



U.S. Construction Outlook Q4 2022

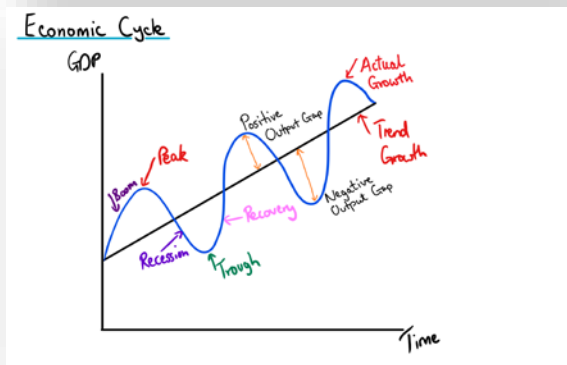
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THREE THINGS TO REMEMBER



New Economy vs. Old Economy

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



The Next 5-Year Cycle

Does geography become the primary determinant of growth?

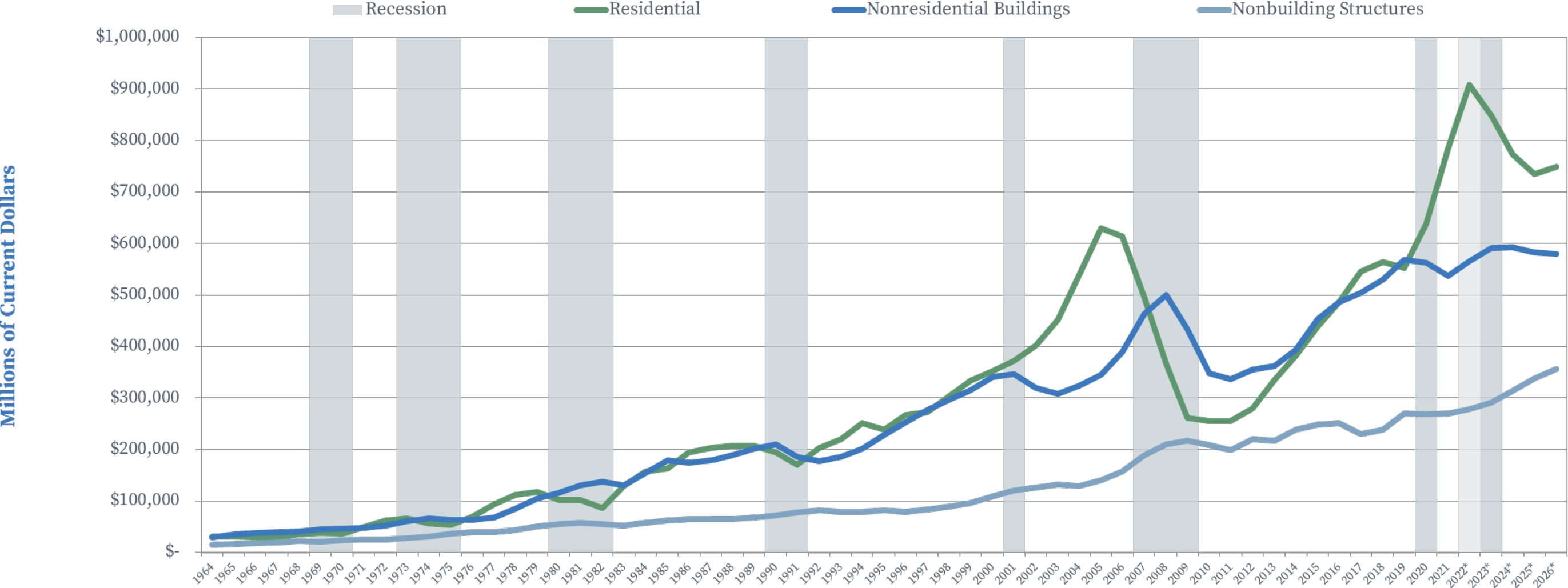


Industry Headwinds

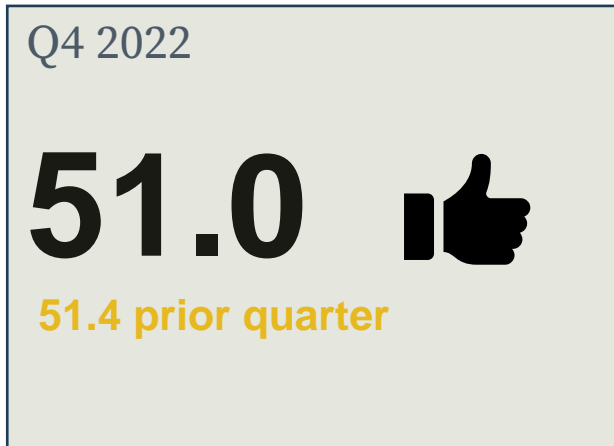
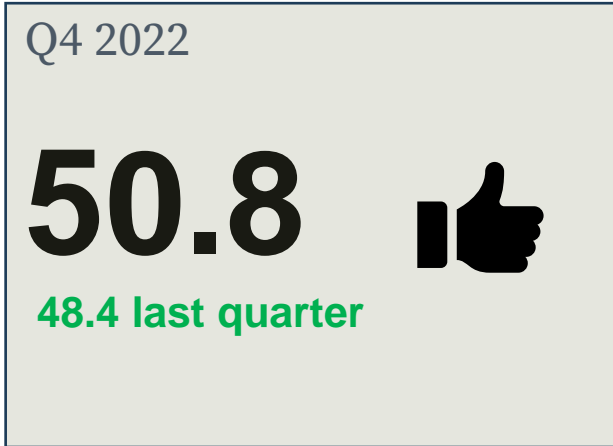
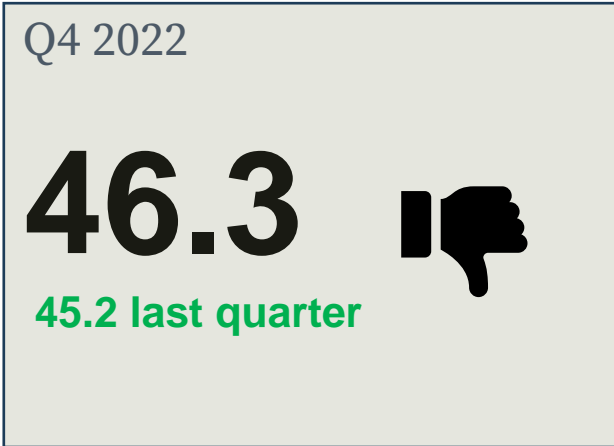
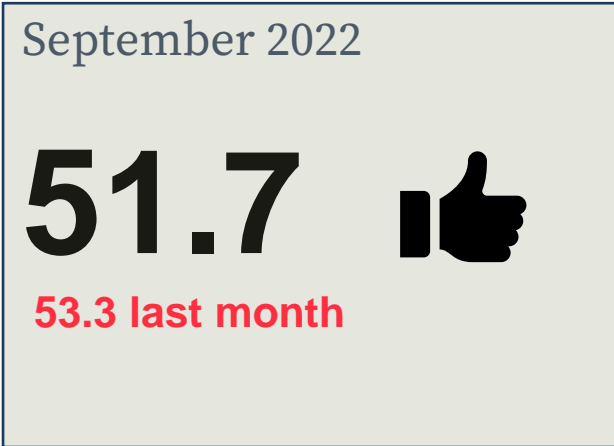
How will evolving market and project characteristics define opportunity?

Construction Forecast

Total Construction Spending Put in Place (U.S.)
Millions of current dollars



AEC Sentiment Indices



Architectural Billings Index
(ABI)



Nonresidential Construction Index
(NRCI)



Heavy Civil Construction Index
(HCCI)



Construction Industry
Round Table

CIRT Sentiment Index

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

New Economy...

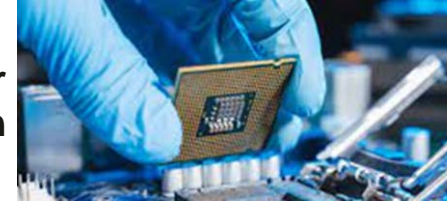
Life Sciences



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 U.S. population is urban**
- Almost 90% of the U.S. population lives in an urban environment
 - Transportation averages 15% to 20% of Americans' 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 USA
 - Ultra-processed foods alone account for 67%

**Life
Sciences**

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

**Distributed
Power**

- Energy demand is increasing as reliability is decreasing**
- Power consumption has increased more than 50% since 1980
 - 70% of the U.S. 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

