Private Market Resources & Economic Outlook

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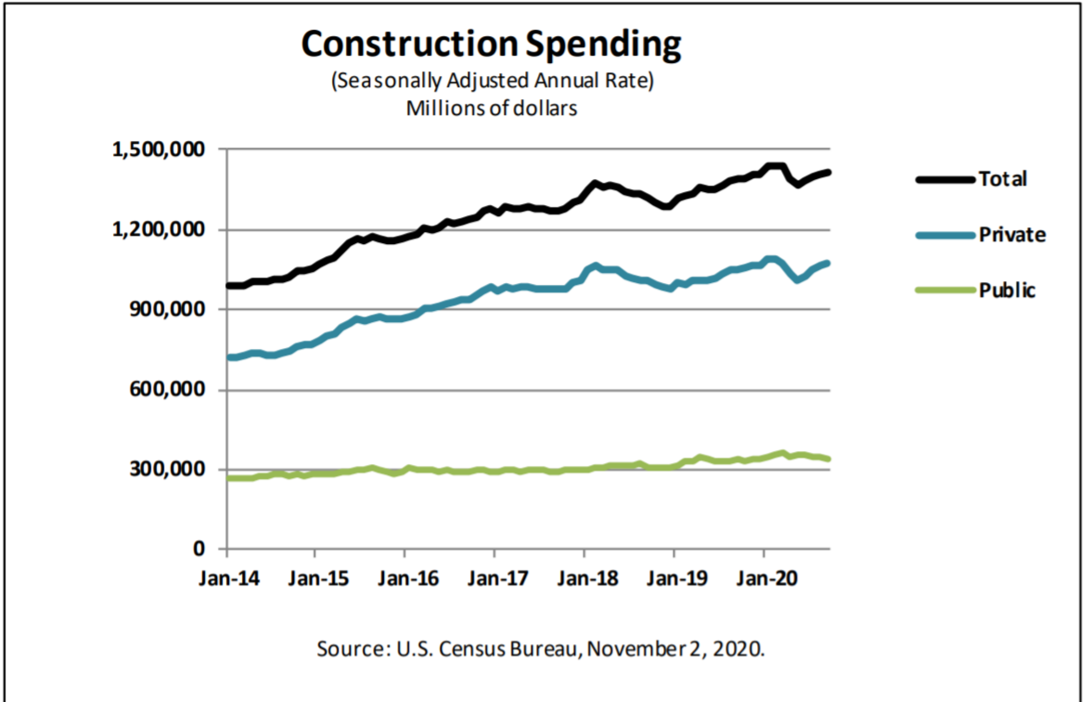
November 10, 2020

Construction Put in Place – thru September 2020



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Construction Put in Place – September 2020

	September 2020	September 2019	YOY % Change
Total Construction	**$1.414 T**	**$1.393 T**	**+1.5%**
Residential (private)	$610.9 B	$555.9 B	+9.9%
Private (non-residential)	$464.1 B	$493.7 B	-6.0%
Public	$339.1 B	$343.7 B	-1.3%

Source: U.S. Census Bureau

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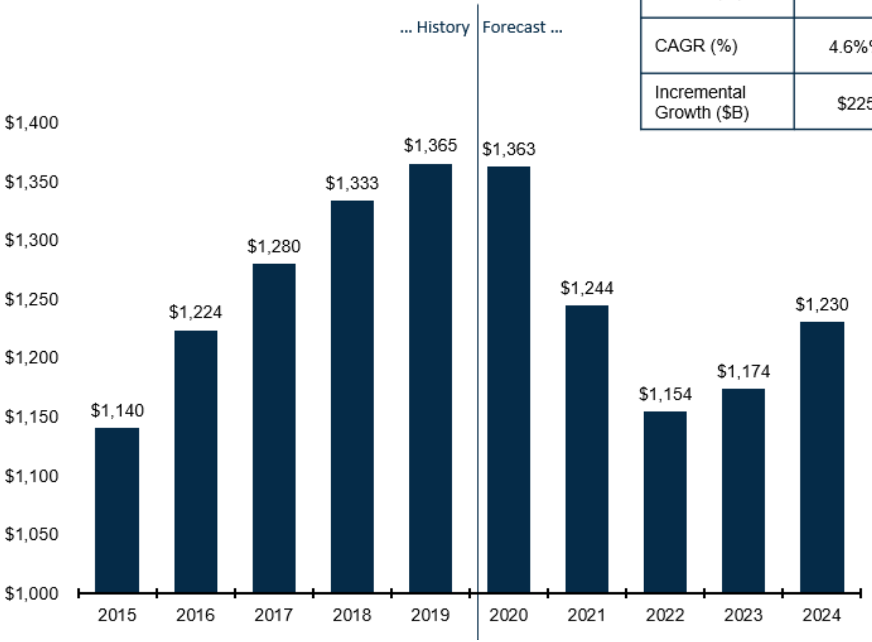
FMI Forecast – Construction Put in Place

Construction put-in-place is forecasted to decline at a compounded annual rate of (2.1%) from 2019 – 2024F, with an estimated trough occurring in 2022 ($1.1 trillion, the lowest since 2015)

	2015-2019	2019-2024F
Growth (%)	19.7%	(9.8%)
CAGR (%)	4.6%%	(2.1%)
Incremental Growth ($B)	$225	($134)



