FMI Consulting

# US Construction Outlook & Trends

## Q3 2022

fmiconsulting.com

CFMA CONSTRUCTION FINANCIAL MANAGEMENT ASSOCIATION

DALLAS/FT. WORTH CHAPTER

Risk of a recession is elevated with multiple economic indicators now suggesting a downturn in the coming months and quarters. As a result, FMI has altered its base case assumptions for our forecasts to include a 12- to 18-month recession in 2022 and 2023. As with historical cycles, the impact on the construction industry will be longer lasting. FMI's recession assumptions along with various better and worse case scenarios are highlighted in our companion white paper, "How Bumpy is it Going to Get? Mapping Recession Scenarios."

Economic factors influencing this forecast include the domestic and foreign impacts of COVID-19, shortages of key materials and labor across various industries, ongoing strain on global logistics infrastructure, volatility across financial and equity markets with additional Federal Reserve rate hikes through 2022 and 2023, and continued inflationary pressures tied to heightened living expenses, elevated energy costs, strength in the U.S. dollar and rising wages. We also considered wartime and economic turmoil in various countries (e.g., Russia, Ukraine, China) adding to strain and uncertainty on each of the items listed above.

It is important to recognize that FMI anticipates the U.S. economy will fare better than most of many other countries, as reflected by strong demand for labor and the long-term commitment to infrastructure investments. As a result, the engineering and construction industry is expected to play a major role in our economy's foundational strength over the coming years, offering a combination of both challenges and opportunities.

# U.S. KEY TAKEAWAYS

- Total engineering and construction spending for the U.S. is forecast to end 2022 up 9% compared to up 8% in 2021.

- Strong investment in residential, commercial and manufacturing will drive industry spending through 2022. Additionally, due to ongoing strength in residential development and manufacturing, several nonbuilding segments, including sewage and waste disposal as well as water supply, are anticipated to realize growth rates exceeding 5% in 2022.

- Year-end 2022 growth will be tempered by ongoing spending declines across various nonresidential building segments, including lodging, educational, religious, public safety and transportation.

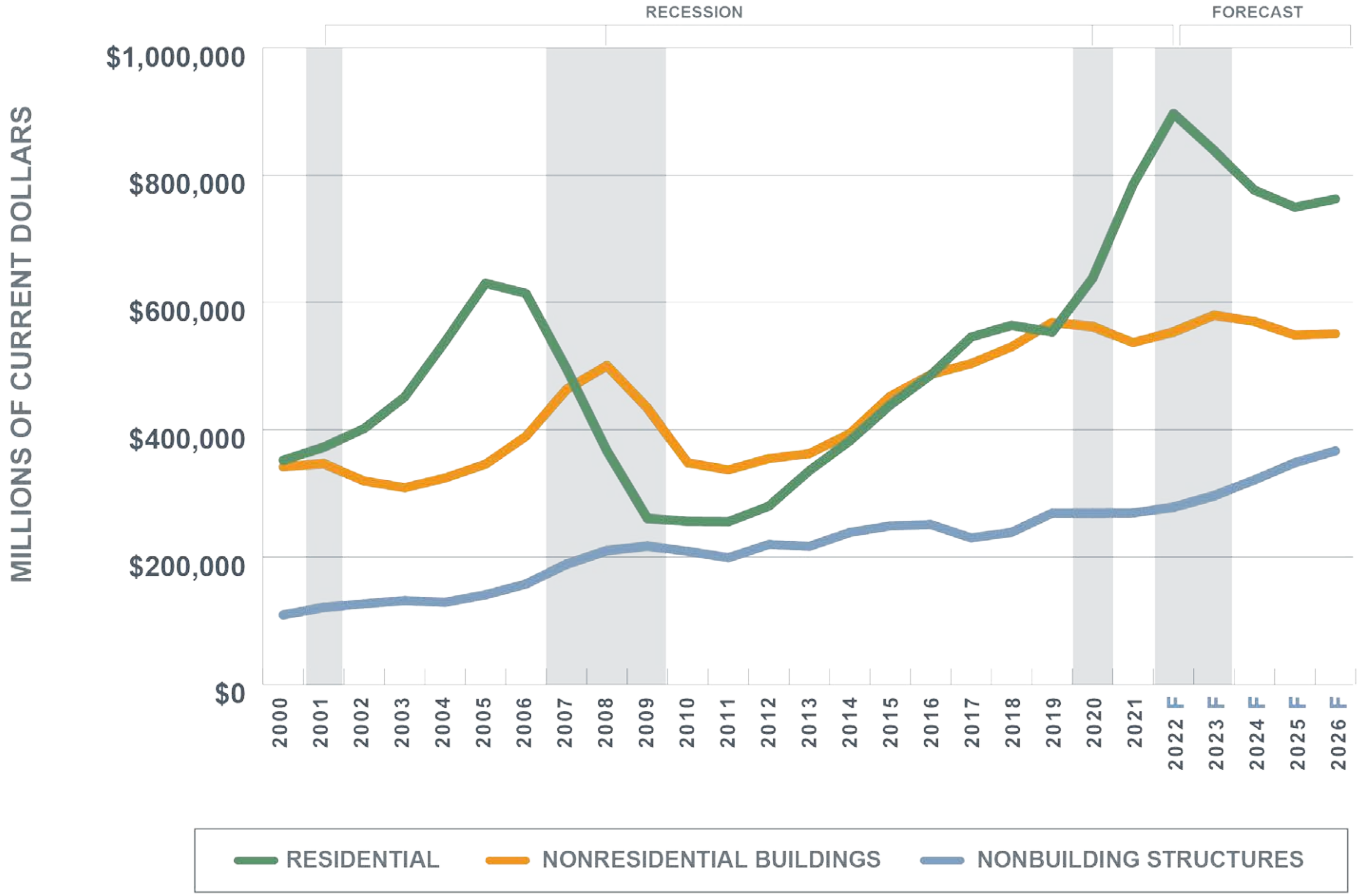
- Office, health care, amusement and recreation, communication, power, highway and street, and conservation and development are all expected to end the year with low growth roughly in line with the historical rate of inflation, between 0% and 4%, and are therefore considered stable.

- The latest Nonresidential Construction Index (NRCI) suggests difficulties heading into the third quarter of 2022, at 45.2, down from 53.8 in the quarter prior. Sentiment this quarter was particularly weakened considering a slowdown in the overall economy. The index has fallen below the growth threshold of 50 for the first time since the 2020 pandemic recession and reflects declining engineering and construction opportunities ahead.

# U.S. 2022 SEGMENT PERFORMANCE (2022/2021 COMPARISON)

| UP<br>5% or more | STABLE<br>0% to 4% | DOWN<br>Under 0% |
|---|---|---|
| Single-family | Office | Lodging |
| Multifamily | Health Care | Educational |
| Improvements | Amusement and Recreation | Religious |
| Commercial | Communication | Public Safety |
| Manufacturing | Power | Transportation |
| Sewage and Waste Disposal | Highway and Street | |
| Water Supply | Conservation and Development | |

# TOTAL CONSTRUCTION PUT-IN-PLACE FORECAST, UNITED STATES

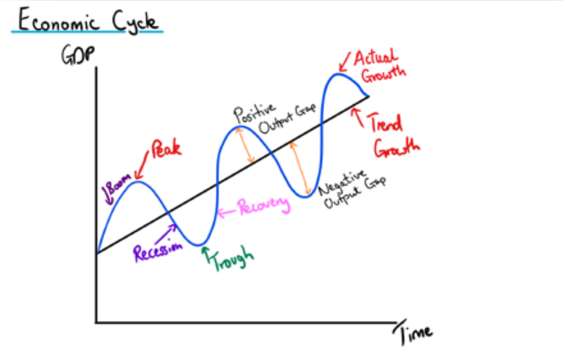



Third quarter forecast based on first quarter 2022 actuals and second quarter assumptions.
SOURCE: FMI FORECAST Q3 2022

# THREE THINGS TO REMEMBER


## New Economy vs. Old Economy

Where can we expect continued demand regardless of overall market performance?




## The Next Five-Year Cycle

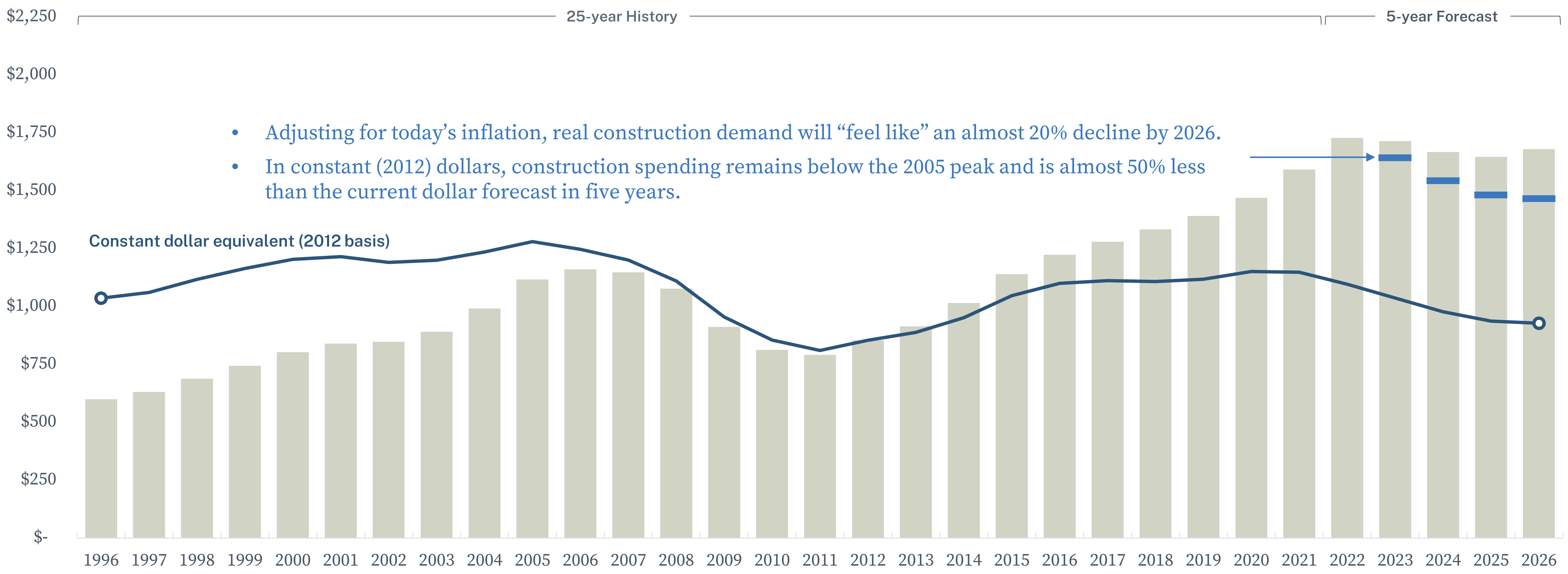
Does geography become the primary determinant of growth?

## Industry Headwinds

How will evolving market and project characteristics define opportunity?

# LESS FOR MORE

Total Construction Spending Put in Place (US)
Billions of current dollars



# CONFIDENCE IS WANING

AEC Sentiment Indices

| Architectural Billings Index (ABI) | Nonresidential Construction Index (NRCI) | Heavy Civil Construction Index (HCCI) | CIRT Sentiment Index |
|---|---|---|---|
| July 2022 | Q3 2022 | Q3 2022 | Q3 2022 |
| 51.0 | 45.2 | 48.4 | 51.4 |
| ↓ 53.2 last month | ↓ 53.8 last quarter | ↓ 57.7 last quarter | ↓ 73.2 prior quarter |
| AIA | FMI | FMI | Construction Industry Round Table |

AIA. FMI, CIRT

# NEW VS. OLD – CONSTRUCTION ACTIVITY REFLECTS THE DIRECTION OF THE ECONOMY

## New Economy…

**Life Sciences**

**Data Centers**

**Semiconductor Fabrication**

**Food & Beverage Manufacturing**

**Logistics**

**Intelligent Transportation Systems**

**Urban Mass Transit**

**Distributed Power**

## Old Economy…

**Lodging**


**Shopping Centers/ Malls**

**Consumer Goods Manufacturing**


**Movie Theaters**

**Office**

**Sports/ Recreation**

**Amusement Parks**

**Textile Mills**

# LOOK AT THE TREND LINE OF PROGRESS AND WHERE IT IS POINTING


# NEW ECONOMY TREND LINE

**Urban Mass Transit**

**Most of the US population is urban**
- Almost 90% of the US population live in an urban environment
- Transportation averages 15% to 20% of American's monthly expenses
- Millennials drive almost 10% less than Baby Boomers

**Food & Beverage Manufacturing**

**Americans are consuming more processed foods**
- Processed foods represent 70% of the daily caloric intake in the US
- Ultra-processed foods alone account for 67%

**Life Sciences**

**Pharmaceuticals are more prevalent**
- Almost 60% of US adults use prescription drugs on an on-going basis
- 110 people per 1,000 take antidepressants in the US
- The number childhood vaccinations has doubled in the past 40 years

**Logistics**

**Distribution is increasingly relied on for consumer purchases**
- Ecommerce sales have grown by almost 200% since 2015
- On-line purchases represent 15% of total retail activity
- Digital grocery buyers account for more than half the US population