Logistics

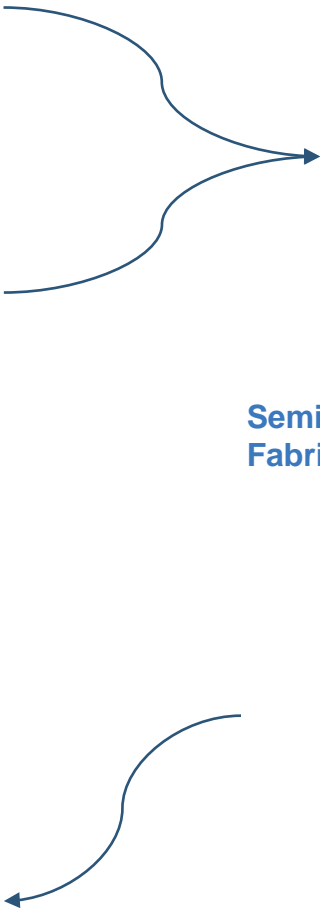
- Distribution is increasingly relied on for consumer purchases**
- E-commerce sales have grown by almost 200% since 2015
 - Online purchases represent 15% of total retail activity
 - Digital grocery buyers account for more than half the U.S. population

**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 5 years
 - Almost 50% of people work remotely compared to less than 5% pre-pandemic
 - The Federal Reserve is exploring the move to digital currency



DEVELOPER/PRIVATE INVESTMENT DRIVEN SEGMENTS SUFFER

Largest Spending

Multifamily



Power



Manufacturing



Highway & Street



Highest Growth

Transportation



Highway & Street



Conservation & Development



Water/Wastewater



Segment	2022-2026 Average Construction Spending (Billions)	2022-2026 Forecast Growth (CAGR)
Multifamily	\$127	-4%
Lodging	\$16	-3%
Office	\$76	-6%
Commercial	\$92	-7%
Health Care	\$53	2%
Educational	\$101	3%
Religious	\$3	0%
Public Safety	\$12	4%
Amusement and Recreation	\$26	-3%
Transportation	\$69	10%
Communication	\$29	8%
Manufacturing	\$106	3%
Power	\$114	2%
Highway and Street	\$128	10%
Sewage and Waste Disposal	\$37	9%
Water Supply	\$26	8%
Conservation and Development	\$10	8%