Source: FMI, U.S. Census Bureau

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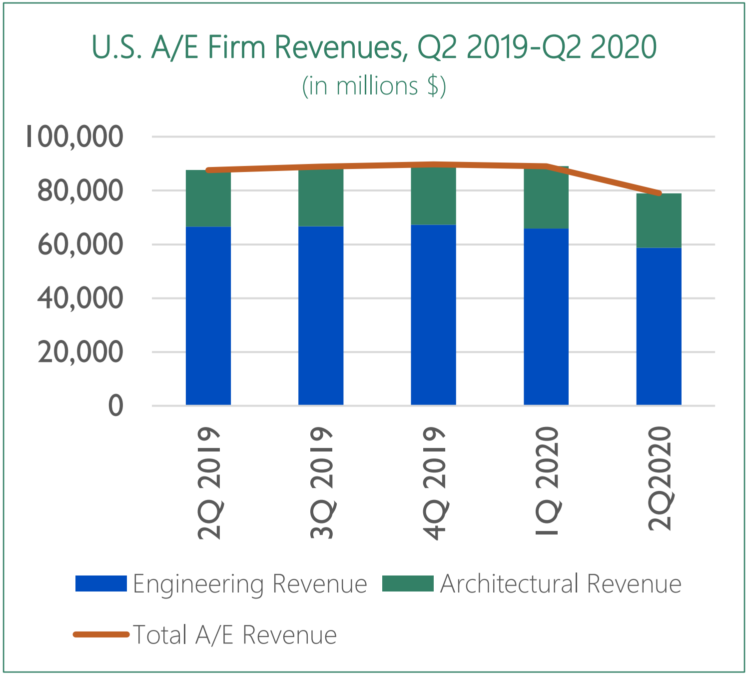
Q2 2020 A/E Revenues Down 9.8% YOY

The U.S. Census Bureau's 'preliminary report' of **total A/E revenues for Q2 2020 are $79.03B, which is a 9.8% decline from same quarter last year**, and an 11.3% decline from the first quarter of 2020.

The second quarter is important to note, as it was the first full quarter for which the impact of the COVID-19 recession is evident. Declines began after the pandemic-related shutdowns started in mid-March, at the end of the first quarter. This year will be **very different from 2019, which represents an all-time high in A/E revenues with Q4 2019 at $89.75B**, according to the Census Bureau.



Source: U.S. Census Bureau

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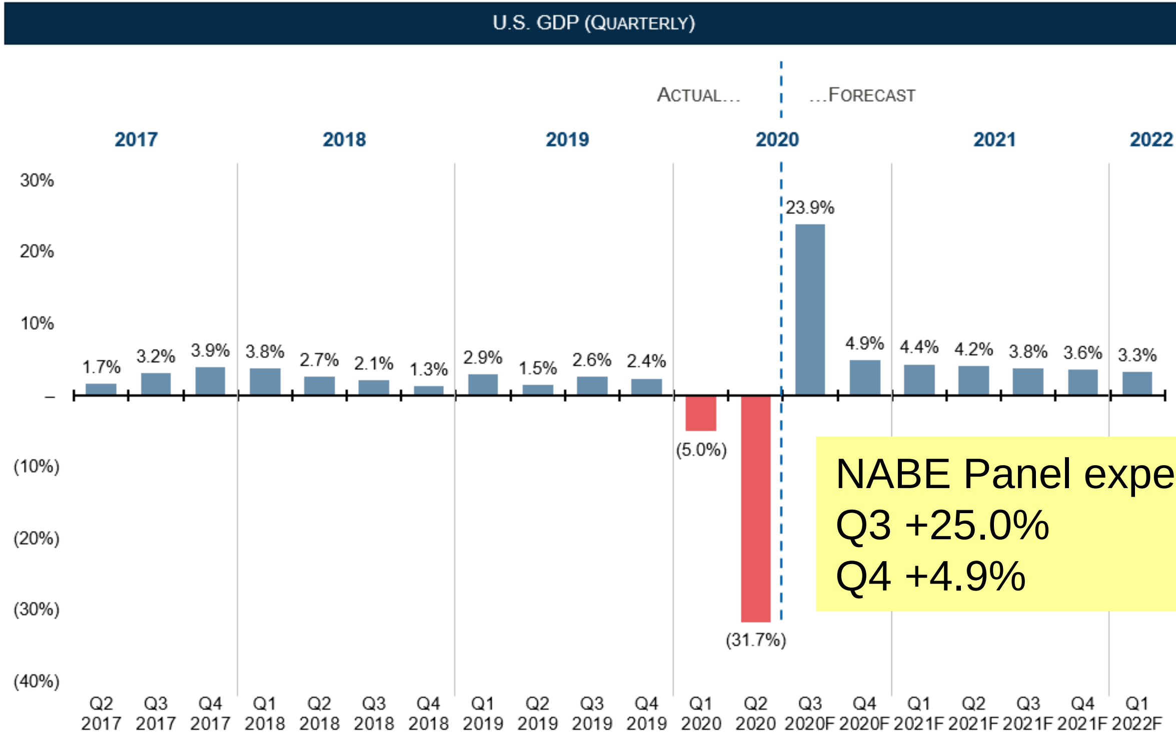
U.S. GDP – Actual & Oct. 2020 Forecast