**Semiconductor Fabrication**

**Semiconductors are required to operate most products**
- More than 932 billion computer chips were manufactured in 2020
- Computer chips are prevalent in most consumer and industrial products

**Data Centers**

**Data processing and storage has grown exponentially**
- The number of connected devices (IoT) has tripled over the past five years
- Almost 50% of people work remotely compared to less than 5% pre-pandemic
- The Federal Reserve is exploring the move to digital currency

**Distributed Power**

**Energy demand is increasing as reliability is decreasing**
- Power consumption has increased more than 50% since 1980
- 70% of the US power grid's transmission lines and power transformers are over 25 years old
- There were more than 180 large sustained outages in 2020 compared to less than two dozen in 2000

FMI analysis of multiple sources

# DEVELOPER/ PRIVATE INVESTMENT DRIVEN SEGMENTS SUFFER

**Largest Spending**

Multifamily

Power

Educational


Highway & Street

**Highest Growth**

Transportation

Highway & Street

Conservation & Development

Water Supply

| | Segment | 2022- 2026 Average Construction Spending (Billions) | 2022- 2026 Forecast Growth (CAGR) |
|---|---|---|---|
| | Multifamily | $ 123 | -4% |
| Nonresidential Buildings | Lodging | $ 17 | -4% |
| | Office | $ 77 | -5% |
| | Commercial | $ 88 | -7% |
| | Health Care | $ 53 | 2% |
| | Educational | $ 104 | 3% |
| | Religious | $ 3 | -1% |
| | Public Safety | $ 11 | 5% |
| | Amusement and Recreation | $ 25 | -4% |
| | Transportation | $ 68 | 10% |
| | Communication | $ 26 | 8% |
| | Manufacturing | $ 88 | -3% |
| Heavy Civil | Power | $ 124 | 3% |
| | Highway and Street | $ 128 | 10% |
| | Sewage and Waste Disposal | $ 36 | 9% |
| | Water Supply | $ 25 | 10% |
| | Conservation and Development | $ 10 | 10% |

Data centers represent approximately **20% of the Office** segment, and spending is forecast to **increase by more than 50% over the next five years**.

**Warehouse represented more than 50% of the Commercial** segment in 2021. Construction **spending on warehouses increased by 35% from 2019-2021** compared to a 15% decline in all other commercial buildings.

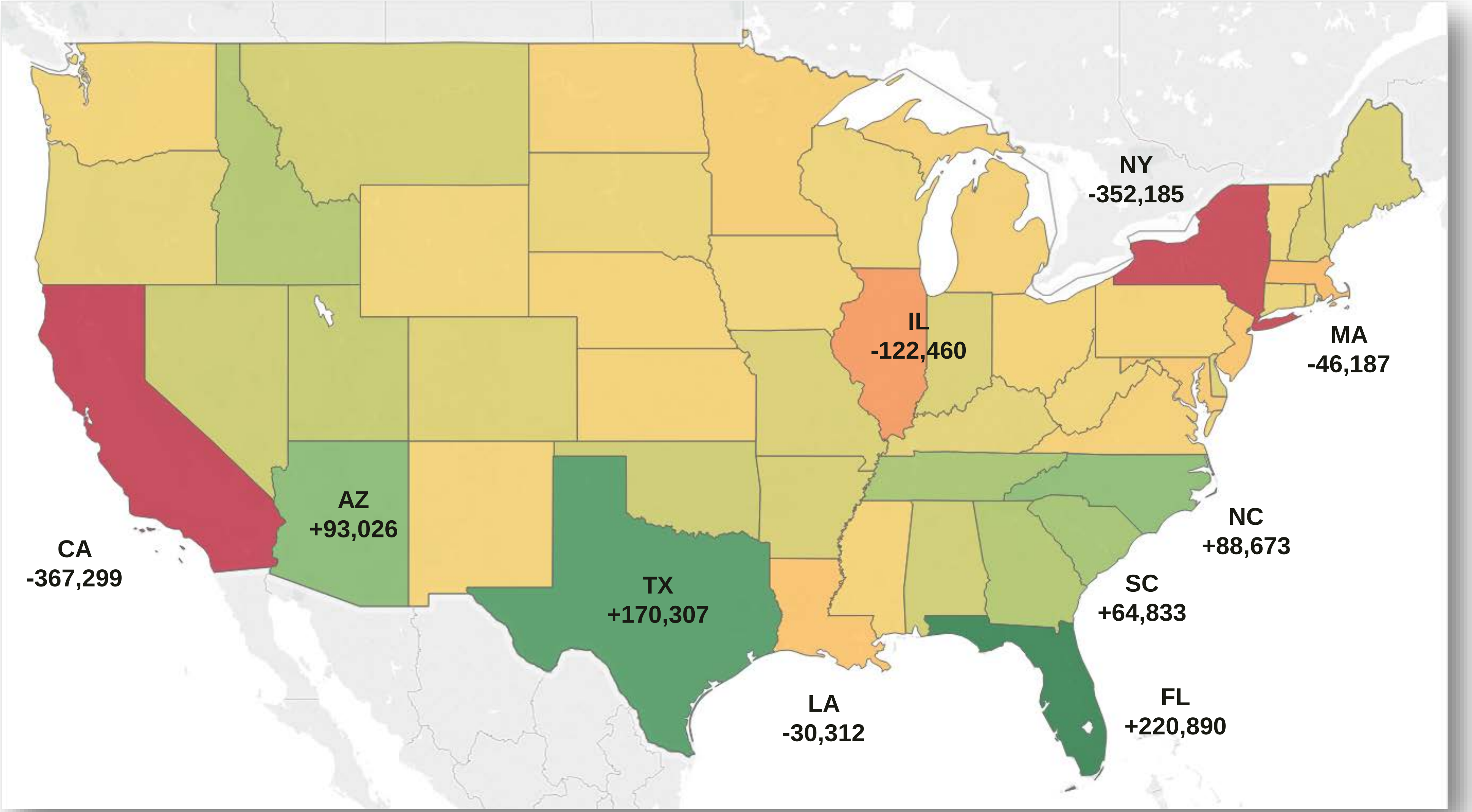
Over the past decade, **food & beverage, chemical, computer & electronics, and transportation equipment** has led the manufacturing construction segment.

FMI Q3 2022 Forecast

# FOLLOW THE PEOPLE

Population Movement by State
Total net migration 2001- 2021

- **Five of the top 10 largest-gaining counties in 2021, were in Texas.** Collin, Fort Bend, Williamson, Denton and Montgomery counties gained a combined 145,663 residents.
- **Los Angeles County, California experienced the largest population loss** of any county, losing 159,621 residents in 2021.
- Seventy-one percent of counties (2,218) experienced positive net international migration.
- Four counties crossed the threshold of 100,000 residents in 2021—Cleveland County, North Carolina (100,359), Lancaster County, South Carolina (100,336), Bastrop County, Texas (102,058), and Grant County, Washington (100,297).
- Los Angeles County, California (9,829,544) and Cook County, Illinois (5,173,146), had more than 5 million residents in 2021, making them the top two most populous counties in the nation.

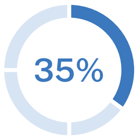



Census

# MORE THAN ONE-IN-THREE CONSTRUCTION DOLLARS ARE SPENT IN JUST 12 MARKETS

Total Construction Spending Put in Place
Metropolitan Statistical Area (MSA); 2021-2025 sum

- Concentration of spending continues in fewer markets
- Old markets move down, and new markets move up
- Megapolitans can equal or rival metropolitans




1. New York

2. Los Angeles

3. Dallas

4. Houston

5. Phoenix

6. Atlanta

7. Seattle

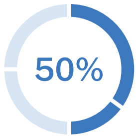
8. Washington, DC

9. San Francisco

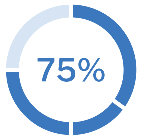
10. Miami

11. Chicago

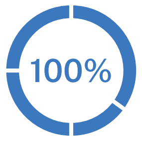
12. Riverside


13. Denver
14. Austin
15. Boston
16. Philadelphia
17. Orlando
18. Tampa
19. Minneapolis
20. Charlotte
21. San Diego
22. Portland

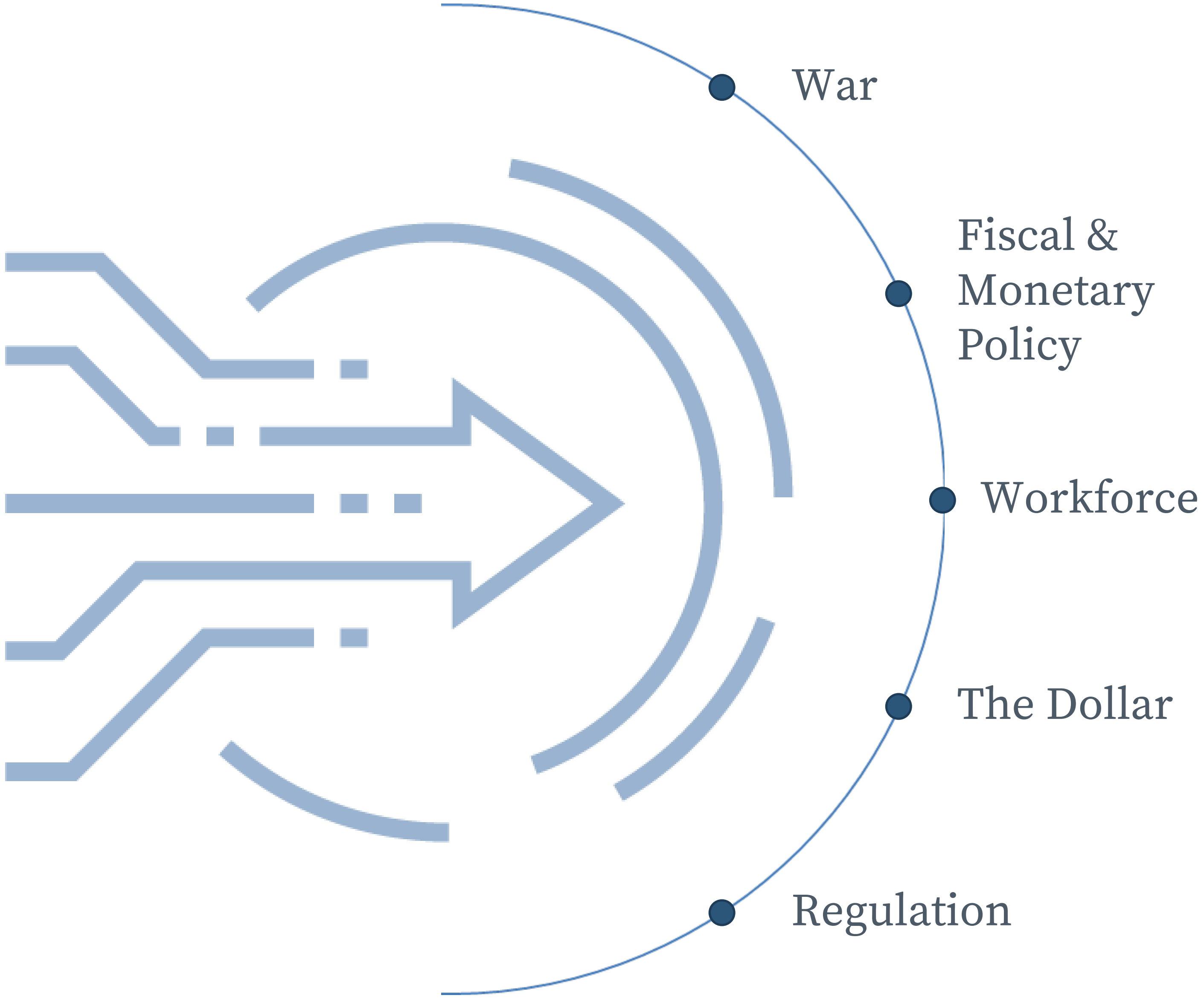



24. Sacramento
25. San Jose
26. Las Vegas
27. Nashville
28. Jacksonville
29. Salt Lake City
30. Detroit
31. Raleigh
32. San Antonio
33. Baltimore
34. Indianapolis
35. St. Louis
36. Sarasota
37. Kansas City
38. Columbus
39. Boise
40. Provo
41. Cincinnati
42. Fort Myers
43. Virginia Beach
44. Pittsburgh
45. Richmond
46. Ogden
47. Charleston
48. Cleveland
49. Oklahoma City
50. Tucson
51. Memphis
52. Colorado Springs
53. Lakeland
54. Milwaukee
55. Greenville
56. Honolulu
57. Naples
58. Providence
59. Louisville
60. Stockton
61. Myrtle Beach
62. Columbia
63. Daytona Beach
64. Grand Rapids
65. Knoxville
66. Fresno
67. Durham
68. Reno
69. Birmingham
70. Melbourne




