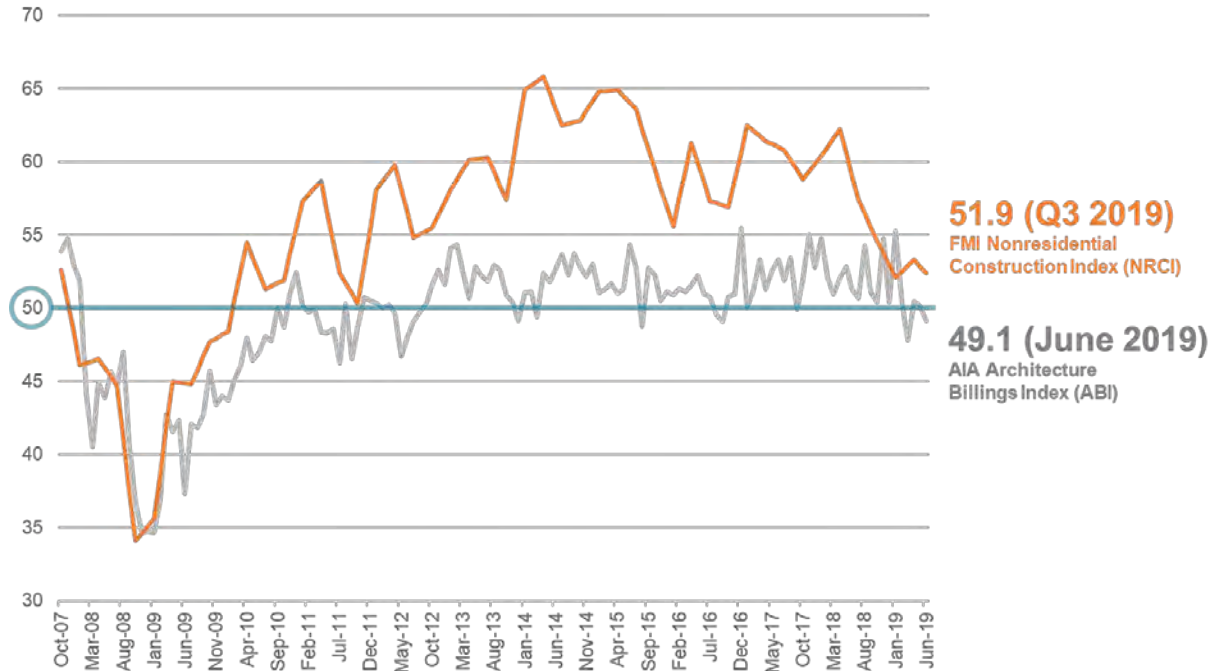
Predictive indicators

Source(s): FMI analysis of multiple sources

| Indicators / Metrics | Recessions Considered | Correct Predictions | False Positives | Prediction Strength* | Flag/ Warning Timing | Risk Assessment/ Trending |
|---------------------------------|-----------------------|---------------------|-----------------|----------------------|----------------------|--|
| Yield Curve Inversion | 5 | 5 | - | High (100%) | ~2-3 year | HIGH  |
| New Home Sales | 6 | 5 | 1 | High (67%) | ~1-4 year | MODERATE  |
| Unemployment Rate | 6 | 4 | - | High (67%) | ~1 year | LOW  |
| US Trade Balance (BOP % change) | 6 | 6 | 2 | High (67%) | ~1 year | LOW  |
| Money Supply | 7 | 5 | 1 | High (57%) | ~1-3 year | MODERATE  |
| Lumber Sales | 2 | 2 | 1 | High (50%) | ~1-2 year | HIGH  |
| MBS Held by Banks | 2 | 2 | 1 | High (50%) | ~1-2 year | LOW  |
| Rental Vacancy Rates | 9 | 4 | - | (44%) | ~1-4 year | MODERATE  |
| Residential CPIP | 6 | 3 | 1 | (33%) | ~1-3 year | MODERATE  |
| Stock Market Performance | 3 | 2 | 1 | (33%) | <1 year | MODERATE  |
| Copper Price (Doctor Copper) | 7 | 4 | 2 | (29%) | ~2-5 year | HIGH  |
| Consumer Confidence (OECD) | 8 | 5 | 4 | Low (13%) | ~1 year | MODERATE  |
| Heavy Duty Truck Sales | 7 | 4 | 4 | Low (0%) | ~1-2 year | MODERATE  |
| Manufactured Goods, New orders | 2 | 1 | 1 | Low (0%) | ~1 year | MODERATE  |
| US Trade Balance (values) | 6 | 1 | 1 | Low (0%) | ~1 year | LOW  |
| Unemployment Claims | 7 | 4 | 5 | Low (-14%) | ~1 year | MODERATE  |

Modest Industry Optimism or Cause for Concern?

Industry sentiment nears the threshold



Is It Too Soon to Begin Using the R-word?