NABE Panel expects:
Q3 +25.0%
Q4 +4.9%

Source: BEA, FMI

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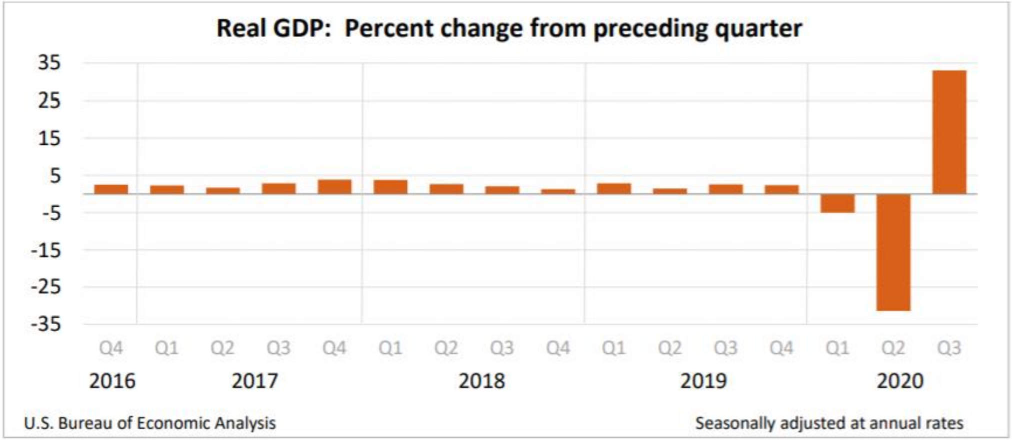
Q3 GDP – “Advance” Estimate

Real gross domestic product (GDP) increased at an annual rate of 33.1 percent in the third quarter of 2020 (table 1), according to the "advance" estimate released by the Bureau of Economic Analysis. In the second quarter, real GDP decreased 31.4 percent.

The GDP estimate released today is based on source data that are incomplete or subject to further revision by the source agency (see “Source Data for the Advance Estimate” on page 2). The "second" estimate for the third quarter, based on more complete data, will be released on November 25, 2020.



Released 10.29.20 from BEA

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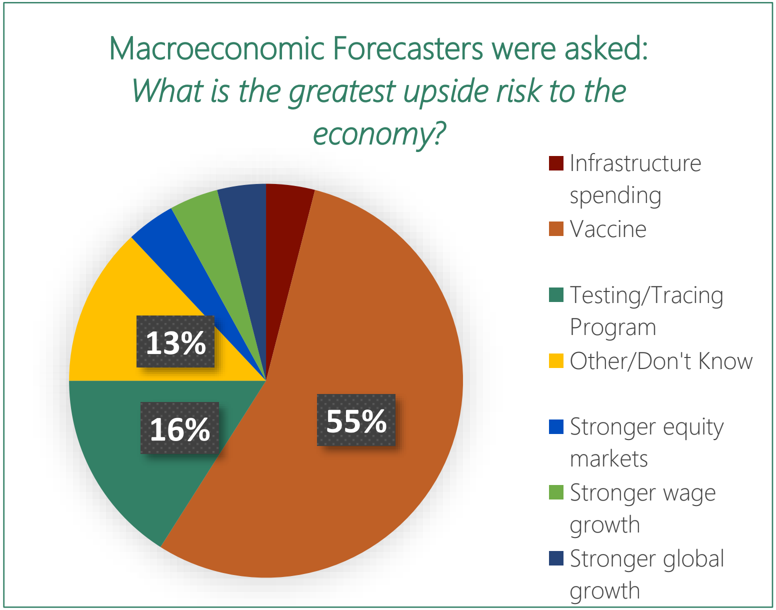
‘Upside Risks’ to Economy

A **vaccine** (55%) or a **successful test and trace policy** (16%) that slows the COVID-19 pandemic are seen as the greatest upside risks to the U.S. economy.

A mere 4% of panelists cite more traditional upsides, equally divided between:

- **Infrastructure spending** (4%)
- Stronger equity markets (4%)
- Stronger wage growth (4%)
- Stronger global growth (4%)

No panelists viewed tax reform or trade policy as an upside risk.



Source: National Association for Business Economics, October 2020

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Macroeconomic Points / Trends

5 Macroeconomic Trends for 2020

1. A “U-Shaped” Recovery Most Likely
2. Federal Stimulus is Key
3. Consumers Drive U.S. Economy
4. Private Markets First to Decline, Public to Follow
5. Future Design Impacts Stemming from Pandemic

- Recession began March 2020
- Volatility prevalent (bottoming out of oil prices, stock market growth, etc.)
- Federal government stimulus focused on individuals/keeping people employed
- Future stimulus may focus on state/local funding
- Recession widely predicted to last through the first half of 2021
  - Shape of recession may be more ‘U’ than ‘V’ shaped (there are other shapes discussed, i.e. ‘K’)
  - The U.S. has a consumer-driven economy
  - Recovery will follow spread and reactions to virus
  - Differs by U.S. region (in timing and impact)
- Impact to public-sector markets will be delayed, tax revenues down will impact capital spending
  - Gas tax
  - Sales tax
  - Income tax

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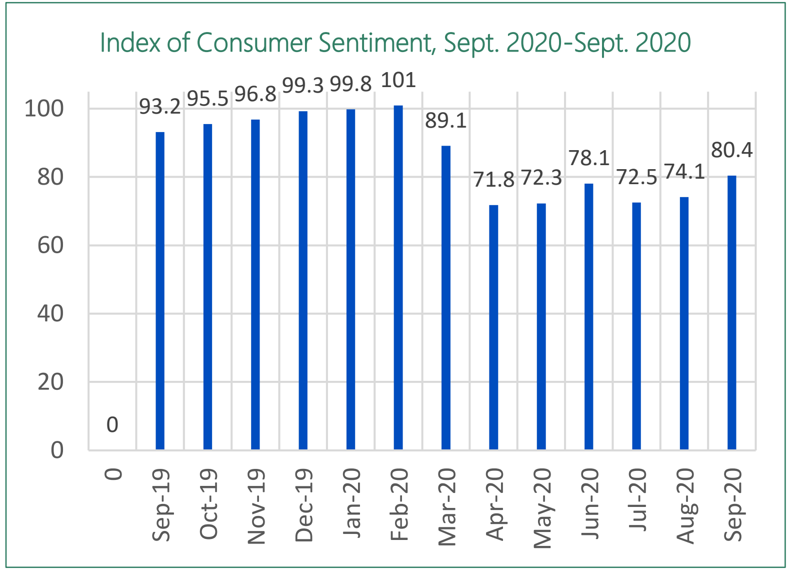
Consumer Behavior Drives U.S. Economy, Commercial Design