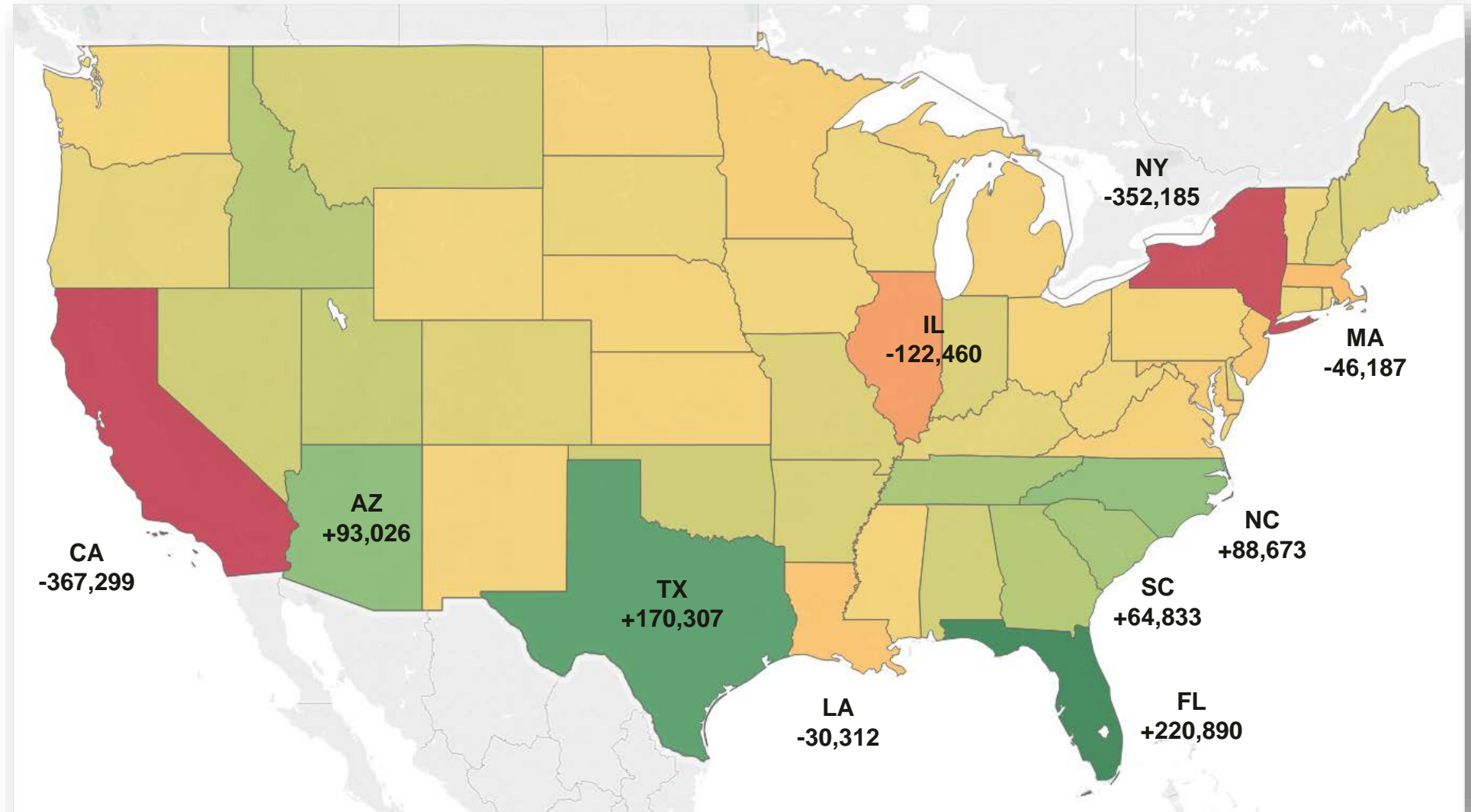
Nonresidential Buildings

Heavy Civil

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.