Consumer confidence remains high



Unemployment remains below the Federal Reserve's target



Corporate earnings surpassed expectations



Increased capital growth and higher exports boost manufacturing



No expected increase in the fed funds rate



GDP continues to be positive

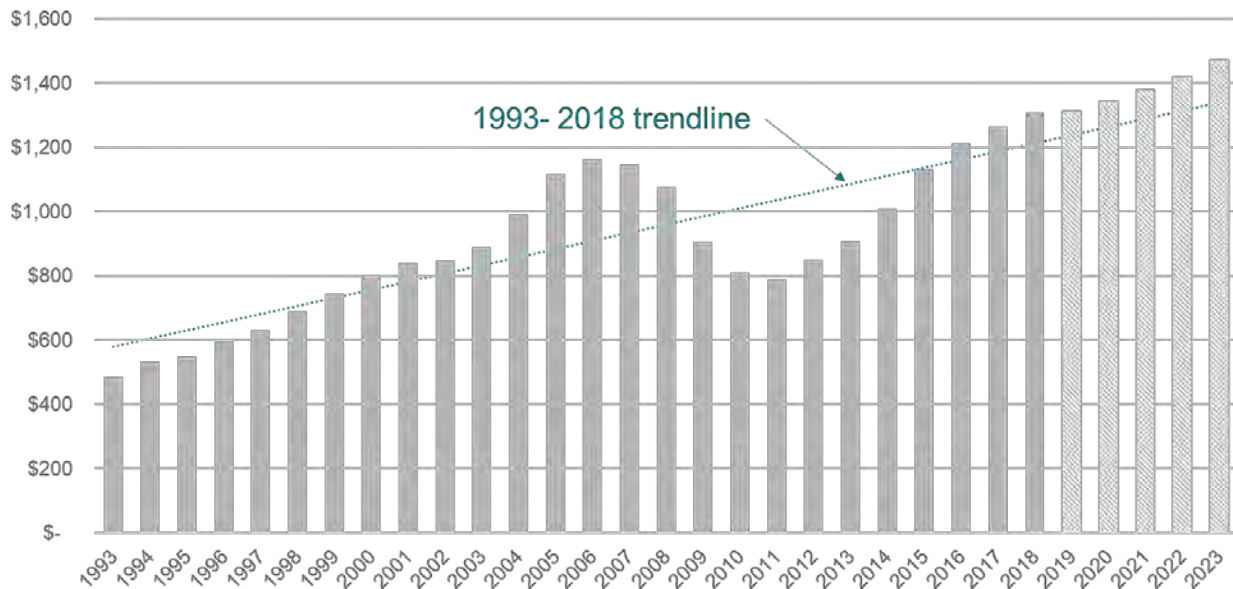
No Expansion Dies of Old Age

Total US construction spending is forecast to increase by just over 2.5% (CAGR) through 2023 compared to 4% during the past five years.

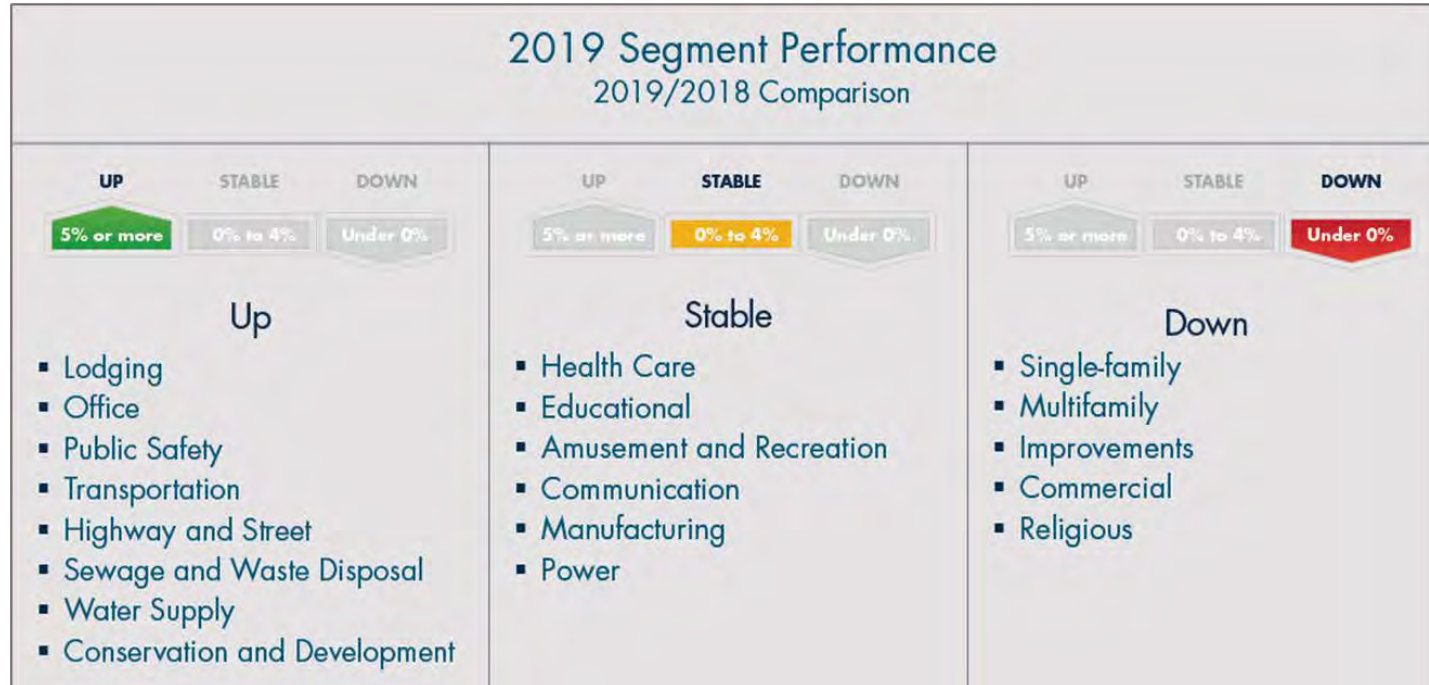
Total US Construction Spending Put in Place