The U.S. economy started becoming consumer-focused as early as the 1920s when the middle class began emerging. However **the current level of consumer spending**, which **accounts for about 70% of U.S. economic activity**, really began in the 1980s. As a result of this heavily consumer-driven economy, the service and retail sectors grew considerably, greatly impacting urban and building design, and elevating the importance of the "third space" (social spaces outside of homes or workplaces, such as a coffee shop). **The importance of commercial spaces and the social experiences we have in them is significant; how the coronavirus pandemic will change consumer attitudes, and therefore design of such spaces, is largely to-be-determined. Consumer sentiment is an economic indicator to watch closely** (see table to the right), as it will likely offer clues to changes in our economy, and to the public's desire to fully interact once again in the "third space".



Source: University of Michigan

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Two Economies / ‘K’-Shape Recovery?

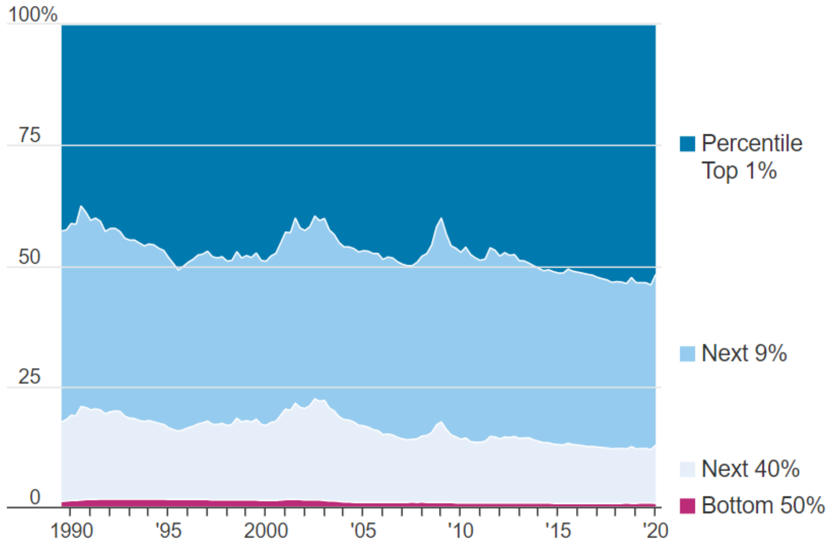
- Housing and stock market indicators show that **there are essentially “two economies” at play in the U.S.**, one for white-collar workers who can largely work remotely, and another for service/consumer-sector employees.

- Stock market shows this: top 10% of earners own 87% of U.S. stocks in Q1 2020; top 1% owns about 50%.

Shares of Wealth

The top 10% of earners owned 87% of all U.S. stocks outstanding in the first quarter of 2020.

Share of stocks held by each income group



Source: Federal Reserve

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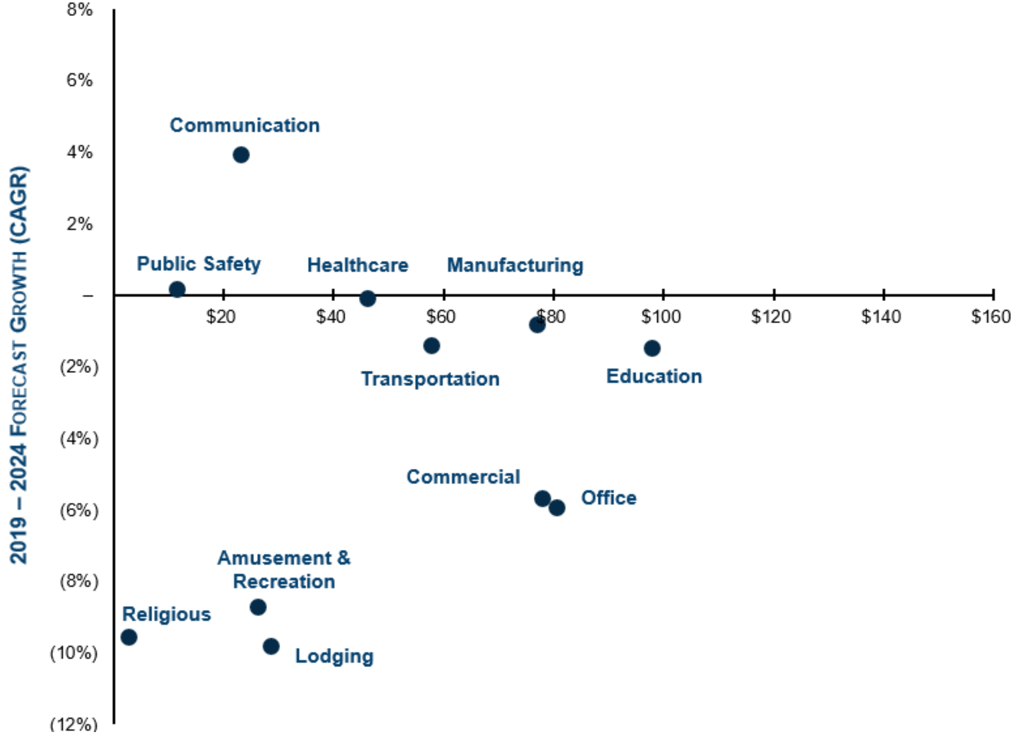
Nonresidential Construction Put in Place
(forecast thru 2024)