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



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

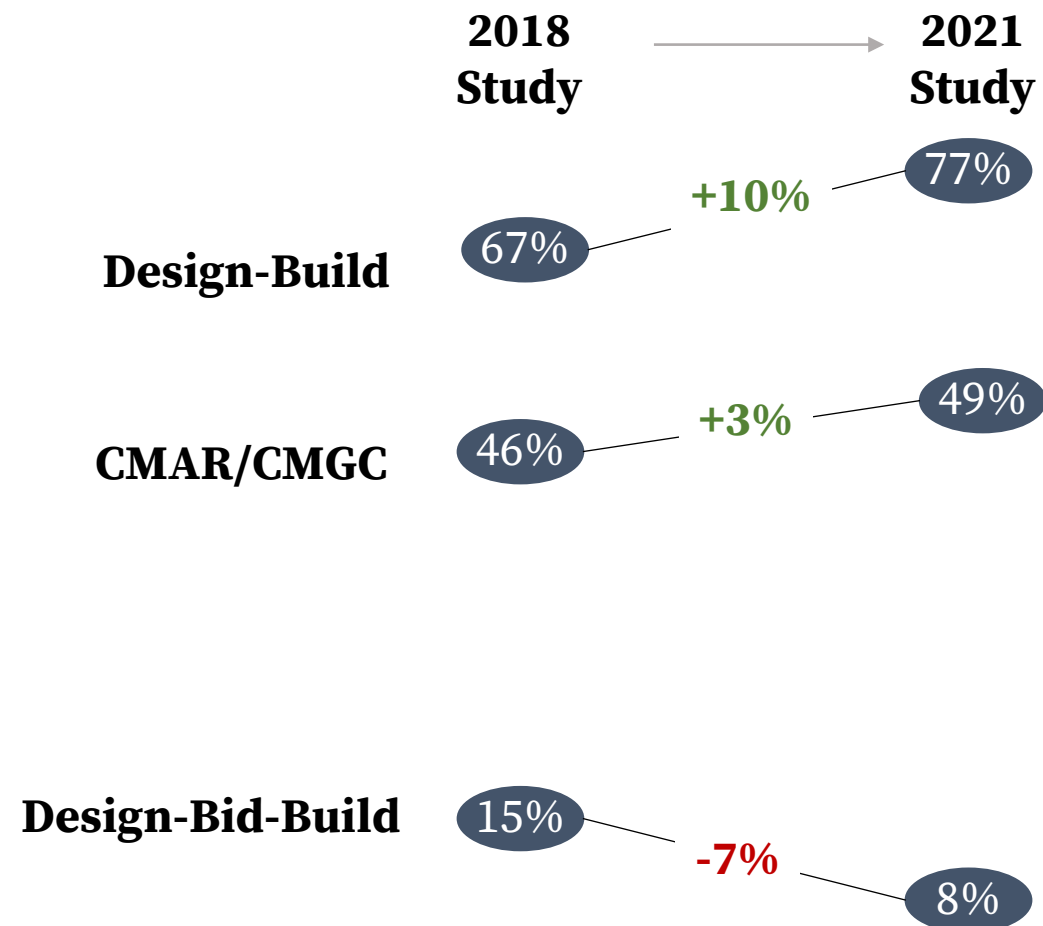


- 24. Sacramento
- 25. San Jose
- 26. Las Vegas
- 27. Nashville
- 28. Jacksonville
- 29. Salt Lake City
- 30. Detroit
- 31. Raleigh
- 32. San Antonio
- 33. Baltimore
- 34. Indianapolis
- 35. St. Louis
- 36. Sarasota
- 37. Kansas City
- 38. Columbus
- 39. Boise
- 40. Provo
- 41. Cincinnati
- 42. Fort 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