71. New Orleans
72. Port St. Lucie
73. Omaha
74. Tulsa
75. Rochester
76. Oxnard
77. Hartford
78. Greensboro
79. Bakersfield
80. Worcester
81. Des Moines
82. Spokane
83. Albuquerque
84. Fayetteville
85. Albany
86. Buffalo
87. Madison
88. Baton Rouge
89. Greeley
90. El Paso
91. Bridgeport
92. Winston-Salem
93. Portland
94. McAllen
95. Allentown
96. Boulder
97. Santa Rosa
98. Asheville
99. Fort Collins
100. Augusta
101. Pensacola
102. St. George
103. Ocala
104. Chattanooga
105. Salisbury
106. Huntsville
107. Little Rock
108. Harrisburg
109. Savannah
110. New Haven
111. Fort Walton Beach
112. Killeen
113. Wilmington
114. Salem
115. Bend
116. Vallejo
117. Lexington
118. Dayton
119. Spartanburg
120. Wichita
121. Lancaster
122. Springfield
123. Bremerton
124. The Villages
125. Syracuse
126. Santa Barbara
127. Olympia
128. Manchester
129. Eugene
130. Modesto
131. Tallahassee
132. Springfield
133. Akron
134. Visalia
135. San Luis Obispo
136. Sioux Falls
137. Salinas
138. Toledo
139. Jackson
140. Fort Wayne
141. Prescott
142. Bellingham
143. Scranton
144. Kennewick
145. Anchorage
146. Hilton Head Island
147. Corpus Christi
148. Punta Gorda
149. Trenton
150. Daphne
151. Hickory
152. Brownsville
153. Coeur d'Alene
154. Ann Arbor
155. York
156. Green Bay
157. Gainesville
158. Fargo
159. Lafayette
160. Clarksville
161. Gainesville
162. Lubbock
163. Lincoln
164. Mobile
165. Vero Beach
166. Medford
167. Gulfport
168. College Station
169. Santa Cruz
170. Beaumont
171. Kahului
172. Laredo
173. Logan
174. Lake Havasu City
175. Charlottesville
176. Fayetteville
177. Rochester
178. Lansing
179. Reading
180. Midland
181. Montgomery
182. Roanoke
183. Amarillo
184. Merced
185. Shreveport
186. Idaho Falls
187. Waco
188. Panama City
189. Elkhart
190. Hagerstown
191. Billings
192. Youngstown
193. Chico
194. Grand Junction
195. Davenport
196. Cedar Rapids
197. Evansville
198. Columbus
199. Burlington
200. Barnstable Town
201. Tyler
202. Athens (Go Dawgs)
203. Kalamazoo
204. Yakima
205. Canton
206. Appleton
207. St. Cloud
208. Kingsport
209. Dover
210. Duluth
211. Lynchburg
212. Atlantic City
213. South Bend
214. Yuma
215. Homosassa Springs
216. Warner Robins
217. Burlington
218. Rockford
219. Flagstaff
220. Missoula
221. Mount Vernon
222. Peoria
223. Napa
224. Pueblo
225. Jacksonville
226. Tuscaloosa
227. Las Cruces
228. Norwich
229. Auburn
230. Greenville
231. Rapid City
232. Columbia
233. Utica
234. Flint
235. Fort Smith
236. Lafayette
237. Wenatchee
238. Iowa City
239. Macon (Home)
240. Johnson City
241. Florence
242. Longview
243. Odessa
244. Erie
245. Yuba City
246. Redding
247. Lake Charles
248. Winchester
249. Madera
250. Harrisonburg
251. Oshkosh
252. Bismarck
253. Valdosta
254. Huntington
255. Albany
256. Houma
257. Joplin
258. Bowling Green
259. Sioux City
260. Eau Claire
261. El Centro
262. Racine
263. Santa Fe
264. Champaign
265. Dalton
266. Abilene
267. Topeka
268. Waterloo
269. Blacksburg
270. Longview
271. Binghamton
272. Janesville
273. Wausau
274. Cleveland
275. La Crosse
276. Bloomington
277. Jackson
278. Sherman
279. Jonesboro
280. Muskegon
281. Hammond
282. Cheyenne
283. New Bern
284. California
285. Brunswick
286. Chambersburg
287. Hanford
288. Rocky Mount
289. Morristown
290. Ocean City
291. Monroe
292. Mankato
293. Springfield
294. San Angelo
295. State College
296. Kingston
297. Elizabethtown
298. Staunton
299. Saginaw
300. Sierra Vista
301. Charleston
302. Jefferson City
303. Bangor
304. Dothan AL
305. Lebanon
306. Ithaca
307. Albany
308. Bloomington
309. Dubuque
310. Sheboygan
311. Vineland
312. Glens Falls
313. Monroe
314. Pocatello
315. East Stroudsburg
316. Jackson
317. Wichita Falls
318. Goldsboro
319. Grants Pass
320. Pittsfield
321. Texarkana
322. Corvallis
323. Alexandria
324. Decatur
325. Grand Forks
326. Florence
327. Owensboro
328. Columbus
329. Niles
330. Casper
331. Gettysburg
332. St. Joseph
333. Terre Haute
334. Altoona
335. Sebring
336. Sumter
337. Lewiston
338. Hattiesburg
339. Fond du Lac
340. Rome
341. Hinesville
342. Victoria
343. Great Falls
344. Walla Walla
345. Lawrence
346. Lewiston
347. Carson City
348. Ames
349. Battle Creek
350. Morgantown
351. Grand Island
352. Cape Girardeau
353. Williamsport
354. Mansfield
355. Johnstown
356. Watertown
357. Bloomsburg
358. Carbondale
359. Farmington
360. Springfield
361. Lima
362. Michigan City
363. Kankakee
364. Anniston
365. Wheeling
366. Decatur
367. Manhattan
368. Muncie
369. Kokomo
370. Gadsden
371. Elmira
372. Cumberland
373. Hot Springs
374. Midland
375. Fairbanks
376. Lawton
377. Bay City
378. Beckley
379. Weirton
380. Parkersburg
381. Pine Bluff
382. Danville

# INDUSTRY HEADWINDS




- Supply disruptions
- Cyber attacks

- Inflation
- Interest rate increases
- Asset price corrections

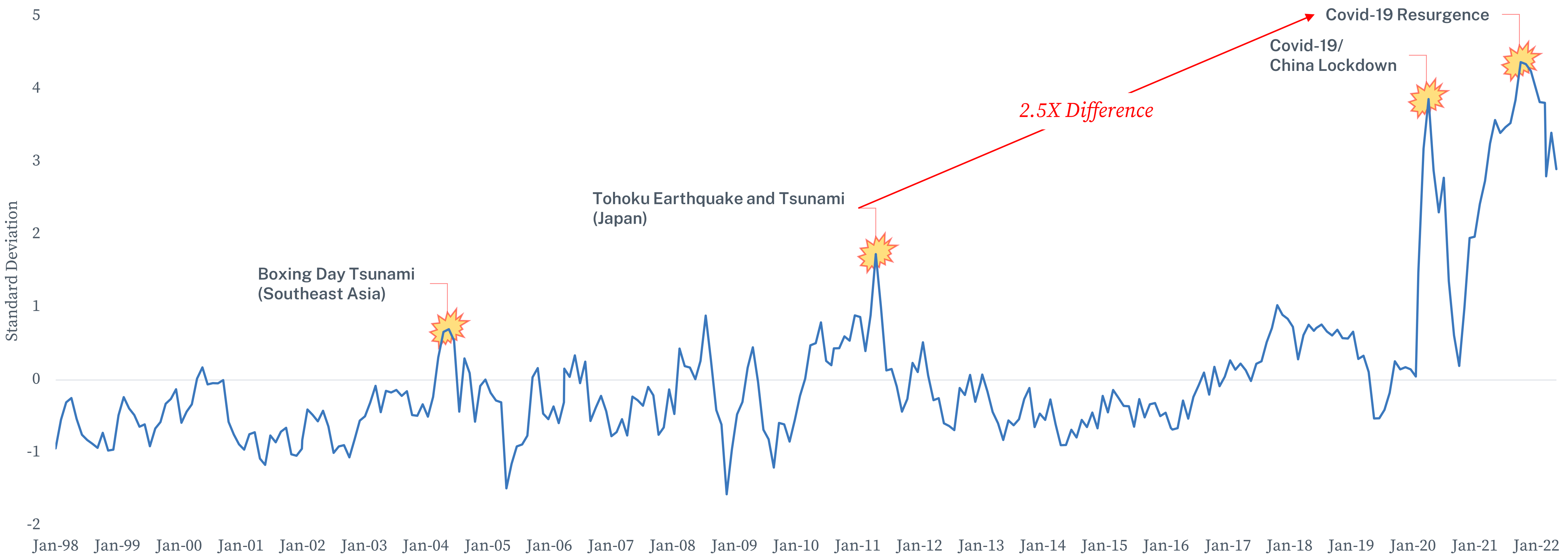
- Residential bust
- Asset price corrections

- Export reductions
- World reserve currency status


- Compliance
- Environmental

# SUPPLY CHAINS ARE UNDER RECORD STRESS

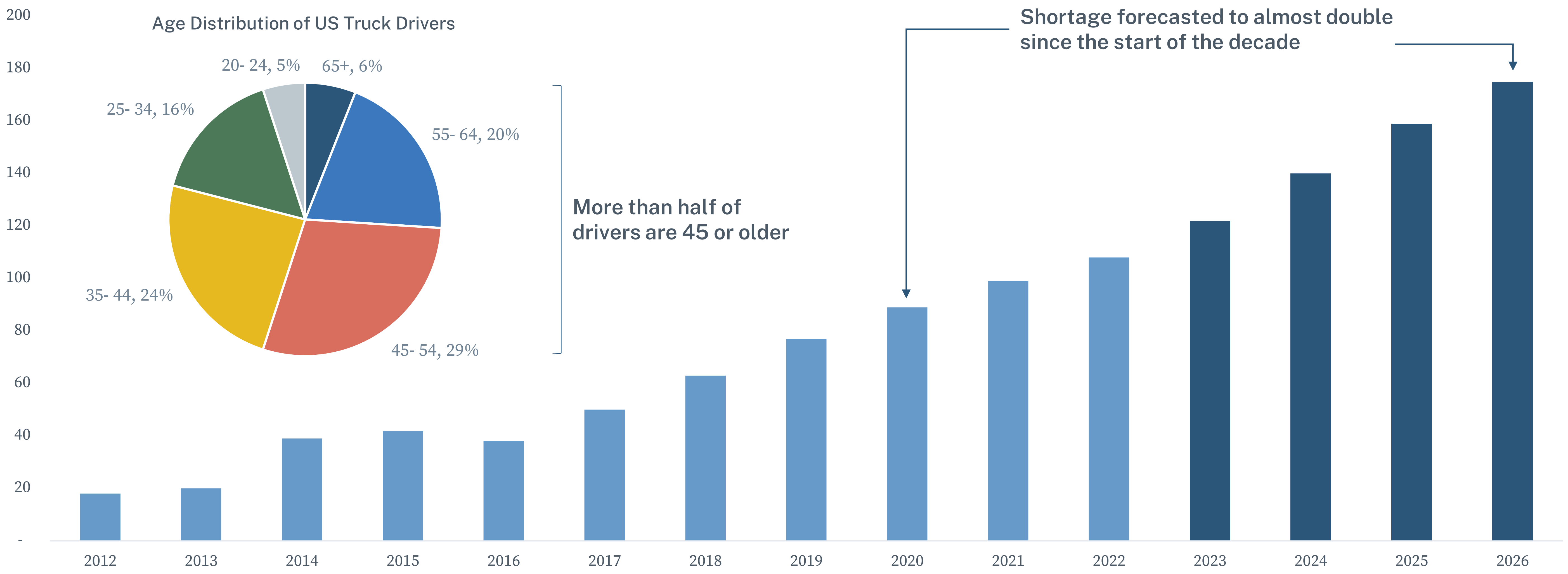
Global Supply Chain Pressure Index
Standard deviation from the mean




New York Federal Reserve

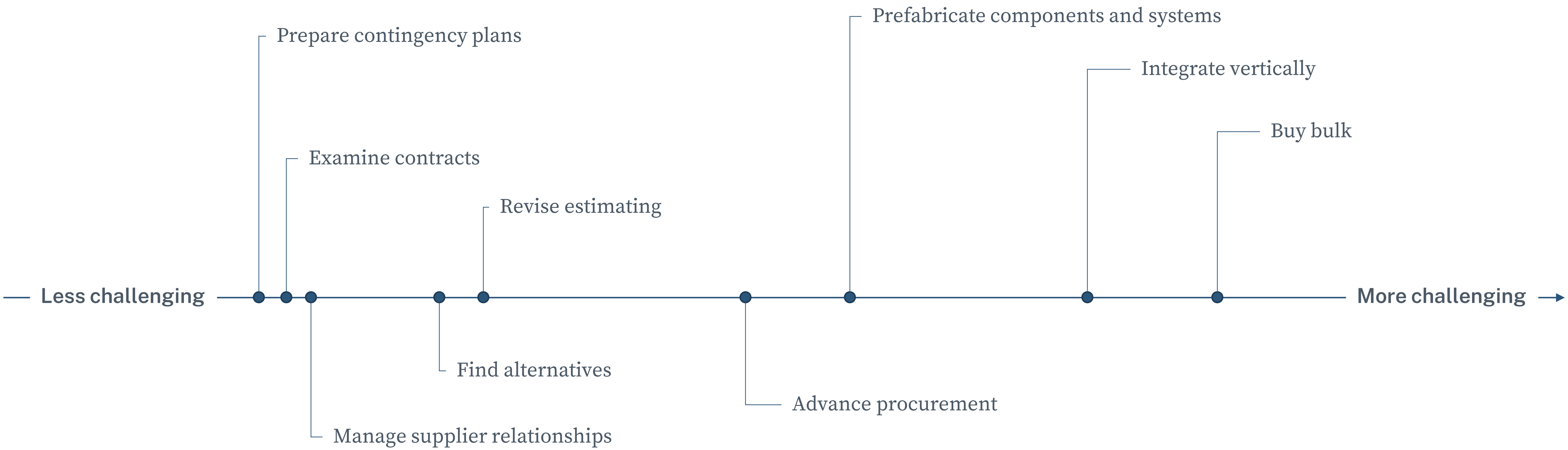
# IS TRANSPORTATION THE REAL PROBLEM?