Source: FMI, U.S. Census Bureau

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Single-Family Housing Surging

Single-family homebuilding jumped 8.5 percent to a rate of 1.108 million units in September, according to monthly U.S. Census Bureau and U.S. Department of Housing and Urban Development joint numbers. This is the **highest rate of single-family starts since June 2007** according to the *World Property Journal*. **Permits to build single-family homes—a leading indicator—increased 7.8 percent to the strongest level since 2007**, according to Bloomberg, which also noted that construction of single-family homes in September reached the highest level in more than 13 years. **In the nation's largest region, the South, new single-family home construction starts rose 17.7 percent—a 13-year high.** Single-family homes accounted for 78 percent of total homebuilding, which is the largest share recorded since 2010. Multi-family construction, which makes up the rest of the market, is not experiencing growth.

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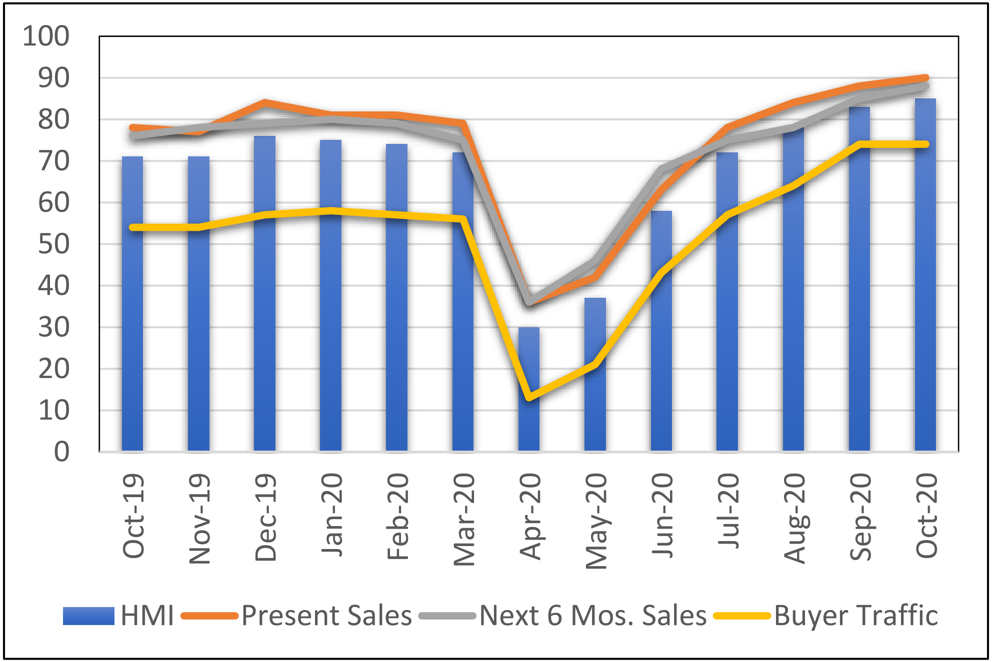
Housing Market Index for Single-Family Residential



The National Association of Home Buildings/Wells Fargo Housing Market Index (HMI) rose by two points to an all-time high of 85 in October, up from the previous all-time high of 83 recorded in September. These months are the first with readings over 80 in the index's 35-year history.

Source: NAHB/Wells Fargo

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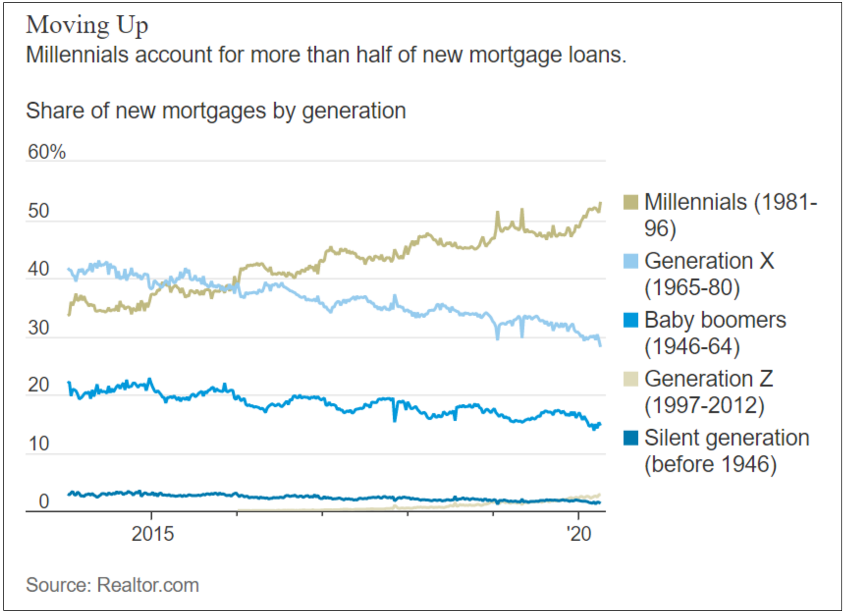
Millennials and Housing Growth