US; Billions of current dollars

Source: FMI Q3 2019 forecast



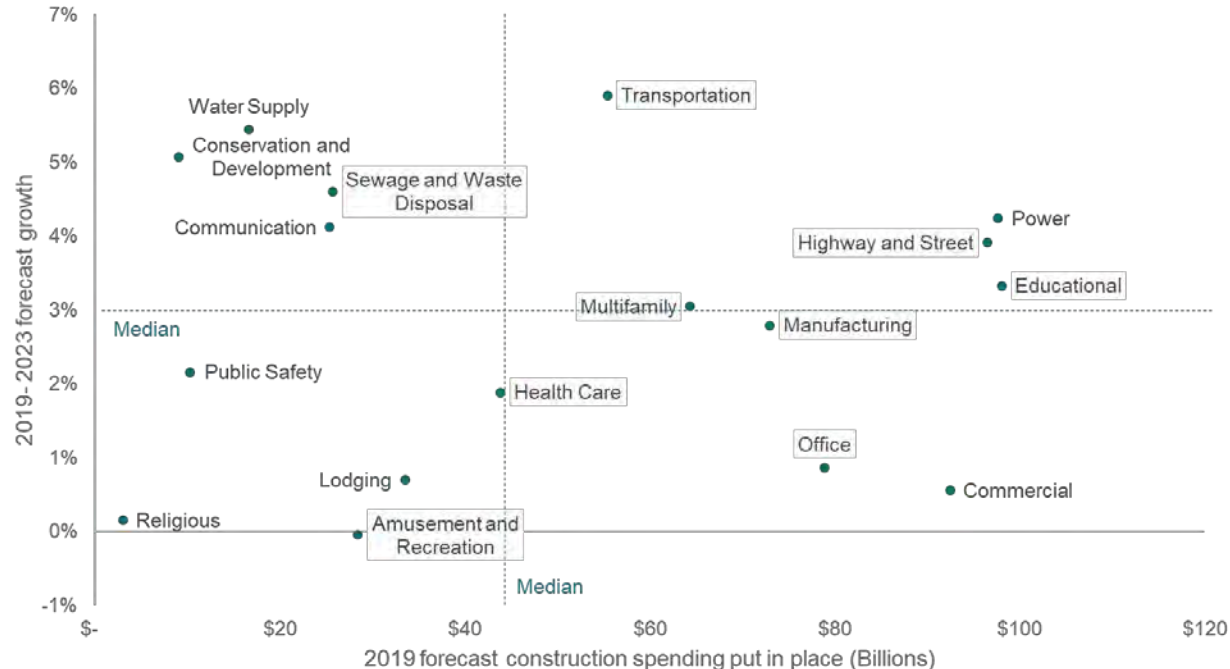
Key Takeaways



Strongest Growth in Public Sectors... but Looks Can Be Deceiving

Comparison of spending and growth by segment

Total US Construction Spending Put in Place (Billions)
FMI Q3 2019 Forecast



Strongest Growth Sub-Segments



Airports



Large Highway



Transit Rail



BioTech



Data Centers



High-Tech Warehouse



High-Tech Manufacturing



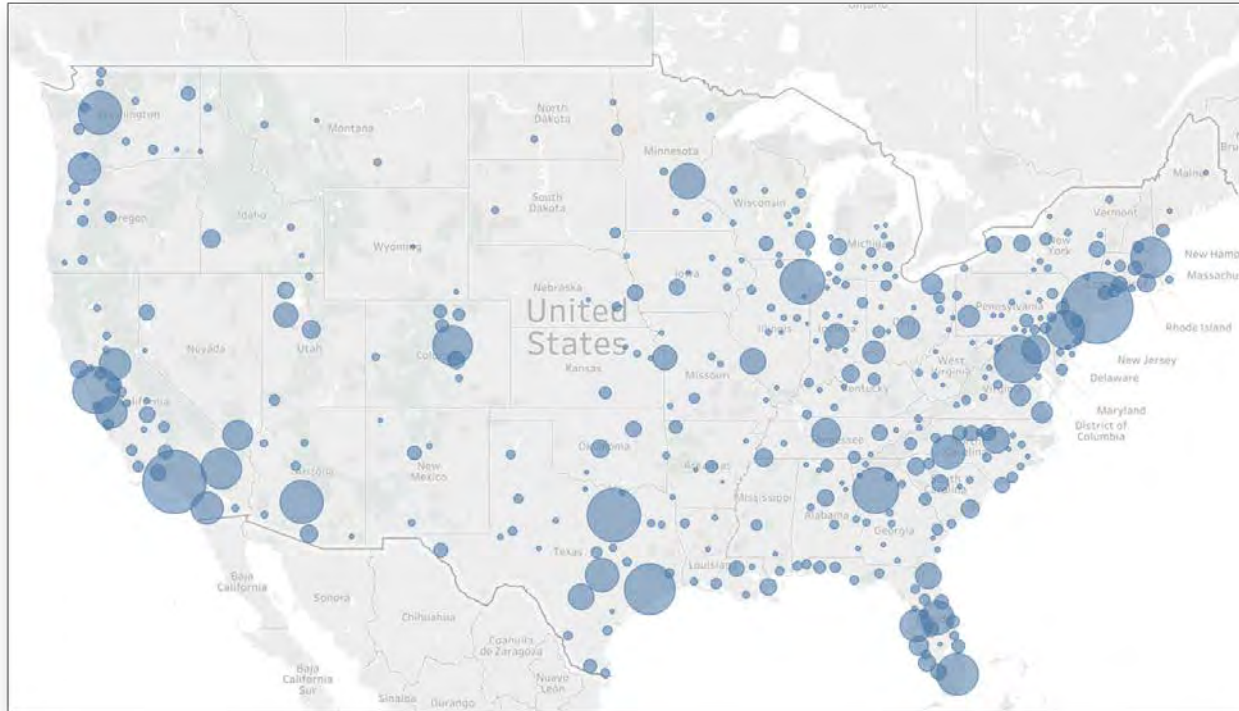
Storage Facilities



Arts Centers

Activity Concentrates in Fewer Markets

Half of all construction spending will occur in 20 metropolitan markets within the next five years.