US Truck Driver Shortage
Thousands of drivers



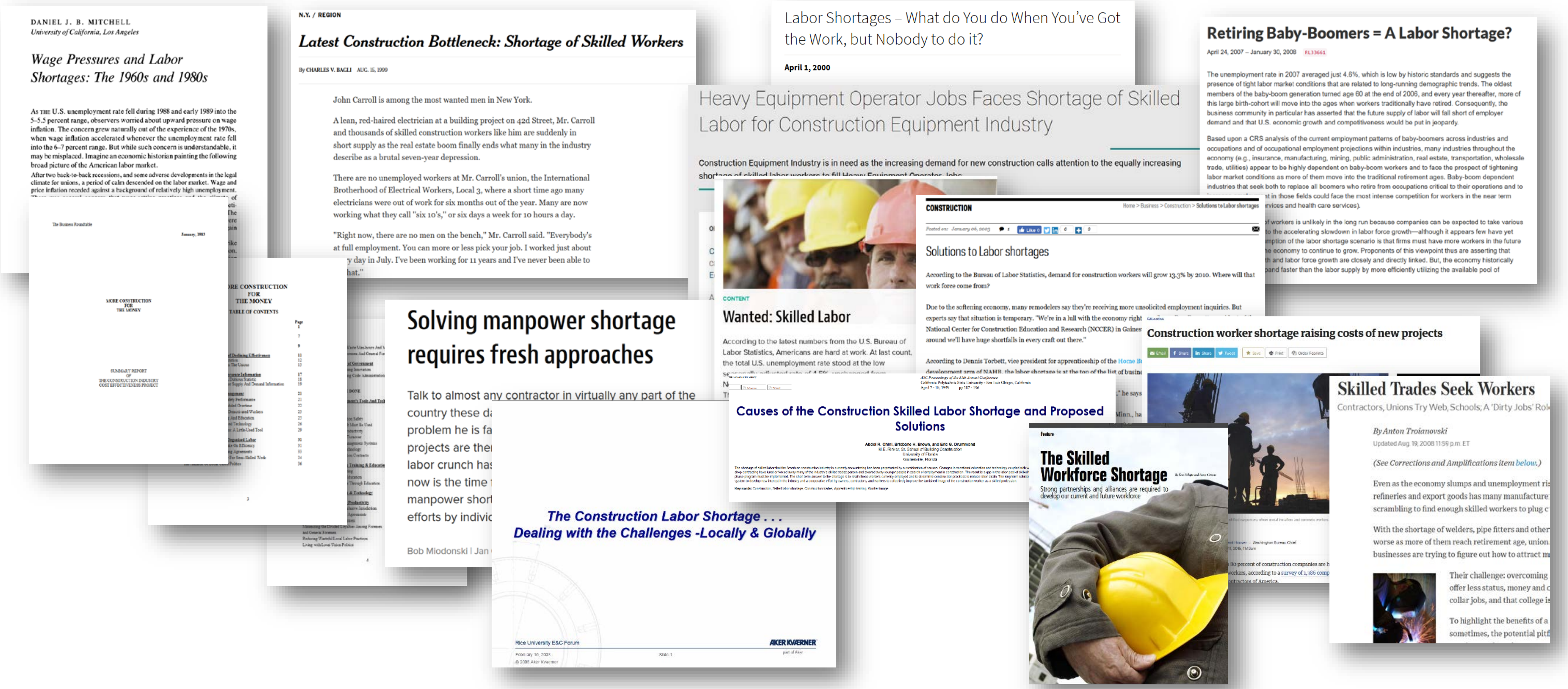

American Trucking Association, BLS

# SCRAMBLING FOR ANSWERS



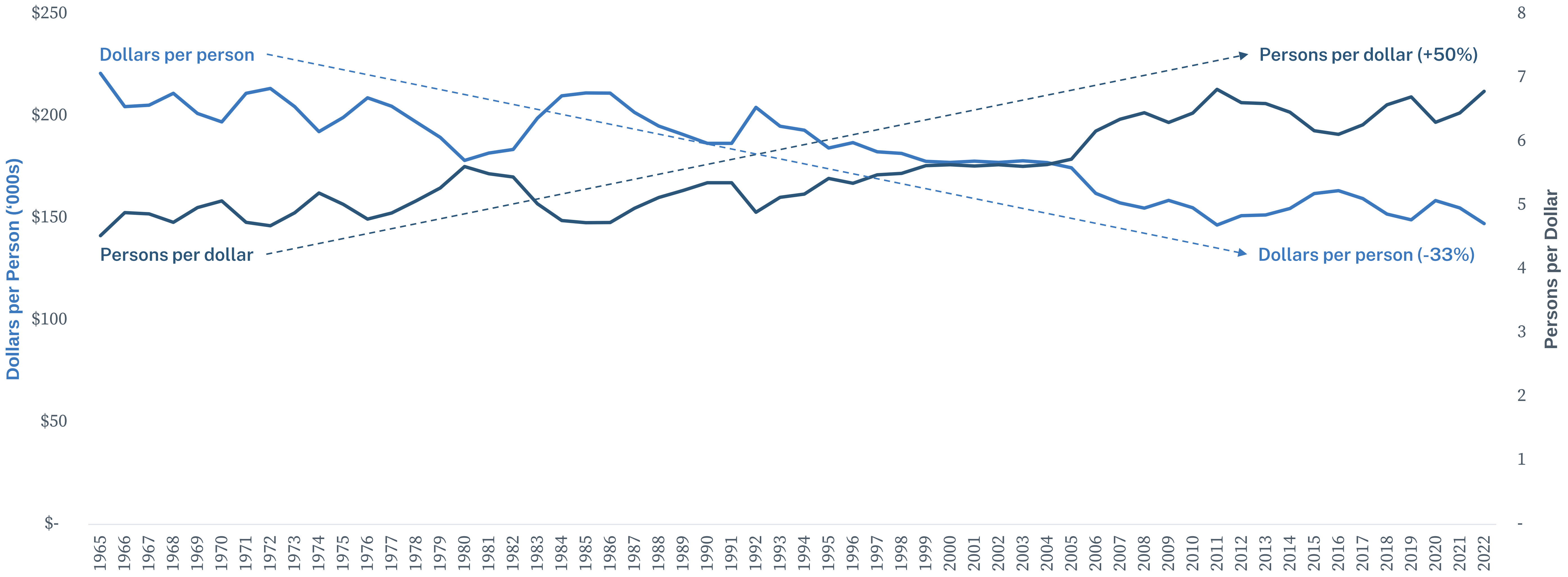

**Regardless of tactics, contractors must design strategies for labor, materials, and costs.**

# “WE DO NOT HAVE A LABOR SHORTAGE PROBLEM IN THE CONSTRUCTION INDUYSTRY”



# INCREASING PROJECT COMPLEXITIES DEMAND MORE LABOR… BUT MUST THEY?

Construction Employment vs. Construction Spending in the US
Constant dollar basis (2012)




BLS, FMI

*Many in today's construction industry have neither managed or led through a significant downturn, and almost no one has managed during an extreme inflationary environment.*

# CONTRACTORS BENEFIT GREATLY FROM ENGAGED EMPLOYEES

1. **Increased productivity**
   *Individual productivity improves by 15% to 20%*

2. **Higher quality**
   *Rework can be reduced by up to 25%*

3. **Fewer safety incidents**
   *Safety incidents may be reduced by roughly 33%*

4. **Superior customer service**
   *Repeat work can increase more than 50%*

5. **Lower absenteeism**
   *Poor engagement results in 30%-plus higher absenteeism*

6. **Reduced turnover**
   *Employee retention improves by almost 40%*

7. **Greater profitability**
   *Contractors with highly engaged employees experience 20% to 25% greater job profitability*

FMI analysis of multiple sources

# REDUCING EMPLOYEE TURNOVER SAVES SIGNIFICANT DOLLARS

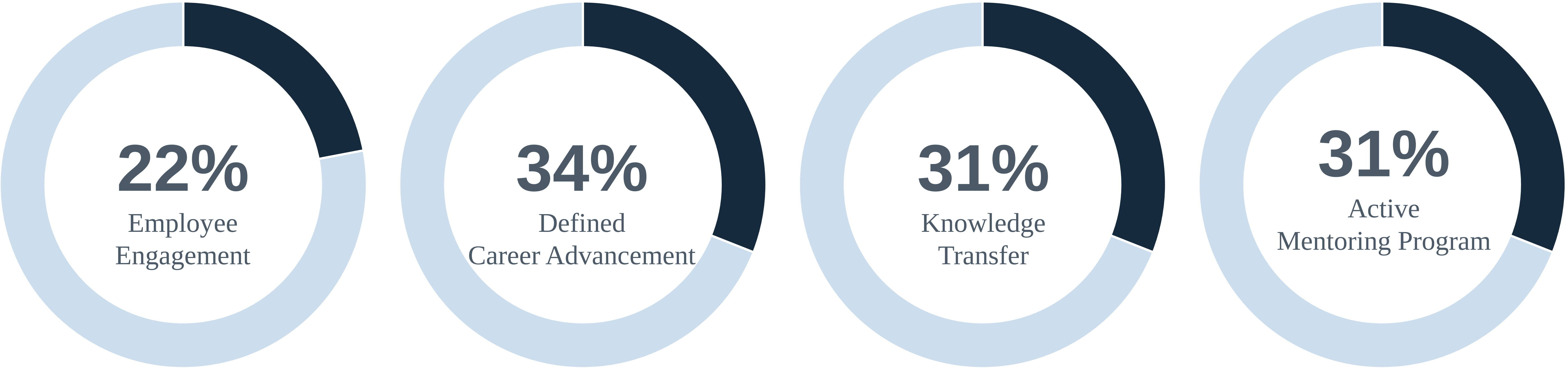
Estimated Cost of Employee Turnover for the Average US Contractor
Assumes a 500-person organization

| **21%**<br>Estimated Voluntary Turnover Rate | | **33%**<br>Cost to Replace (of salary) | | **$**<br>Total Cost/ Savings |
|---|---|---|---|---|
| **30%**<br>Project Management | **50%**<br>Field Labor | **$93,370**<br>Project Management | **$34,810**<br>Field Labor | |
| *Average Employee Engagement* | | | | |
| 32 | 53 | $985,987 | $608,827 | $1,594,814 |
| *Above Average Employee Engagement* (12.5% estimated voluntary turnover rate) | | | | |
| 19 | 31 | $585,430 | $356,106 | $941,536/ **$653,278** |

Other "hidden" costs…
- Loss of customers
- Loss of knowledge
- Loss of morale

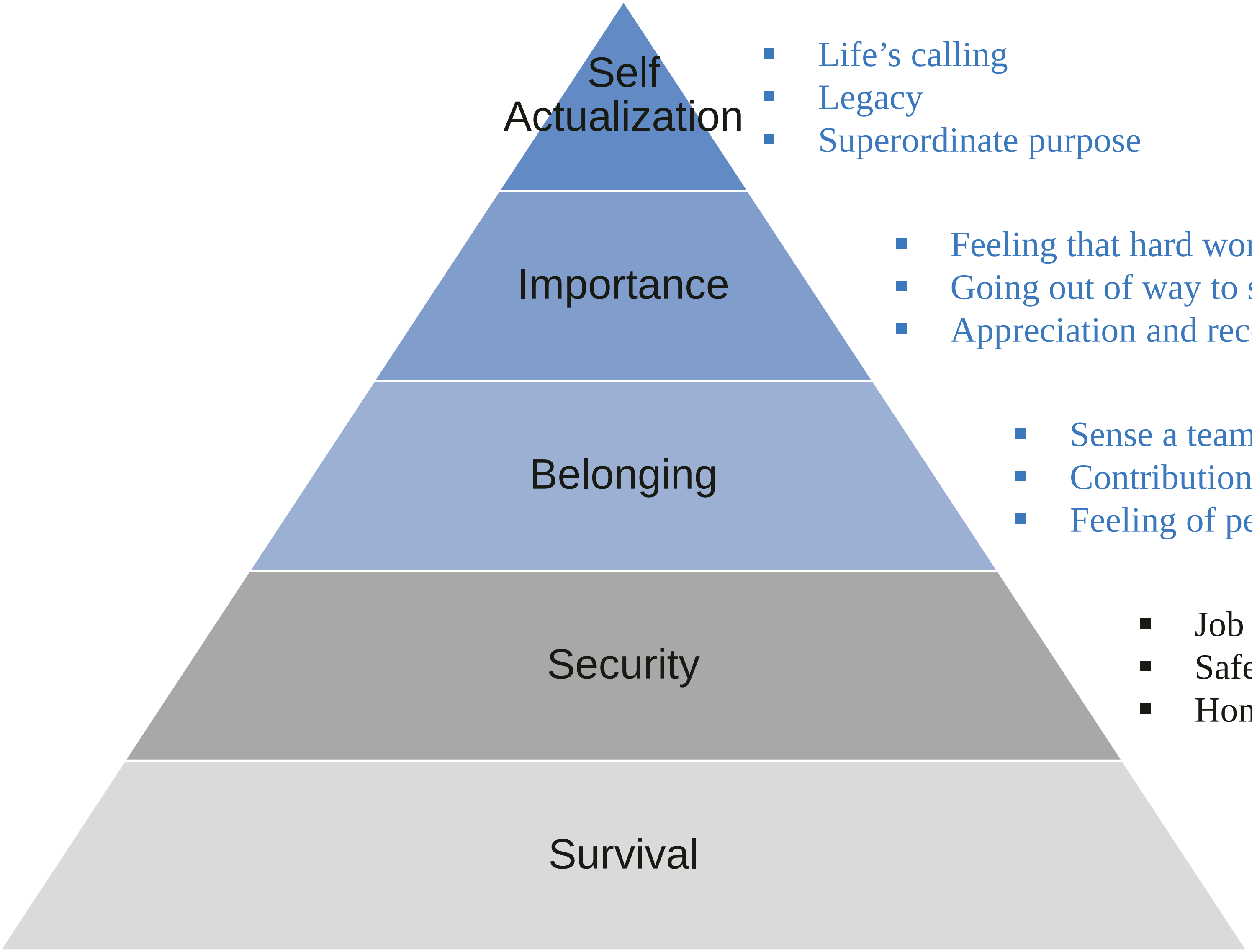
# LESS THAN 25% HAVE AN ACTIVE EMPLOYEE ENGAGEMENT STRATEGY