- **2019 Millennials accounted for largest share of all new home loans for the first time**
- Millennials (now mid 20s-late 30s) driving housing market
- Were slower to become homeowners compared to past generations (student loans, witness of housing crash in 2008-2009, etc.)
- **Suburban growth**—may be more like previous generations than once thought
- Also **in 2019 Millennials surpassed Baby Boomers as largest living adult generation**



Sources: National Association of Realtors, WSJ, Pew Research Center

Four Private-Market Sectors

Commercial & Residential Real Estate

Client types:

Real Estate Developers

Home Builders

Retailers

Example Clients	Fortune 2019 Ranking
Walmart	1
CBRE	146
D.R. Horton	194
Lennar	154
JLL	189

Energy & Utilities

Client types:

Energy

Utilities

Telecommunications

Example Clients	Fortune 2019 Ranking
Exelon	93
Duke Energy	126
PG&E	183
American Electric Power	192
Dominion Energy	238

Intermodal & Logistics

Client types:

Ports & Intermodal

Railroads

Logistics/Freight Delivery

Example Clients	*Fortune* 2019 Ranking
UPS	41
Fedex	47
Union Pacific	134
Waste Management	213
CSX	260

Health Care & Science+Technology

Client types:

Medical Facilities

Laboratories/Pharma

Universities

Data Centers

Example Clients	Fortune 2019 Ranking
Johnson & Johnson	37
Procter & Gamble	45
Pfizer	61
Merck	76
Community Health Systems	223

Commercial & Residential Real Estate

Key drivers/trends:

- Growth of the industrial/distribution market due to e-commerce, often in unexpected urban locations
- 'Retail apocalypse' with stores closing and adaptive reuse of properties
- Focus on limiting buildings' energy usage and carbon emissions
- Decline of the multi-family market
- Expected growth of suburbs and second-tier cities in part due to coronavirus pandemic

Key: a=actual, e=estimate, f=forecast

Construction Put in Place *Forecast by market segment*	2019a	2020e	2021f	2022f	2023f	2024f	Change 2019-2024f
Commercial	$80.44B	$78B	$67B	$56B	$56B	$60B	-25%
Office	$84.86B	$81B	$70B	$60B	$59B	$62B	-27%
Lodging	$33.07B	$29B	$22B	$19B	$18B	$20B	-40%
Amusement & Recreation	$28.80B	$26B	$21B	$18B	$17B	$18B	-38%
Residential (single, multi & improvements)	$550.94B	$565B	$502B	$451B	$459B	$484B	-12%

Sources: U.S. Census Bureau & FMI

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Intermodal & Logistics

Key drivers/trends:

- Infrastructure challenges related to urban locations and ‘last mile’ delivery needs
- Growth of Southeastern U.S. ports and their connections
- New inland ports emerging, along with increased investment in rail
- Trade policy issues and recession may hamper growth considerably
- E-commerce continues to be a strong driver

Key: a=actual, e=estimate, f=forecast

Construction Put in Place *Forecast by market segment*	2019a	2020e	2021f	2022f	2023f	2024f	Change 2019-2024f
Manufacturing	$80.08B	$77B	$74B	$73B	$75B	$77B	-4%
Transportation (buildings)	$57.14B	$58B	$54B	$50B	$50B	$53B	-7%

Sources: U.S. Census Bureau & FMI

Energy & Utilities

Key drivers/trends:

- Sharp decline in oil market in Spring 2020, with volatility expected to continue
- Decreasing demand for energy due to sharp drop in economic activity
- Focus on energy efficiency goals driven by 'Green New Deal'-type city and state policies; a national political change in 2020-2021 could shift priorities more broadly
- Pre-recession, both solar and wind were growing to meet electricity demand

Key: a=actual, e=estimate, f=forecast

Construction Put in Place *Forecast by market segment*	2019a	2020e	2021f	2022f	2023f	2024f	Change 2019-2024f
Power	$113.89B	$115B	$111B	$108B	$110B	$116B	+2%
Communication	$22.24B	$23B	$24B	$25B	$26B	$27B	+18%
Sewage & Waste Disposal	$26.09B	$27B	$27B	$25B	$24B	$25B	-4%
Water Supply	$15.88B	$17B	$17B	$16B	$16B	$16B	+1%

Sources: U.S. Census Bureau & FMI

Data Centers & Telecommunications

5 Market Trends for 2020

1. Connectivity Becomes a True Necessity
2. Federal Government Ramps Up Broadband Plans
3. States Step Up to Coordinate Broadband Initiatives
4. Electric Co-Ops Become Key to Broadband
5. Focus on Data Center Innovation, Sustainability

ACEC Private Industry Brief

Data Centers & Telecommunications

Special Issue 2020

Introduction & Market Scope

The communications market sector is one of the few expected to grow over the coming years—and may be the most resilient during the current pandemic-caused recession. In this *Private Industry Brief* Special Issue we take a deeper look into two significant parts of the communications sector: data centers, which are largely "vertical" projects; and telecommunications, which includes "horizontal" infrastructure focused on broadband. Once considered niche markets, data centers and telecommunications are increasingly mainstream due to the growth of connected devices and the massive amounts of data moving across the internet. The work-from-home environment of the COVID-19 era has resulted in even more streaming media and meeting applications. Analysis by the Uptime Institute finds that media streaming represents the biggest portion of global internet traffic and it is in fact the "energy guzzler of the internet".