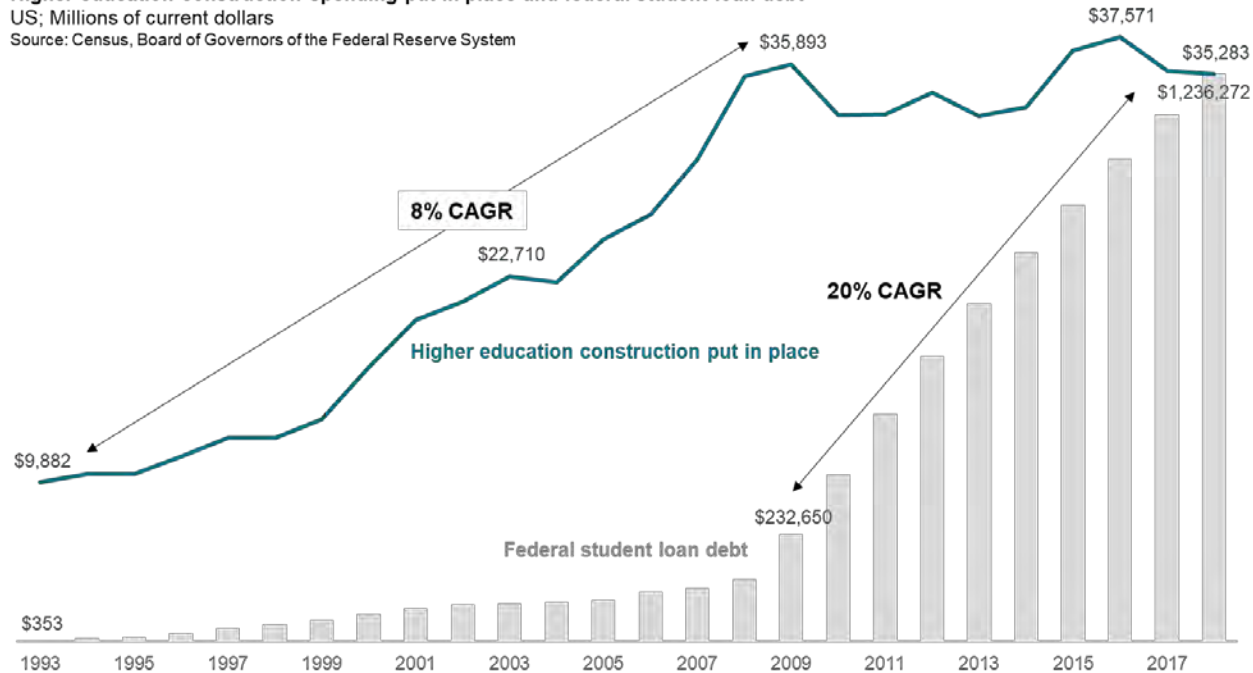
Finding the First Domino

Does the unsustainable growth of student debt represent a possible recession trigger?

Higher education construction spending put in place and federal student loan debt

US; Millions of current dollars

Source: Census, Board of Governors of the Federal Reserve System



It Becomes Harder to Define the Customer

“Our goal is to be the number one health-care provider in the industry. And the more we broaden our assortment, the more we broaden our offering, the more we educate the customer Walmart is a great place to create a one-stop shop.”