Which of the following does your organization have formal plans for?
FMI survey of multifamily and nonresidential building/ infrastructure contractors



# MASLOW'S HIERACHY OF NEEDS APPLIED TO EMPLOYEE ENGAGEMENT

**Engagement Factors**




- Life's calling
- Legacy
- Superordinate purpose

- Feeling that hard work results in more gain than money
- Going out of way to show family / friends results of work
- Appreciation and recognition from the senior level

- Sense a team / collaborative environment
- Contributions that benefit the organization
- Feeling of personal / professional development

**Basic Needs**

- Job security and savings
- Safe / non-hostile environment
- Honest / ethical leadership

- Ability to make mortgage / rent
- Food for family
- Maintenance of health

# WHAT ELSE SHOULD WE BE CONSIDERING?

1. Understand the customer
2. Recruit the people you have
3. Leverage your strengths to overcome obstacles
4. Develop scenarios based on sustained 10% to 15% increase in cost
5. Build your network
6. Remember what’s not going change in the next five to 10 years
7. Focus on the WIN – “What’s Important Now?”

# Thank you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Wreck Diving the Felipe Xicotencatl C-53
Cozumel, Mexico – December 2020

### Mike Clancy, Partner & Strategy Practice Lead

Mike Clancy is a partner and senior executive with FMI, the world's oldest and largest provider of management consulting, investment banking, and research exclusively for the built environment. As the leader of FMI's Strategy Practice, he counsels domestic and international clients in the AEC industry on market-related strategies.

Mike has led consulting engagements with global EPC firms, several of North America's building trades unions, and with contractors of all size and scope. In addition to solving complex strategic challenges for his industry clients, Mike has expertise in work acquisition, project controls, and asset management.

A highly regarded keynote speaker, Mike is frequently tapped to present at the nation's largest industry conferences. He has led or co-authored many of FMI's publications on the topic of strategy and serves on FMI's Economic Advisory group where his insight into emerging industry trends and dynamics helps drives FMI's future research.

Mike is a U.S. Army Infantry veteran, earned his Master of Business Administration degree with concentrations in Competitive Strategy and Finance from the University of Florida, and his undergraduate degree from the University of Florida in construction management. In his spare time, Mike is an avid SCUBA diver and has dived off the coast of four continents.

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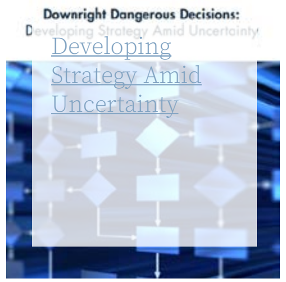
## Thought Leadership

The Changing Game of Strategy


The Last Normal Day


Downright Dangerous Decisions




Our Latest Construction Outlook – Download

FMI Consulting

FMI is a leading consulting and investment banking firm dedicated exclusively to the built environment. We serve as the industry's trusted advisor, providing current market insights, deep industry research and key relationships that deliver tangible results for our clients.


**Denver**
44 Cook Street
Suite 900
Denver, Colorado 80206
303.377.4740

**Houston**
1301 McKinney Street
Suite 2000
Houston, TX 77010
713.936.5400

**Raleigh**
223 S. West Street
Suite 1200
Raleigh, NC 27603
919.787.8400

**Tampa**
4300 W. Cypress Street
Suite 950
Tampa, FL 33607
813.636.1364

# APPENDIX

Segment Forecasts, U.S. & Canada

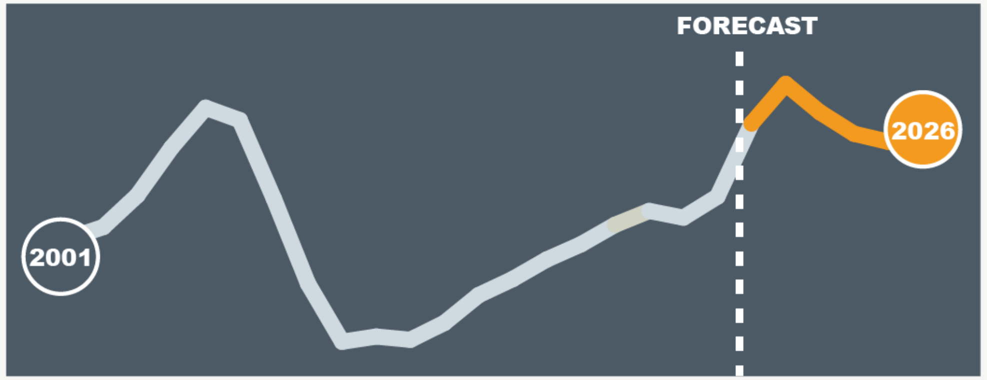
# Residential Construction Put in Place

# Single-Family Residential

**13%**

**$468 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Unemployment rate
- Core CPI
- Income
- Mortgage rates
- Home prices
- Housing starts
- Housing permits




| | | | |
|---|---|---|---|
| 2023 | DWN | -8% | $429 B |
| 2024 | DWN | -7% | $398 B |
| 2025 | DWN | -3% | $387 B |
| 2026 | STA | 2% | $396 B |

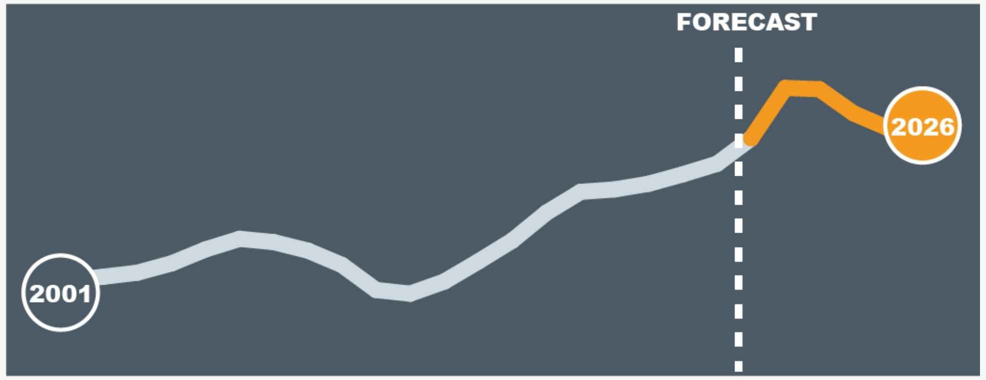
- Builders are retooling operations to reduce customization and luxury options to protect margins and streamline delivery of homes.
- Construction input costs (i.e., materials and labor) will experience ongoing relief through 2023 and 2024.
- Increasing mortgage rates through 2022 will result in ongoing affordability challenges, fewer buyers and rising inventories.
- Competition among sellers is increasing and is expected to moderate home price appreciation while tempering investor interest in single-family assets.

# Multifamily Residential

25%

**$134 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Unemployment rate
- Core CPI
- Income
- Mortgage rates
- Home prices
- Housing starts
- Housing permits




| | | | |
|---|---|---|---|
| 2023 | STA | 0% | $133 B |
| 2024 | DWN | -10% | $121 B |
| 2025 | DWN | -6% | $113 B |
| 2026 | STA | 1% | $114 B |

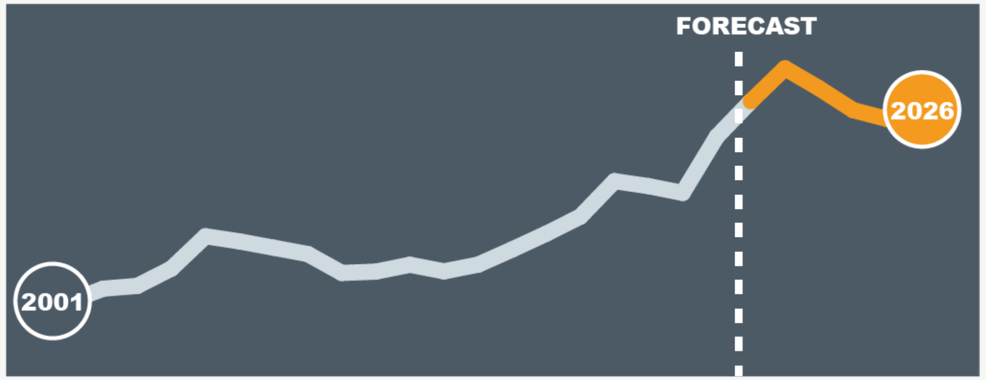
- Homeownership rates are expected to fall as rental activity rises.
- Increasing demand for rentals draws developers back into both urban and suburban multifamily and mixed-use investments.
- Affordable housing projects and rent caps will be encouraged as elevated living costs weigh on lower earners.

# Improvements

**11%**

**$294 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Unemployment rate
- Core CPI
- Income
- Mortgage rates
- Home prices
- Housing starts
- Housing permits




| | | | |
|---|---|---|---|
| 2023 | DWN | -6% | $277 B |
| 2024 | DWN | -7% | $257 B |
| 2025 | DWN | -3% | $250 B |
| 2026 | STA | 1% | $253 B |

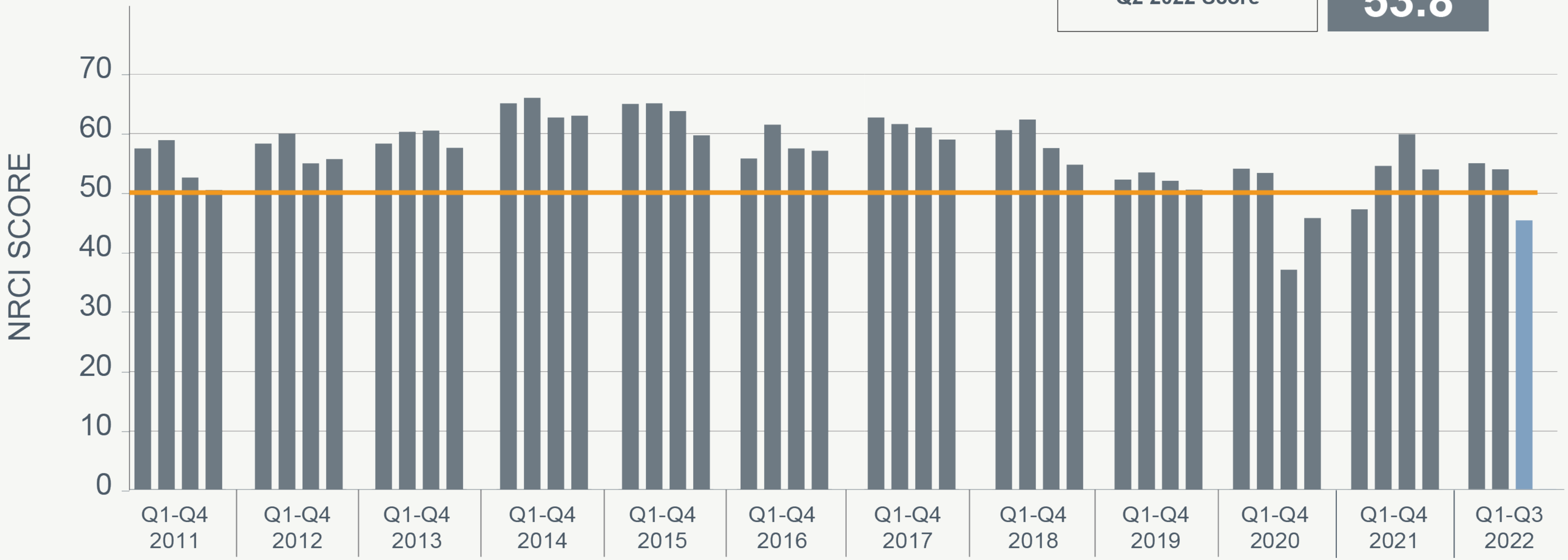
- Reduced home buying and selling, moderated home price appreciation and diminished refinance activity result in less demand for improvement investments.
- Homebuilders will reduce luxury and customization options on new homes, which could help improve demand for some new homeowners.
- Improvements spending will continue to move away from consumers to investor interest in flips and/or rentals.