Many firms count data center developers and owners as well as telecommunications companies as major clients. Typically working under Master Services Agreements or similar type of contracts, a wide range of engineering services are provided to these clients, including: civil, mechanical/electrical, structural, environmental, geotechnical, and water-related design. Telecommunications and other utility clients are also significant buyers of surveying and mapping services, because their projects often span large geographies.

Top Clients

Data center developers and user-owners: Apple, Amazon Web Services (AWS), CyrusOne, Digital Reality, Equinix, Facebook, GDS Holdings, Google, Interxion, Microsoft and NTT Communications.
Source: Data Center Construction Market – Global Outlook and Forecast 2020-2025

Cable companies (ordered by size): Comcast, Charter, Cox, Altice, Mediacom, Cable ONE, WOW (WideOpenWest) and Atlantic Broadband.

Phone companies (ordered by size): AT&T, Verizon, CenturyLink, Frontier, Windstream, Consolidated, TDS and Cincinnati Bell.
Source: Leichtman Research Group, Inc.

See lists of top A/E/C firms in these markets on page 4.

5 Current Market Trends

1. Connectivity Becomes a True Necessity

The need for social distancing during the COVID-19 pandemic has translated into millions of Americans needing to work from home, engage in distance learning, shop via the internet, and even have medical appointments using telemedicine. The result is that communications infrastructure—in the form of data centers and broadband—is not just a market trend, but a life necessity. According to FMI's *Third Quarter 2020 Report*, the communications sector is the only one that will rise each year between 2020 and 2024, from $23 billion to $27 billion in annual design and construction spending. The strength of this sector in 2020 is evident in the performance of data center real estate investment trusts (REITs) which collectively recorded the highest YTD returns ever and outperformed other sectors in the first half (H1) of 2020 *(see chart on page 2)*. Real estate firm JLL credits this growth to immediate demand for e-commerce and

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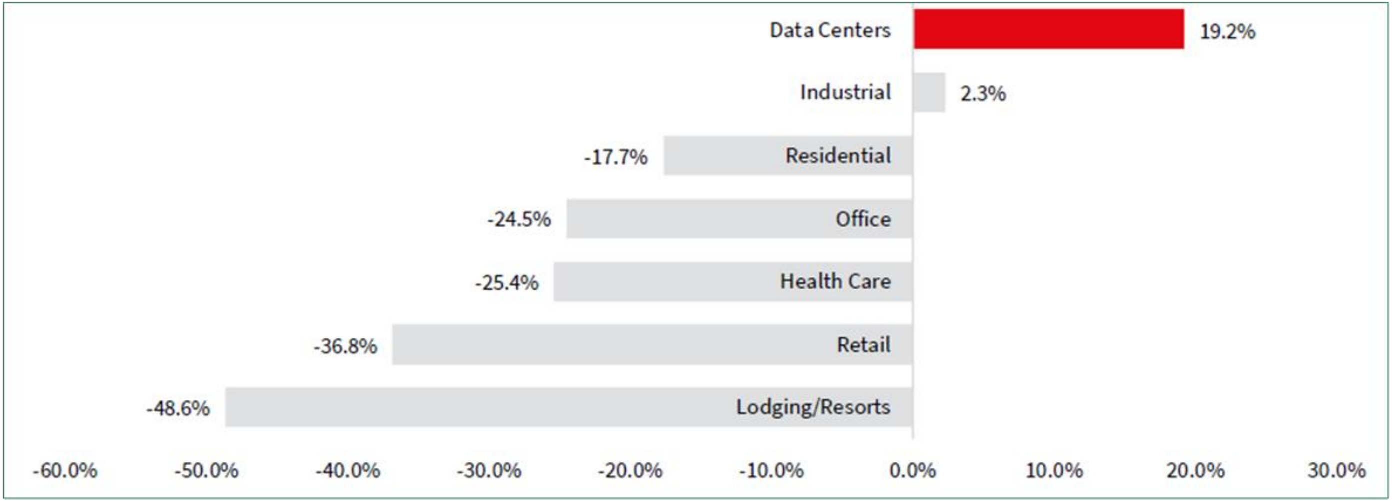
REIT H1 2020 Performance by Sector



Source: JLL

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Health Care & Science+Technology

Key drivers/trends:

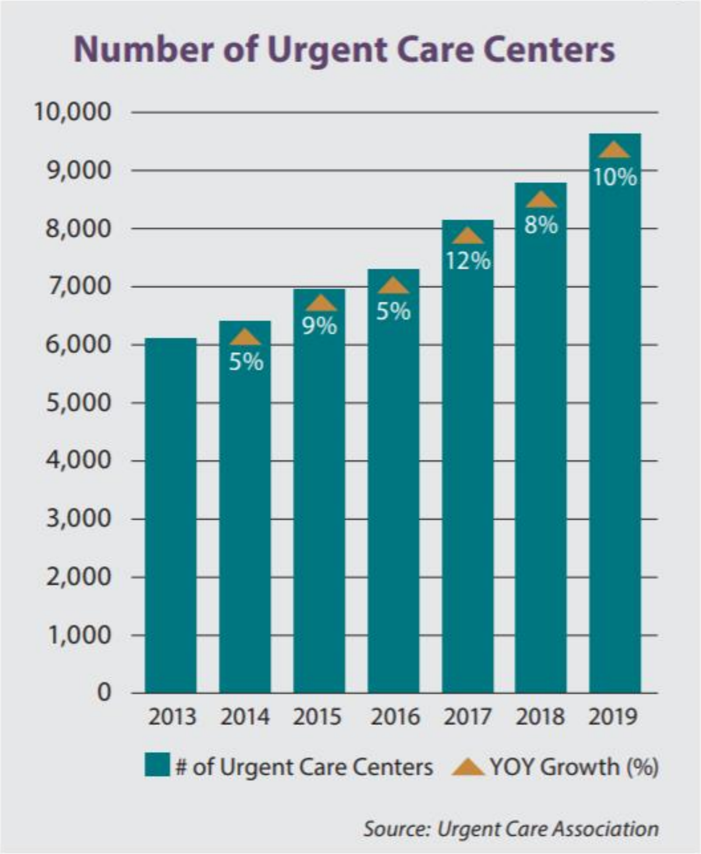
- Worldwide focus on a coronavirus vaccine shines a light on the biopharma and science and technology (S+T) industries
- Demographic drivers with growth of 65+ population due to aging baby boomers
- Increase of telehealth
- 'Retailing' of health care through CVS Minute Clinics and adaptive reuse of mall space to healthcare space
- Expected demand for changes in HVAC design due to pandemic