Labeed Diab
Senior Vice President and President of
Health & Wellness
Walmart



Megaproject Spending Projected to Increase to 600% over the Next Decade

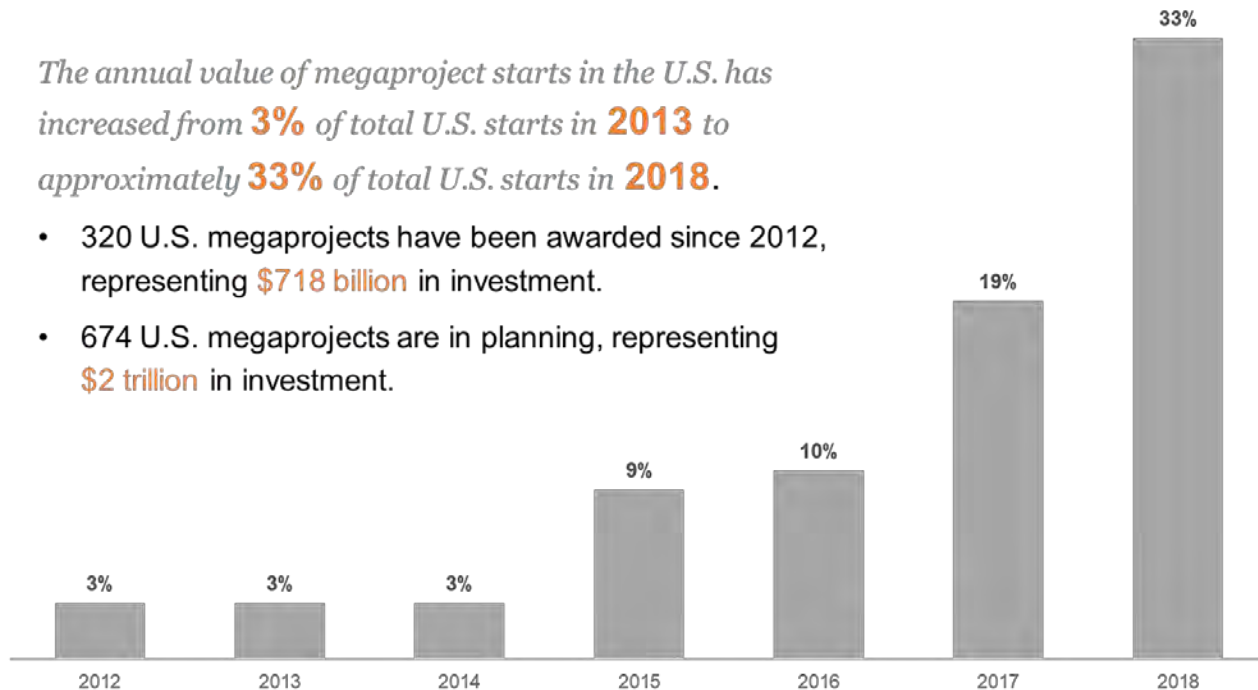
Historical megaproject starts as a share of all US construction starts

Projects valued \$1 Billion or more

Source(s): FMI, Global Insight, US Census Bureau

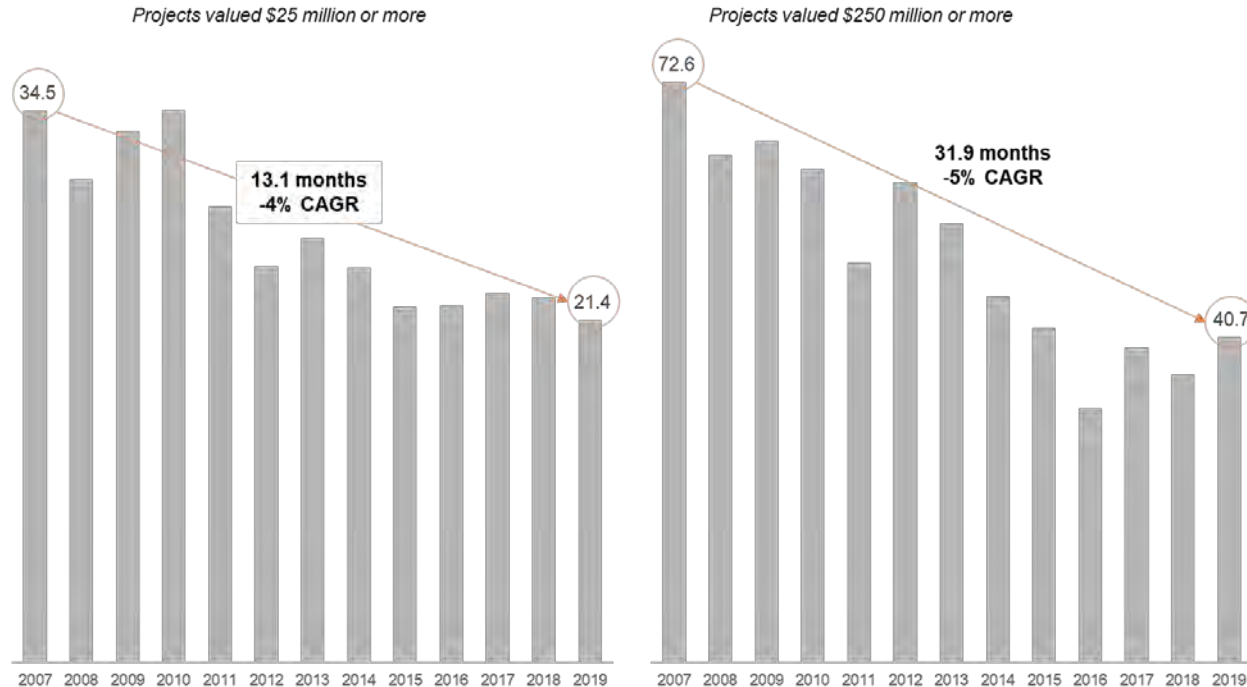
*The annual value of megaproject starts in the U.S. has increased from **3%** of total U.S. starts in **2013** to approximately **33%** of total U.S. starts in **2018**.*