# Nonresidential Construction Put in Place

# Nonresidential Construction Index (NRCI) Scores Since Inception Q1 2011 to Q3 2022

| Current NRCI Reading for Q3 2022 *(June 9-25)* | 45.2 |
|---|---|
| Q2 2022 Score | 53.8 |

Scores above 50 indicate expansion, scores below 50 indicate contraction.




The data in the NRCI is presented as a sampling of construction industry executives voluntarily serving as panelists for this FMI survey. Responses are based on their experience and opinions, and the analysis is based on FMI's interpretation of the aggregated results.

# Total Nonresidential Construction Spending Put in Place 2021 and Forecast Growth (2021 through 2026) by Construction Segment

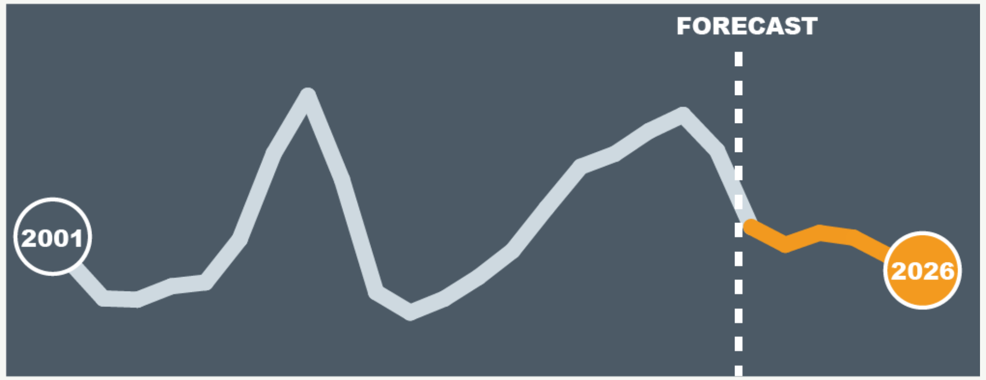

Throughout the value of construction put in place includes the cost of architectural and engineering work.
SOURCE: FMI FORECAST Q3 2022

# Lodging

**-11%**

**$17 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Occupancy rate
- RevPAR
- Average daily rate
- Room starts




| | | | |
|---|---|---|---|
| 2023 | UP | 8% | $19 B |
| 2024 | DWN | -3% | $18 B |
| 2025 | DWN | -12% | $16 B |
| 2026 | DWN | -7% | $15 B |

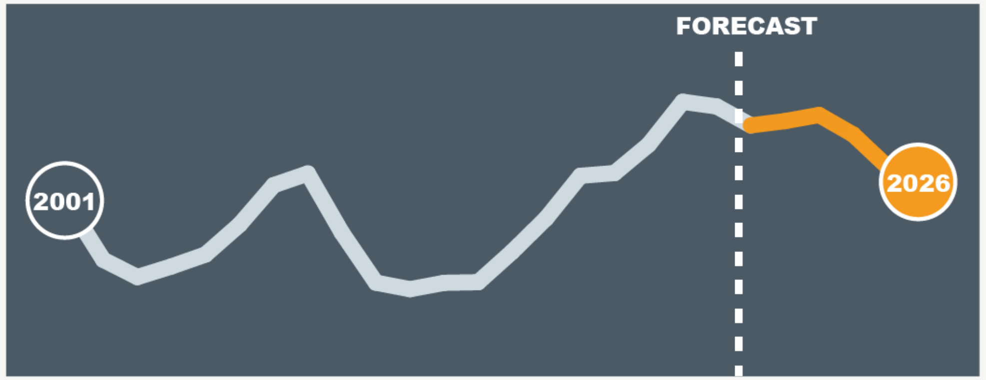
- Average daily rates (ADR) continue to be pushed beyond 2019 levels due to rising labor and overhead costs.
- Central business districts and the top 25 markets are not expected to reach full revenue per available room (RevPAR) recovery until after 2024.
- Deferred maintenance and room upgrades will pick up this year.
- A large wave of future expansionary spending in planning will be challenged by the onset of recession through the remainder of 2022 into 2023.

# Office

# 1%

**$83 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Office vacancy rate
- Unemployment rate




| | | | |
|---|---|---|---|
| 2023 | STA | 2% | $85 B |
| 2024 | DWN | -6% | $80 B |
| 2025 | DWN | -11% | $70 B |
| 2026 | DWN | -4% | $68 B |

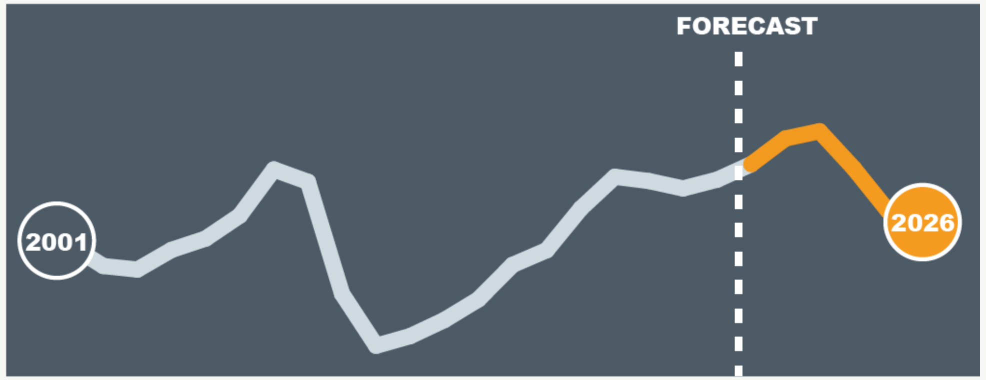
- Data centers (a subset of office) will continue to outperform traditional office space over the forecast period.
- Owners will increasingly look to scale back square footage needs over the coming years, while reorganization lends to some short-term investment in renovations.
- Earnings pressures continue to fuel corporate relocations through 2023 and 2024 as companies leave expensive coastal markets (i.e., California).

# Commercial

↑ 8%

**$98 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Retail sales
- CPI
- Income
- Home prices
- Housing starts




| | | | |
|---|---|---|---|
| 2023 | STA | 2% | $100 B |
| 2024 | DWN | -10% | $90 B |
| 2025 | DWN | -13% | $78 B |
| 2026 | DWN | -4% | $75 B |

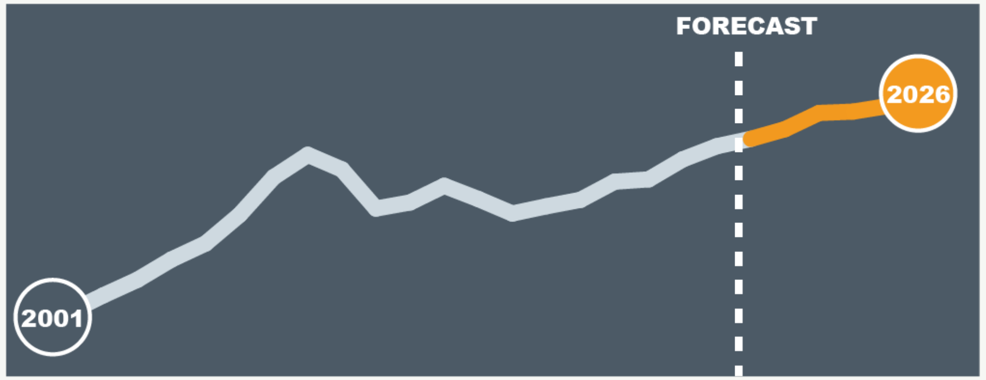
- Discretionary spending on retail goods will be reduced by the loss of inflation-led purchasing power and softening economic conditions.
- Poor earnings and higher interest rates put many retailers at risk of failure.
- National chains and big-box retailers continue renovations to implement efficiencies across online customer pickup and same-day delivery services.
- Logistics infrastructure and warehousing (a subset of commercial) will become less active over the coming years as major owners (i.e., Amazon) pause expansionary investments.

# Health Care

# 3%

**$51 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Population change
- Population change in ages 75 and up
- Uninsured population
- Government spending
- Nonresidential structure investment




| | | | |
|---|---|---|---|
| 2023 | UP | 5% | $53 B |
| 2024 | STA | 0% | $53 B |
| 2025 | STA | 1% | $54 B |
| 2026 | STA | 1% | $54 B |

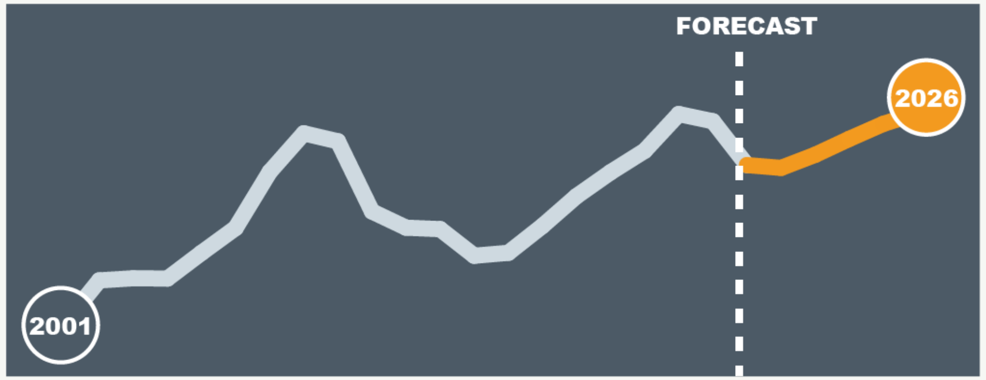
- Driven by increased demand for hospital and medical office facilities, health care remains the only institutional segment to experience growth in construction spending through 2022.
- Significant hospital investments are in planning stages across many major metropolitan areas, supported by aging and/or expanding populations, but also increasingly challenged by rising operating expenses (i.e., wages) and construction costs.
- Specialty care and nursing home investments remain depressed with ongoing disruptions by advancements in home care services and associated technologies.

# Educational

-1%

$98 BILLION
2022/2021 Comparison

**DRIVERS:**
- Population change younger than age 18
- Population change ages 18-24
- Stock markets
- Government spending
- Nonresidential structure investment




| | | | |
|---|---|---|---|
| 2023 | STA | 3% | $100 B |
| 2024 | STA | 3% | $104 B |
| 2025 | STA | 3% | $107 B |
| 2026 | STA | 2% | $109 B |

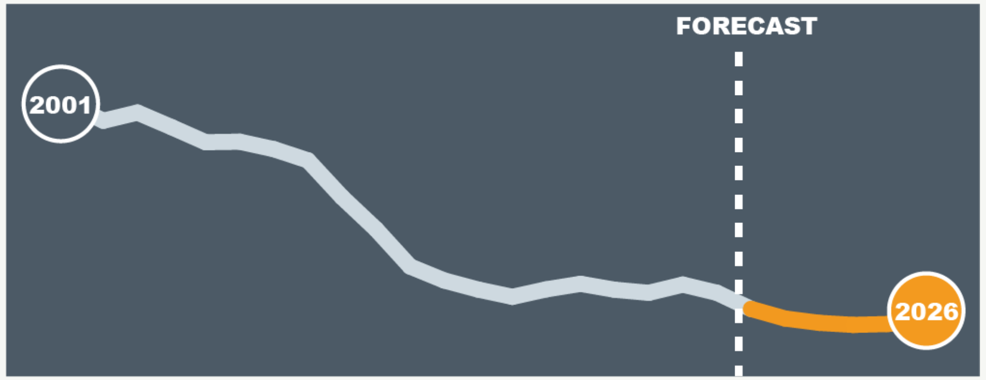
- Short-term activity will be led by K-12 and private higher education owners.
- Higher education enrollments are expected to remain depressed through the outlook period.
- Recessionary economic factors will encourage student loan forgiveness and other programs that will spur demand for enrollments over the coming years.

# Religious

-9%

$3 BILLION
2022/2021 Comparison

**DRIVERS:**
- GDP
- Population
- Income
- Personal savings




| | | | |
|---|---|---|---|
| 2023 | DWN | -4% | $3 B |
| 2024 | DWN | -2% | $3 B |
| 2025 | STA | 1% | $3 B |
| 2026 | STA | 3% | $3 B |

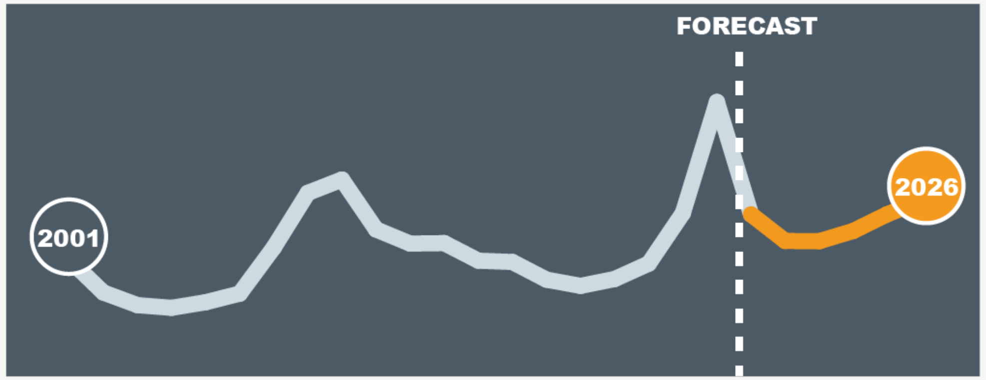
- The increasing number of religious services offered as COVID-19 restrictions have lifted has not resulted in a corresponding rise in membership or attendance.
- Opportunities for renovations and/or acquisitions of vacant worship, lodging, office and retail spaces will become more practical and attractive over the coming years.