Key: a=actual, e=estimate, f=forecast

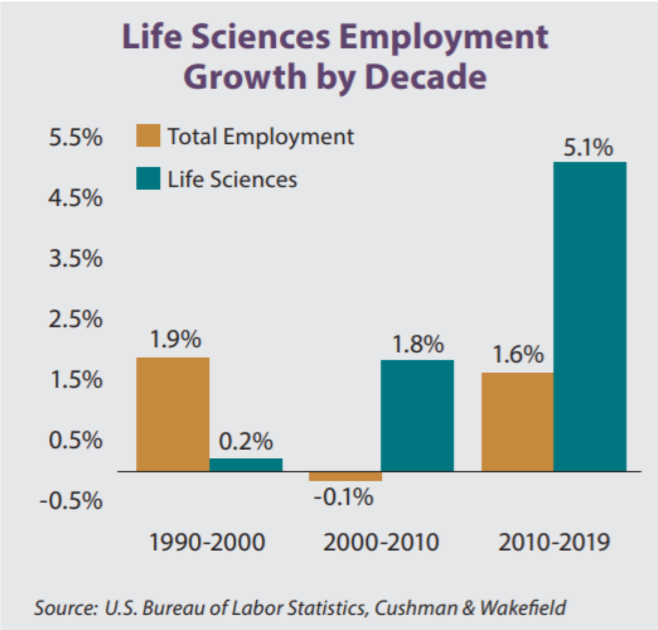
Construction Put in Place *Forecast by market segment*	2019a	2020e	2021f	2022f	2023f	2024f	Change 2019-2024f
Health Care	$45.56B	$46B	$44B	$42B	$44B	$45B	-1%

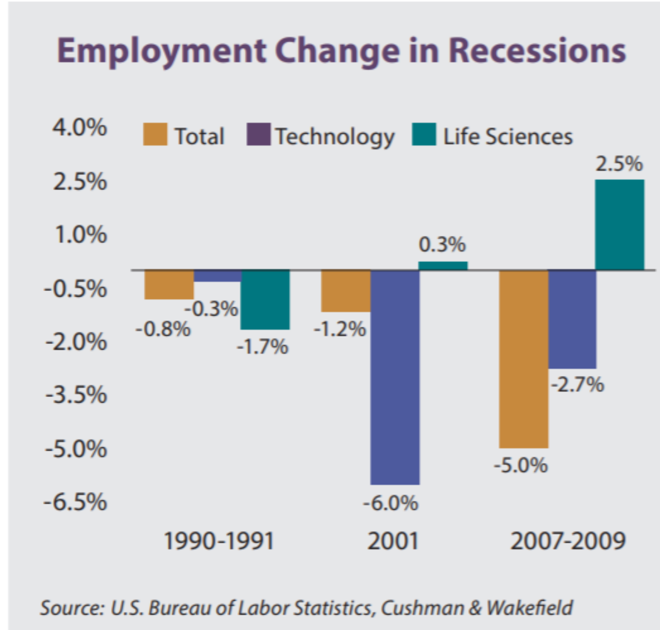
Sources: U.S. Census Bureau & FMI

Growth of Outpatient Facilities



Is HC & S+T Recession Proof?





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Public Sector & P3s

Key drivers/trends:

- Tax revenues from gas, sales, and income taxes expected to drop sharply due to shutdowns and recession
- Need for federal stimulus directed strategically to state and local governments, who for the most part cannot run deficits
- Highway and street funding expected to be a bright spot in the coming years, with a once-expected decrease in car usage likely not to trend as quickly due to pandemic
- The education market (which is the second largest overall by annual construction put in place value) may transform due to financial constraints and focus on virtual classrooms

Key: a=actual, e=estimate, f=forecast

Construction Put in Place *Forecast by market segment*	2019a	2020e	2021f	2022f	2023f	2024f	Change 2019-2024f
Educational	$105.37B	$98B	$91B	$91B	$94B	$98B	-7%
Highway & Street	$97.56B	$99B	$97B	$100B	$105B	$108B	+10%
Public Safety	$10.53B	$12B	$11B	$10B	$10B	$11B	+4%
Conservation & Development	$9.13B	$9B	$8B	$7B	$8B	$9B	0%

Sources: U.S. Census Bureau & FMI

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Additional Resources

- Private Industry Briefs
- Private Side column in *Engineering, Inc.* magazine
- Webinars
- Private/Vertical Roundtable Discussion on COVID-19 Impacts

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Thank You

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