- 320 U.S. megaprojects have been awarded since 2012, representing **\$718 billion** in investment.
- 674 U.S. megaprojects are in planning, representing **\$2 trillion** in investment.

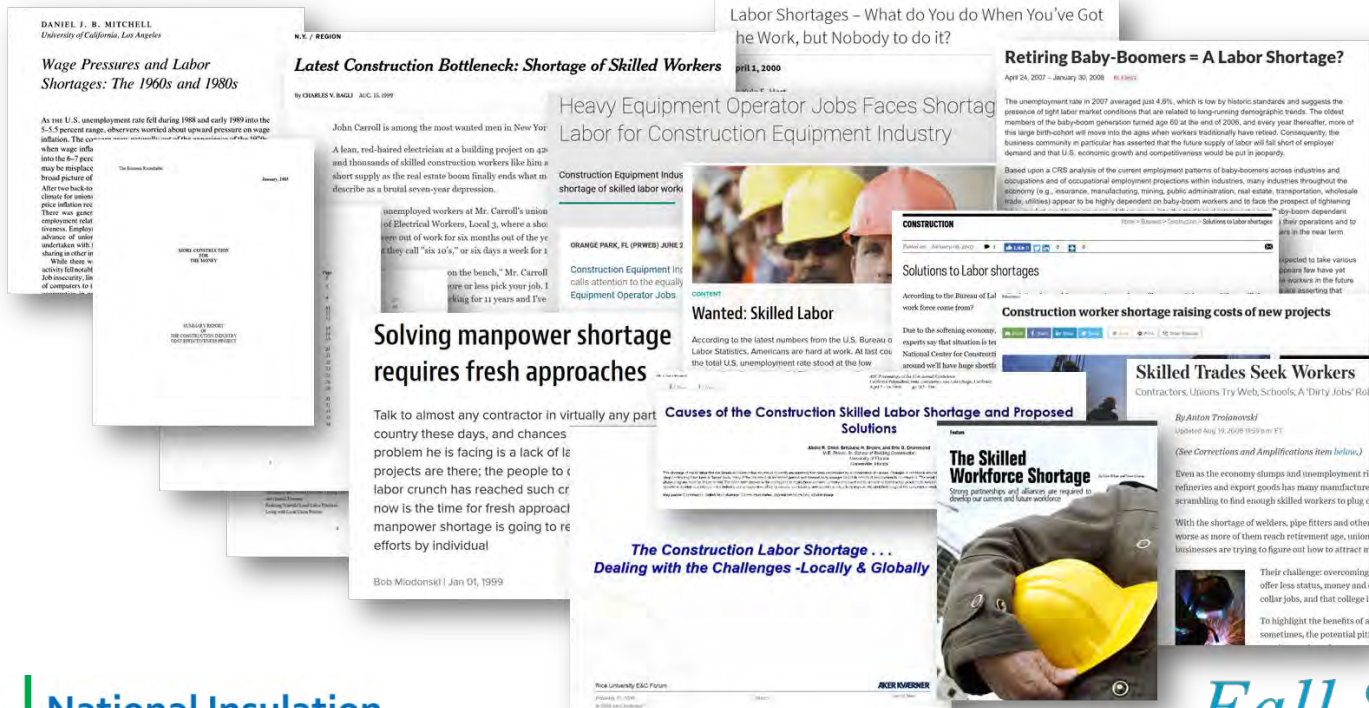


Speed to Market has Accelerated

Average construction schedule in months excluding single family



Labor Challenges Persist and Intensify



National Insulation Association®

Fall Summit
EDUCATE | ENGAGE | ELEVATE 2015

The Big Transition: Ownership Transfer and Management Succession

By Robert Murray on March 9, 2017



Much has been written about the aging baby-boom segment of the population.

Surprisingly, despite well-documented statistics on the aging workforce, preliminary results of FMI's 2017 ownership transfer and management succession for your business (OTMS) industry research^[1] indicate that only 22% of contractors have a formal plan for transitioning themselves out of their businesses.