# Public Safety

**-12%**

**$11 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Population
- Government spending
- Incarceration rate
- Nonresidential structure investment




| | | | |
|---|---|---|---|
| 2023 | STA | 0% | $11 B |
| 2024 | UP | 5% | $11 B |
| 2025 | UP | 8% | $12 B |
| 2026 | UP | 6% | $13 B |

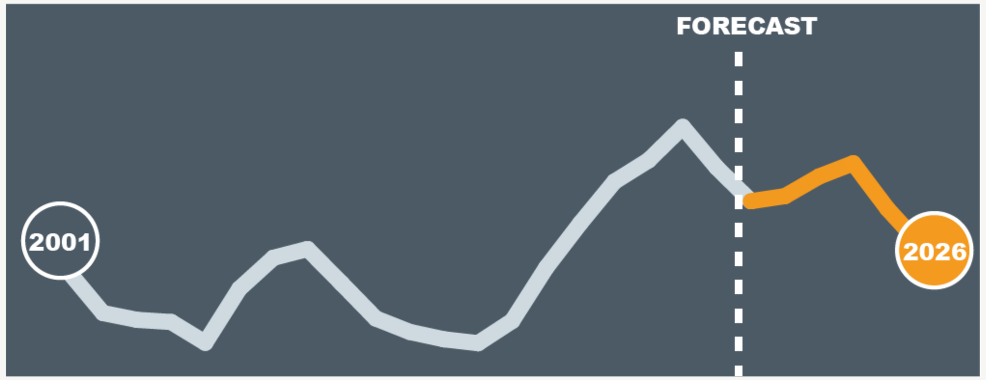
- Addressing rising crime is expected to be in focus throughout midterm elections.
- Ongoing and increased military and correctional spending is anticipated over the coming years.

# Amusement and Recreation

**1%**

**$26 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Income
- Personal savings rate
- Unemployment rate
- Employment




| | | | |
|---|---|---|---|
| 2023 | UP | 5% | $27 B |
| 2024 | STA | 3% | $28 B |
| 2025 | DWN | -11% | $25 B |
| 2026 | DWN | -11% | $22 B |

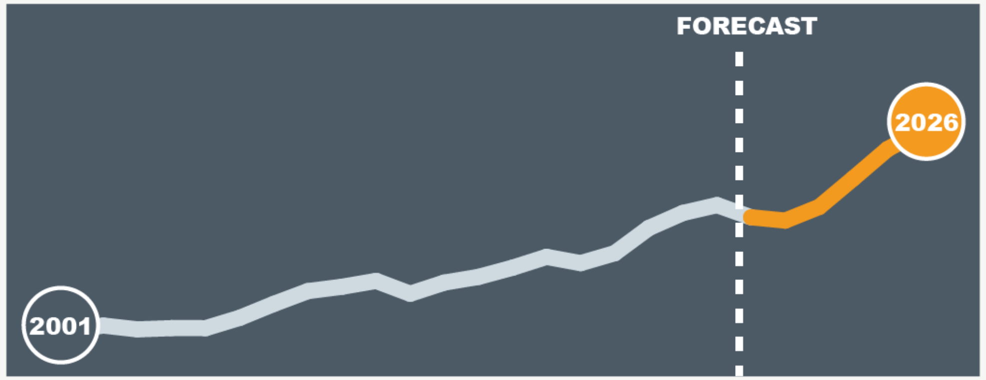
- Industry revenue will suffer well into next year amid rising costs for nondiscretionary expenses (i.e., food, energy, shelter) and softening economic conditions.
- High transportation costs and reduced consumer spending will support less significant investments into local parks, social centers, and music and sports venues.
- Business travel will remain depressed through the forecast period.

# Transportation

-2%

$55 BILLION
2022/2021 Comparison

DRIVERS:
- Population
- Government spending
- Transportation funding




| | | | |
|---|---|---|---|
| 2023 | UP | 7% | $59 B |
| 2024 | UP | 14% | $67 B |
| 2025 | UP | 12% | $75 B |
| 2026 | UP | 7% | $81 B |

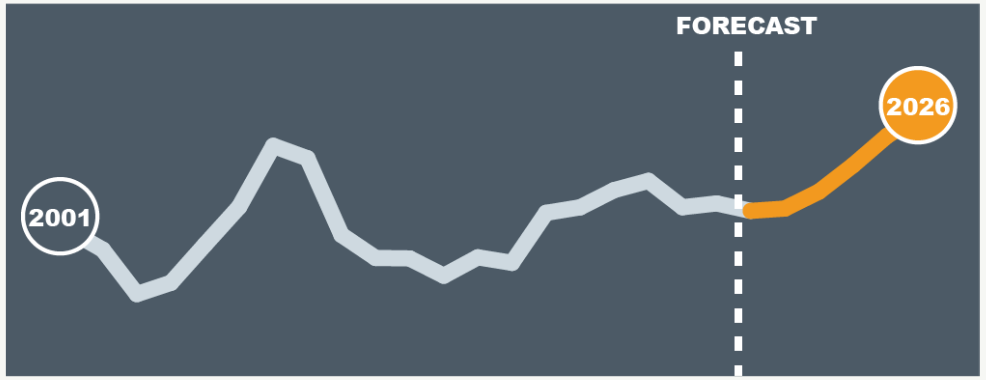
- Both business and leisure travel will remain depressed through the forecast period as the economy softens, travel costs rise and discretionary spending falls.
- Public transit projects will become increasingly important to healthy and expanding markets.
- Electrification investments into transportation systems will be backed by Infrastructure Investment and Jobs Act (IIJA) funds.

# Communication

1%

$22 BILLION
2022/2021 Comparison

**DRIVERS:**
- Population
- Security and regulation standards
- Private investment
- Innovation and technology investment




| | | | |
|---|---|---|---|
| 2023 | UP | 7% | $24 B |
| 2024 | UP | 10% | $26 B |
| 2025 | UP | 10% | $28 B |
| 2026 | UP | 7% | $30 B |

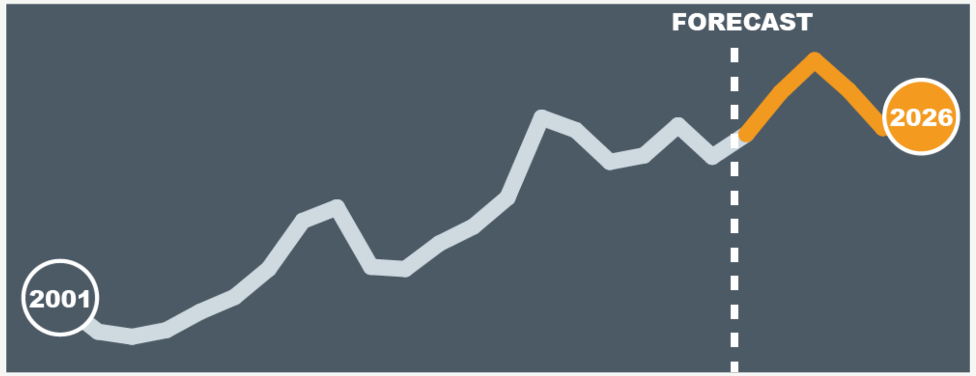
- Investment demand overlaps with growth across connected devices, data centers (i.e., office), and logistics and distributions investment.
- Changing consumer and business behaviors (e.g., hybrid working, learning, entertainment, and ecommerce experiences) will drive increased demand for flexible and fast networks.

# Manufacturing

↑15%

$90 BILLION
2022/2021 Comparison

**DRIVERS:**
- PMI
- Industrial production
- Capacity utilization
- Durable goods orders
- Manufacturing inventories




| | | | |
|---|---|---|---|
| 2023 | UP | 10% | $99 B |
| 2024 | DWN | -9% | $91 B |
| 2025 | DWN | -12% | $80 B |
| 2026 | STA | 2% | $82 B |

- Manufacturing investment is expected to remain strong over the next 18 to 24 months due to producers addressing domestic demand in a climate of elevated prices, input shortages and rising trade tensions.
- International supply chain constraints are expected to remain in place well into 2023.
- Reduced demand for manufactured goods will challenge future investment over the coming years as economic conditions continue to soften.

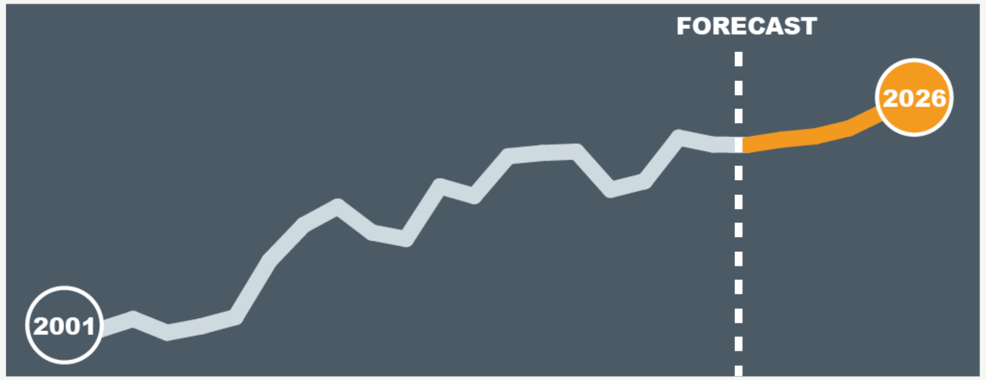
# Nonbuilding Structures Construction Put in Place

# Power

# 2%

**$117 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Population
- Industrial production
- Government spending




| | | | |
|---|---|---|---|
| 2023 | STA | 1% | $118 B |
| 2024 | STA | 3% | $122 B |
| 2025 | UP | 6% | $129 B |
| 2026 | STA | 3% | $133 B |

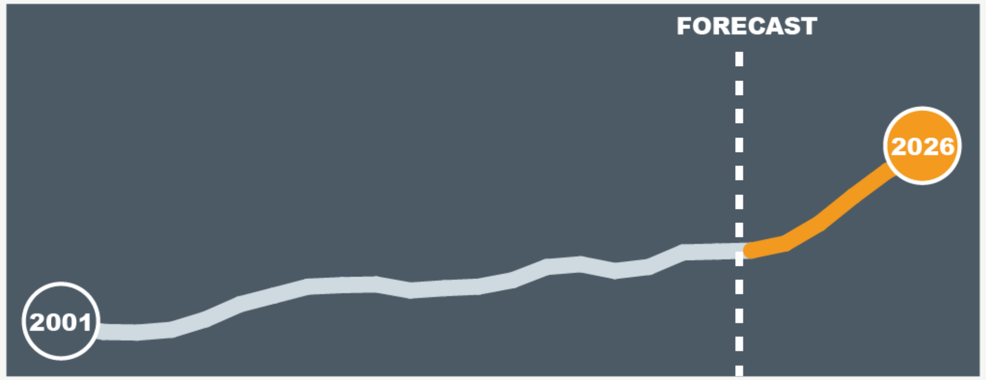
- Ongoing geopolitical disruptions cause high energy prices through the second half of 2022.
- Supply chain disruptions and resource limitations lead to investment delays across renewable energy, energy storage, microgrids and distributed generation.
- The recent U.S. Supreme Court ruling limiting the Environmental Protection Agency's (EPA) oversight of existing power plant carbon emissions will dampen renewable investments over the coming years.

# Highway and Street

**4%**

**$104 BILLION**

**DRIVERS:**
- Population
- Government spending
- Nonresidential structure investment




| | | | |
|---|---|---|---|
| 2023 | UP | 10% | $115 B |
| 2024 | UP | 13% | $129 B |
| 2025 | UP | 10% | $142 B |
| 2026 | UP | 6% | $151 B |

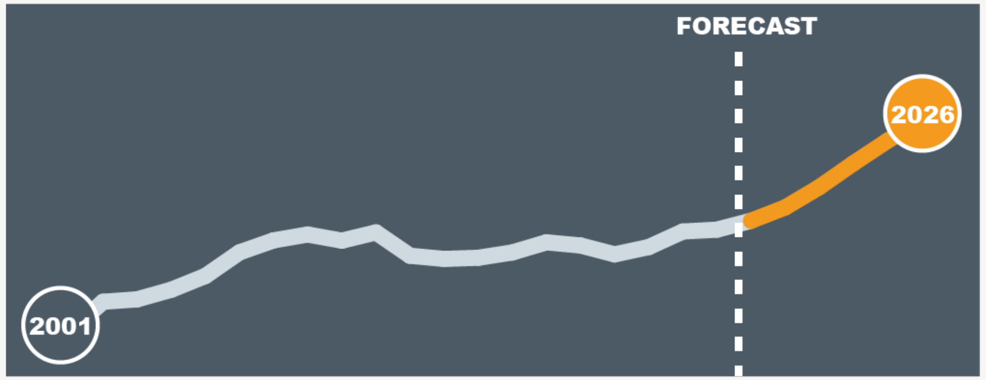
- IIJA funds of more than $365 billion will begin rollout late summer of 2022.
- Early funding is expected to favor smaller or shovel-ready projects over the next two years as states adjust to expanded budgets.
- There will likely be a significant wave of bridge construction over the next five years.