This situation, combined with the importance of management quality, makes succession planning critical to the future success of a construction business. During such transitions it is vital to have the surety provider's support and confidence in the contractor's financial strength, technical execution capabilities, and management quality and character. While it may come as a surprise to some financial purists, quality of management is one of the most

Related Links

fmi quarterly

Innovation: Pull Away From the Pack

In this Quarterly edition, authors discuss several topics, including how to develop high-performing teams, effective boards, and a strategic compensation...

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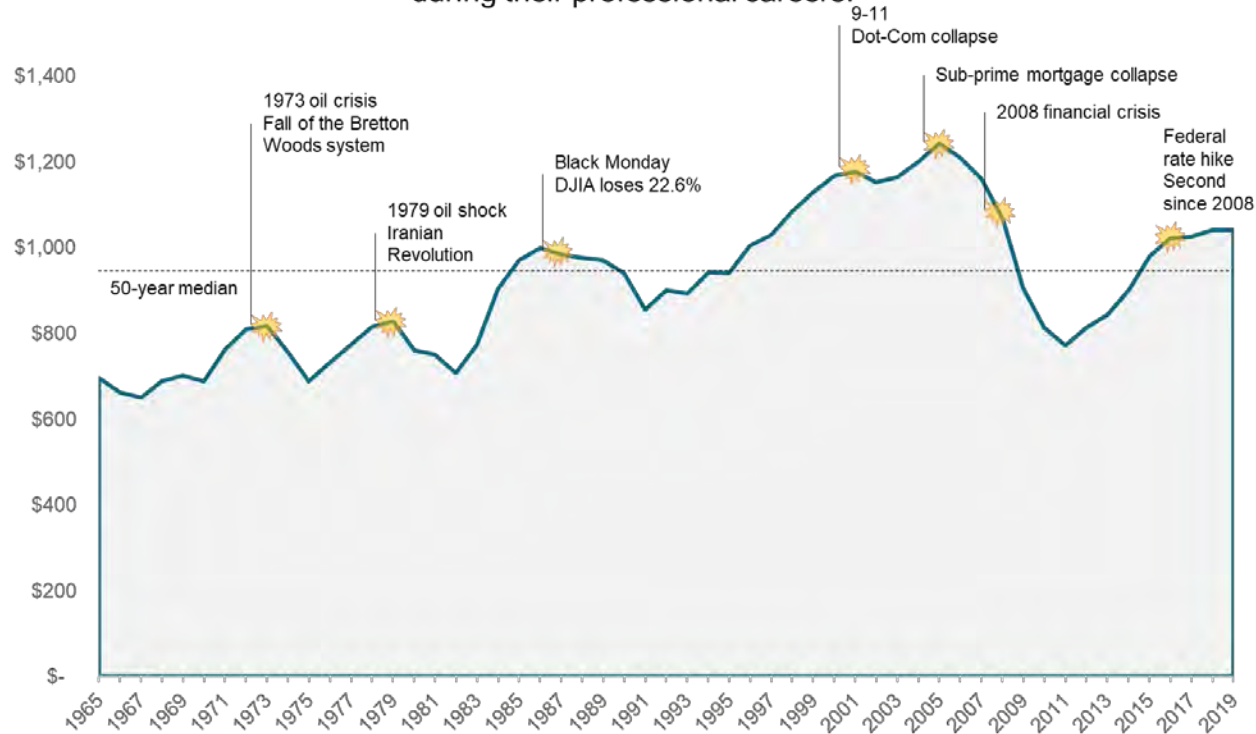
industry outlooks

Third Quarter 2017 Construction Outlook

Total construction spending

Avoiding Normalcy Bias

More than two-thirds of the Millennial workforce has not experienced an economic recession during their professional careers.



Venture Capital Invests over \$1 Billion in Construction Tech

Project & Task Management/ Collaboration



Robotics



Design



Building/Project Information



Data & Analytics



Inventory & Supply Chain



Financial Management



Equipment Share



Augmenting a Carbon-based Workforce with Silicon-based Tools



Drones and VR

Construction sites are employing drones more frequently for site surveys, and tracking job progress..

VR has proven to attract next gen talent, develop critical skills, and possibly usher in remote construction.



Autonomous Equipment


Construction equipment is quickly becoming autonomous or semi-autonomous, led by remote sites, delivering greater precision in less time.



Trade Robotics

Similar to autonomous and semi-autonomous construction equipment, robotics have the potential of reducing labor demands and achieving 24 hour construction.

What Changes When Buildings Become Disposable?



“One of my top concerns is that I may purchase an office building that in five years won’t meet the needs of the market.”

Emerging Trends in Real Estate 2019
Urban Land Institute and PwC

It has become a commonplace idea in contemporary architecture that social and technological shifts occur at fast pace, and that in comparison, the process of building is slow. Architecture’s longstanding value of having **permanence is paradoxically recast as sluggishness**. The idea is that the pace of change has outstripped architecture’s capacity to adapt and thus rendered it unresponsive if not irrelevant to an ever-accelerating society. This claim **inverts the value associated with permanence**.

The Life of Buildings – Design for Adaptation in Tokyo
C-Lab

Manufacturing and Tech Join the E&C Convergence

In the marketplace



Shifting customer profile



Increasing building and infrastructure complexity



Nontraditional stakeholders and methods of competition

And among management practices



Profiting from data analytics



Enhancing solutions by expanding across the value chain



Augmenting labor development to accelerate productivity

New Competitors Do Not Adhere to Legacy Practices

Artificial Intelligence

Replicating or replacing
knowledge-work tasks

Internet of Things

Process optimization via a network
of sensors and other devices for
data collection, monitoring, etc.

Advanced Robotics

Human augmentation and/or task
automation that enhances precision
and speed of delivery



Iterative Manufacturing

Increased customization, creation of
unique products, and reduction of waste

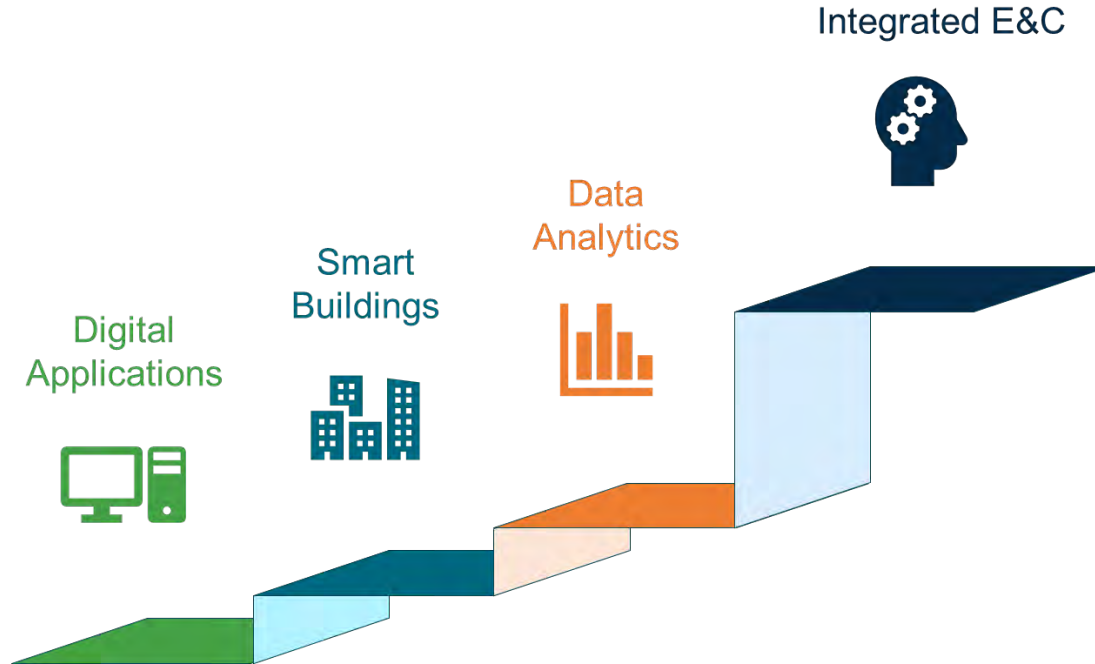
Autonomous Vehicles

Machine-to-machine communication
and elimination of human operation

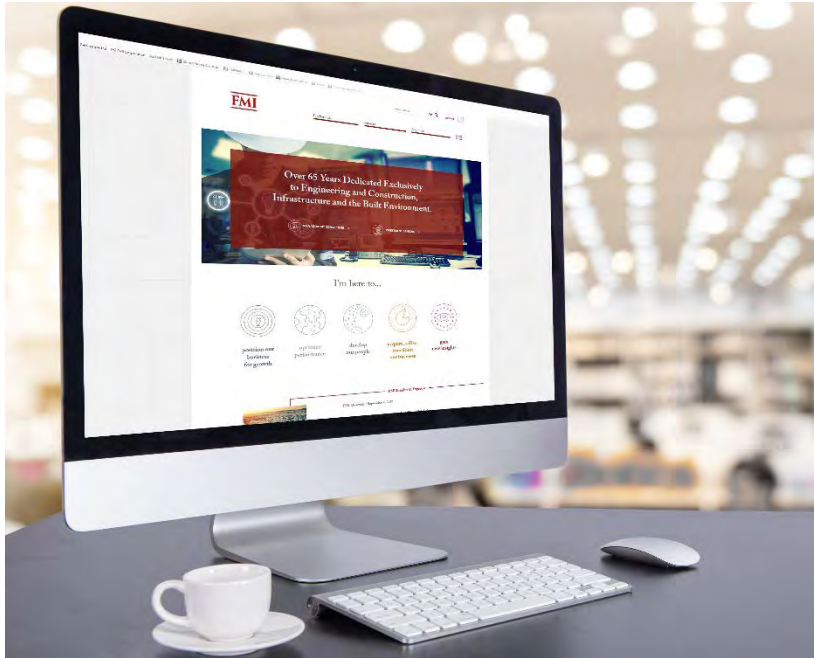
Modularization/ Prefabrication

Off-site fabrication and
kitting services

E&C Is Fast Approaching an Industry Step Change



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**Why
Contractors Fail?**



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