# Sewage and Waste Disposal

**7%**

**$29 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Population
- Industrial production
- Government spending




| | | | |
|---|---|---|---|
| 2023 | UP | 10% | $32 B |
| 2024 | UP | 10% | $36 B |
| 2025 | UP | 9% | $39 B |
| 2026 | UP | 7% | $42 B |

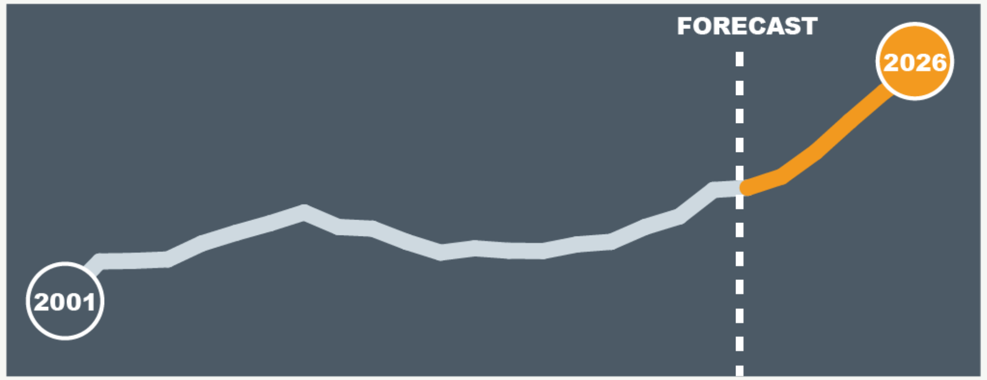
- The IIJA allocates $50 billion for water and wastewater investments with a significant portion ($15 billion, or 30%) directed into replacing an estimated 6 million to 10 million lead water lines.
- Utility capital spending will continue to prioritize funds into electronic metering, data capture/efficiency and lines versus pump stations or plant work.
- Industrial wastewater restrictions are on the rise, and increased investment in decarbonization and decentralized water reuse technologies over the forecast period is expected.

# Water Supply

5%

$20 BILLION
2022/2021 Comparison

**DRIVERS:**
- Population
- Industrial production
- Government spending




| | | | |
|---|---|---|---|
| 2023 | UP | 11% | $22 B |
| 2024 | UP | 12% | $25 B |
| 2025 | UP | 10% | $27 B |
| 2026 | UP | 8% | $29 B |

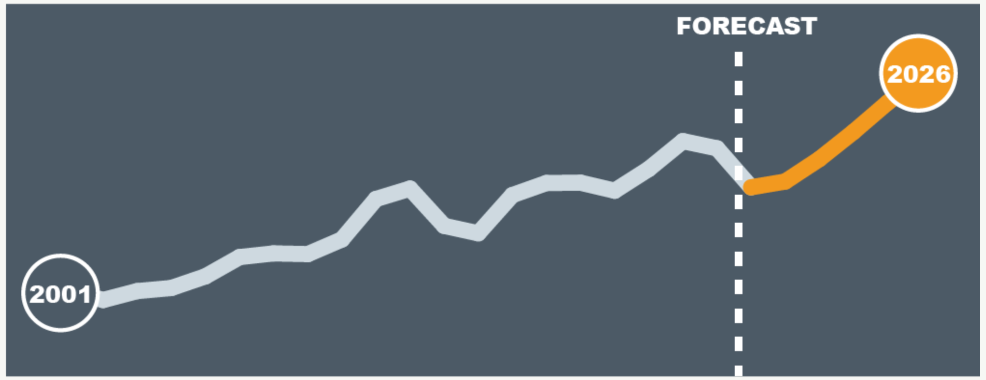
- Most of the forthcoming $50 billion in IIJA funds will be made available through the Drinking Water State Revolving Funds (DWSRFs).
- Through 2023 state match requirements have been dropped from 20% to 10%, and all match requirements have been eliminated for lead service replacements.
- Domestic manufacturing investments will drive capital spending into plant renovations and capacity expansion in select markets.

# Conservation and Development

# 3%

**$8 BILLION**
2022/2021 Comparison

**DRIVERS:**
- Population
- Government spending




| | | | |
|---|---|---|---|
| 2023 | UP | 10% | $9 B |
| 2024 | UP | 11% | $10 B |
| 2025 | UP | 11% | $11 B |
| 2026 | UP | 9% | $11 B |

- IIJA funds targeting Army Corps of Engineers resiliency will add more than $12 billion in construction across harbors, navigation channels, and coastal storm and flood mitigation.
- An additional $5 billion from the IIJA is set aside for the EPA to address a list of 49 superfund sites and manage $1.5 billion into brownfield programs and grants.

# Construction Put in Place Estimated for the United States | Millions of Current Dollars

## 3rd Quarter 2022 Forecast, Based on 1st Quarter 2022 Actuals and 2nd Quarter 2022 Assumptions

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022F | 2023F | 2024F | 2025F | 2026F |
|---|---|---|---|---|---|---|---|---|---|---|
| **RESIDENTIAL BUILDINGS** | | | | | | | | | | |
| Single-family | 270,365 | 289,855 | 280,385 | 310,051 | 412,713 | 468,366 | 428,677 | 398,418 | 387,135 | 395,986 |
| Multifamily | 80,403 | 83,411 | 88,401 | 93,935 | 107,368 | 133,972 | 133,326 | 120,572 | 112,834 | 113,513 |
| Improvements* | 194,986 | 190,611 | 184,656 | 234,102 | 265,193 | 294,210 | 276,688 | 257,397 | 249,618 | 252,836 |
| **Total Residential** | **545,754** | **563,877** | **553,442** | **638,088** | **785,275** | **896,548** | **838,691** | **776,387** | **749,587** | **762,336** |
| **NONRESIDENTIAL BUILDINGS** | | | | | | | | | | |
| Lodging | 28,660 | 31,464 | 33,461 | 29,053 | 19,660 | 17,470 | 18,931 | 18,343 | 16,166 | 14,958 |
| Office | 68,685 | 76,662 | 88,724 | 87,399 | 82,092 | 83,287 | 85,009 | 79,507 | 70,481 | 67,630 |
| Commercial | 87,626 | 86,422 | 84,345 | 86,816 | 91,174 | 98,394 | 100,446 | 90,076 | 78,151 | 74,810 |
| Health Care | 43,120 | 43,450 | 46,263 | 48,113 | 49,147 | 50,510 | 52,787 | 52,979 | 53,751 | 54,279 |
| Educational | 96,685 | 101,210 | 108,952 | 107,435 | 98,189 | 97,594 | 100,351 | 103,713 | 106,882 | 109,183 |
| Religious | 3,586 | 3,499 | 3,730 | 3,500 | 3,047 | 2,776 | 2,654 | 2,597 | 2,621 | 2,705 |
| Public Safety | 8,539 | 9,353 | 12,012 | 17,878 | 11,948 | 10,546 | 10,532 | 11,075 | 11,958 | 12,674 |
| Amusement and Recreation | 26,569 | 28,068 | 30,416 | 27,550 | 25,190 | 25,547 | 26,930 | 27,860 | 24,668 | 22,041 |
| Transportation | 46,137 | 53,219 | 57,448 | 59,661 | 56,244 | 55,307 | 59,152 | 67,186 | 75,386 | 80,677 |
| Communication | 23,696 | 24,502 | 22,184 | 22,521 | 21,864 | 22,068 | 23,553 | 25,874 | 28,460 | 30,363 |
| Manufacturing | 70,682 | 72,508 | 80,978 | 72,143 | 78,484 | 90,210 | 99,299 | 90,832 | 80,223 | 81,505 |
| **Total Nonresidential Buildings** | **503,985** | **530,357** | **568,513** | **562,069** | **537,039** | **553,710** | **579,644** | **570,043** | **548,747** | **550,827** |
| **NONBUILDING STRUCTURES** | | | | | | | | | | |
| Power | 95,951 | 99,569 | 117,960 | 115,048 | 114,859 | 117,084 | 118,486 | 121,917 | 128,883 | 133,073 |
| Highway and Street | 89,620 | 91,745 | 99,402 | 99,888 | 100,364 | 104,141 | 114,662 | 129,121 | 142,467 | 151,041 |
| Sewage and Waste Disposal | 22,901 | 23,931 | 26,119 | 26,379 | 27,633 | 29,499 | 32,352 | 35,702 | 38,881 | 41,780 |
| Water Supply | 14,168 | 15,477 | 16,397 | 18,727 | 18,916 | 19,902 | 22,068 | 24,777 | 27,350 | 29,443 |
| Conservation and Development | 7,464 | 8,229 | 9,207 | 8,955 | 7,584 | 7,786 | 8,576 | 9,529 | 10,558 | 11,474 |
| **Total Nonbuilding Structures** | **230,104** | **238,951** | **269,085** | **268,997** | **269,356** | **278,412** | **296,144** | **321,047** | **348,138** | **366,811** |
| **Total Put in Place** | **$1,279,843** | **$1,333,185** | **$1,391,040** | **$1,469,154** | **$1,591,670** | **$1,728,670** | **$1,714,478** | **$1,667,477** | **$1,646,472** | **$1,679,974** |

# Construction Put in Place Estimated for the United States | Change From Prior Year

## 3rd Quarter 2022 Forecast, Based on 1st Quarter 2022 Actuals and 2nd Quarter 2022 Assumptions

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022F | 2023F | 2024F | 2025F | 2026F |
|---|---|---|---|---|---|---|---|---|---|---|
| **RESIDENTIAL BUILDINGS** | | | | | | | | | | |
| Single-family | 11% | 7% | -3% | 11% | 33% | 13% | -8% | -7% | -3% | 2% |
| Multifamily | 2% | 4% | 6% | 6% | 14% | 25% | 0% | -10% | -6% | 1% |
| Improvements* | 19% | -2% | -3% | 27% | 13% | 11% | -6% | -7% | -3% | 1% |
| **Total Residential** | **12%** | **3%** | **-2%** | **15%** | **23%** | **14%** | **-6%** | **-7%** | **-3%** | **2%** |
| **NONRESIDENTIAL BUILDINGS** | | | | | | | | | | |
| Lodging | 6% | 10% | 6% | -13% | -32% | -11% | 8% | -3% | -12% | -7% |
| Office | 1% | 12% | 16% | -1% | -6% | 1% | 2% | -6% | -11% | -4% |
| Commercial | 11% | -1% | -2% | 3% | 5% | 8% | 2% | -10% | -13% | -4% |
| Health Care | 6% | 1% | 6% | 4% | 2% | 3% | 5% | 0% | 1% | 1% |
| Educational | 6% | 5% | 8% | -1% | -9% | -1% | 3% | 3% | 3% | 2% |
| Religious | -4% | -2% | 7% | -6% | -13% | -9% | -4% | -2% | 1% | 3% |
| Public Safety | 4% | 10% | 28% | 49% | -33% | -12% | 0% | 5% | 8% | 6% |
| Amusement and Recreation | 12% | 6% | 8% | -9% | -9% | 1% | 5% | 3% | -11% | -11% |
| Transportation | 6% | 15% | 8% | 4% | -6% | -2% | 7% | 14% | 12% | 7% |
| Communication | 7% | 3% | -9% | 2% | -3% | 1% | 7% | 10% | 10% | 7% |
| Manufacturing | -11% | 3% | 12% | -11% | 9% | 15% | 10% | -9% | -12% | 2% |
| **Total Nonresidential Buildings** | **4%** | **5%** | **7%** | **-1%** | **-4%** | **3%** | **5%** | **-2%** | **-4%** | **0%** |
| **NONBUILDING STRUCTURES** | | | | | | | | | | |
| Power | -14% | 4% | 18% | -2% | 0% | 2% | 1% | 3% | 6% | 3% |
| Highway and Street | -4% | 2% | 8% | 0% | 0% | 4% | 10% | 13% | 10% | 6% |
| Sewage and Waste Disposal | -5% | 4% | 9% | 1% | 5% | 7% | 10% | 10% | 9% | 7% |
| Water Supply | 2% | 9% | 6% | 14% | 1% | 5% | 11% | 12% | 10% | 8% |
| Conservation and Development | -4% | 10% | 12% | -3% | -15% | 3% | 10% | 11% | 11% | 9% |
| **Total Nonbuilding Structures** | **-8%** | **4%** | **13%** | **0%** | **0%** | **3%** | **6%** | **8%** | **8%** | **5%** |
| **Total Put in Place** | **5%** | **4%** | **4%** | **6%** | **8%** | **9%** | **-1%** | **-3%** | **-1%** | **2%** |