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|--------------------|-------------------|------------------------|-------------------------|---------------------|-----------------------|------------------------|------------------------|-------------------|--------------------|------------------|--------------------|-----------------------|------------------|---------------------|--------------------|------------------|
| 71. New Orleans | 90. El Paso | 109. Savannah | 128. Manchester | 147. Corpus Christi | 166. Medford | 185. Shreveport | 204. Yakima | 223. Napa | 242. Longview | 261. El Centro | 280. Muskegon | 299. Saginaw | 318. Goldsboro | 337. Lewiston | 356. Watertown | 375. Fairbanks |
| 72. Port St. Lucie | 91. Bridgeport | 110. New Haven | 129. Eugene | 148. Punta Gorda | 167. Gulfport | 186. Idaho Falls | 205. Canton | 224. Pueblo | 243. Odessa | 262. Racine | 281. Hammond | 300. Sierra Vista | 319. Grants Pass | 338. Hattiesburg | 357. Bloomsburg | 376. Lawton |
| 73. Omaha | 92. Winston-Salem | 111. Fort Walton Beach | 130. Modesto | 149. Trenton | 168. College Station | 187. Waco | 206. Appleton | 225. Jacksonville | 244. Erie | 263. Santa Fe | 282. Cheyenne | 301. Charleston | 320. Pittsfield | 339. Fond du Lac | 358. Carbondale | 377. Bay City |
| 74. Tulsa | 93. Portland | 112. Killen | 131. Tallahassee | 150. Daphne | 169. Santa Cruz | 188. Panama City | 207. St. Cloud | 226. Tuscaloosa | 245. Yuba City | 264. Champaign | 283. New Bern | 302. Jefferson City | 321. Texarkana | 340. Rome | 359. Farmington | 378. Beckley |
| 75. Rochester | 94. McAllen | 113. Wilmington | 132. Springfield | 151. Hickory | 170. Beaumont | 189. Elkhart | 208. Kingsport | 227. Las Cruces | 246. Redding | 265. Dalton | 284. California | 303. Bangor | 322. Corvallis | 341. Hinesville | 360. Springfield | 379. Weirton |
| 76. Oxnard | 95. Allentown | 114. Salem | 133. Akron | 152. Brownsville | 171. Kahului | 190. Hagerstown | 209. Dover | 228. Norwich | 247. Lake Charles | 266. Abilene | 285. Brunswick | 304. Dothan AL | 323. Alexandria | 342. Victoria | 361. Lima | 380. Parkersburg |
| 77. Hartford | 96. Boulder | 115. Bend | 134. Visalia | 153. Coeur d'Alene | 172. Laredo | 191. Billings | 210. Duluth | 229. Auburn | 248. Winchester | 267. Topeka | 286. Chambersburg | 305. Lebanon | 324. Decatur | 343. Great Falls | 362. Michigan City | 381. Pine Bluff |
| 78. Greensboro | 97. Santa Rosa | 116. Vallejo | 135. San Luis Obispo | 154. Ann Arbor | 173. Logan | 192. Youngstown | 211. Lynchburg | 230. Greenville | 249. Madera | 268. Waterloo | 287. Hanford | 306. Ithaca | 325. Grand Forks | 344. Walla Walla | 363. Kankakee | 382. Danville |
| 79. Bakersfield | 98. Asheville | 117. Lexington | 136. Sioux Falls | 155. York | 174. Lake Havasu City | 193. Chico | 212. Atlantic City | 231. Rapid City | 250. Hiram | 269. Blacksburg | 288. Rocky Mount | 307. Albany | 326. Florence | 345. Lawrence | 364. Anniston | 383. Decatur |
| 80. Worcester | 99. Fort Collins | 118. Dayton | 137. Salinas | 156. Green Bay | 175. Charlottesville | 194. Grand Junction | 213. South Bend | 232. Columbia | 251. Oshkosh | 270. Longview | 289. Morristown | 308. Bloomington | 327. Owensboro | 346. Lewiston | 365. Wheeling | 384. Danville |
| 81. Des Moines | 100. Augusta | 119. Spartanburg | 138. Toledo | 157. Gainesville | 176. Fayetteville | 195. Davenport | 214. Yuma | 233. Utica | 252. Bismarck | 271. Binghamton | 290. Oceans City | 309. Dubuque | 328. Columbus | 347. Carson City | 366. Decatur | 385. Danville |
| 82. Spokane | 101. Pensacola | 120. Wichita | 139. Jackson | 158. Fargo | 177. Rochester | 196. Cedar Rapids | 215. Homosassa Springs | 234. Flint | 253. Valdosta | 272. Janesville | 291. Monroe | 310. Sheboygan | 329. Niles | 348. Ames | 367. Manhattan | 386. Danville |
| 83. Albuquerque | 102. St. George | 121. Lancaster | 140. Fort Wayne | 159. Lafayette | 178. Lansing | 197. Evansville | 216. Warner Robins | 235. Fort Smith | 254. Huntington | 273. Wausau | 292. Mankato | 311. Vineland | 330. Casper | 349. Battle Creek | 368. Muncie | 387. Danville |
| 84. Fayetteville | 103. Ocala | 122. Springfield | 141. Prescott | 160. Clarksville | 179. Reading | 198. Columbus | 217. Burlington | 236. Lafayette | 255. Albany | 274. Cleveland | 293. Springfield | 312. Glens Falls | 331. Gettysburg | 350. Morgantown | 369. Kokomo | 388. Danville |
| 85. Albany | 104. Chattanooga | 123. Brentwood | 142. Bellingham | 161. Gainesville | 180. Midland | 199. Burlington | 218. Rockford | 237. Wenatchee | 256. Houma | 275. La Crosse | 294. San Angelo | 313. Monroe | 332. St. Joseph | 351. Grand Island | 370. Gadsden | 389. Danville |
| 86. Buffalo | 105. Salisbury | 124. The Villages | 143. Scranton | 162. Lubbock | 181. Montgomery | 200. Barnstable Town | 219. Flagstaff | 238. Iowa City | 257. Joplin | 276. Bloomington | 295. State College | 314. Pocatello | 333. Terre Haute | 352. Cape Girardeau | 371. Elmira | 390. Danville |
| 87. Madison | 106. Huntsville | 125. Syracuse | 144. Kennewick | 163. Lincoln | 182. Roanoke | 201. Tyler | 220. Missoula | 239. Macon (Home) | 258. Bowling Green | 277. Jackson | 296. Kingston | 315. East Stroudsburg | 334. Altoona | 353. Williamsport | 372. Cumberland | 391. Danville |
| 88. Baton Rouge | 107. Little Rock | 126. Santa Barbara | 145. Anchorage | 164. Mobile | 183. Amarillo | 202. Athens (Go Dawgs) | 221. Mount Vernon | 240. Johnson City | 259. Sioux City | 278. Sherman | 297. Elizabethton | 316. Jackson | 335. Sebring | 354. Mansfield | 373. Hot Springs | 392. Danville |
| 89. Greeley | 108. Harrisburg | 127. Olympia | 146. Hilton Head Island | 165. Vero Beach | 184. Merced | 203. Kalamazoo | 222. Peoria | 241. Florence | 260. Eau Claire | 279. Jonesboro | 298. Staunton | 317. Wichita Falls | 336. Sumter | 355. Johnston | 374. Midland | 393. Danville |

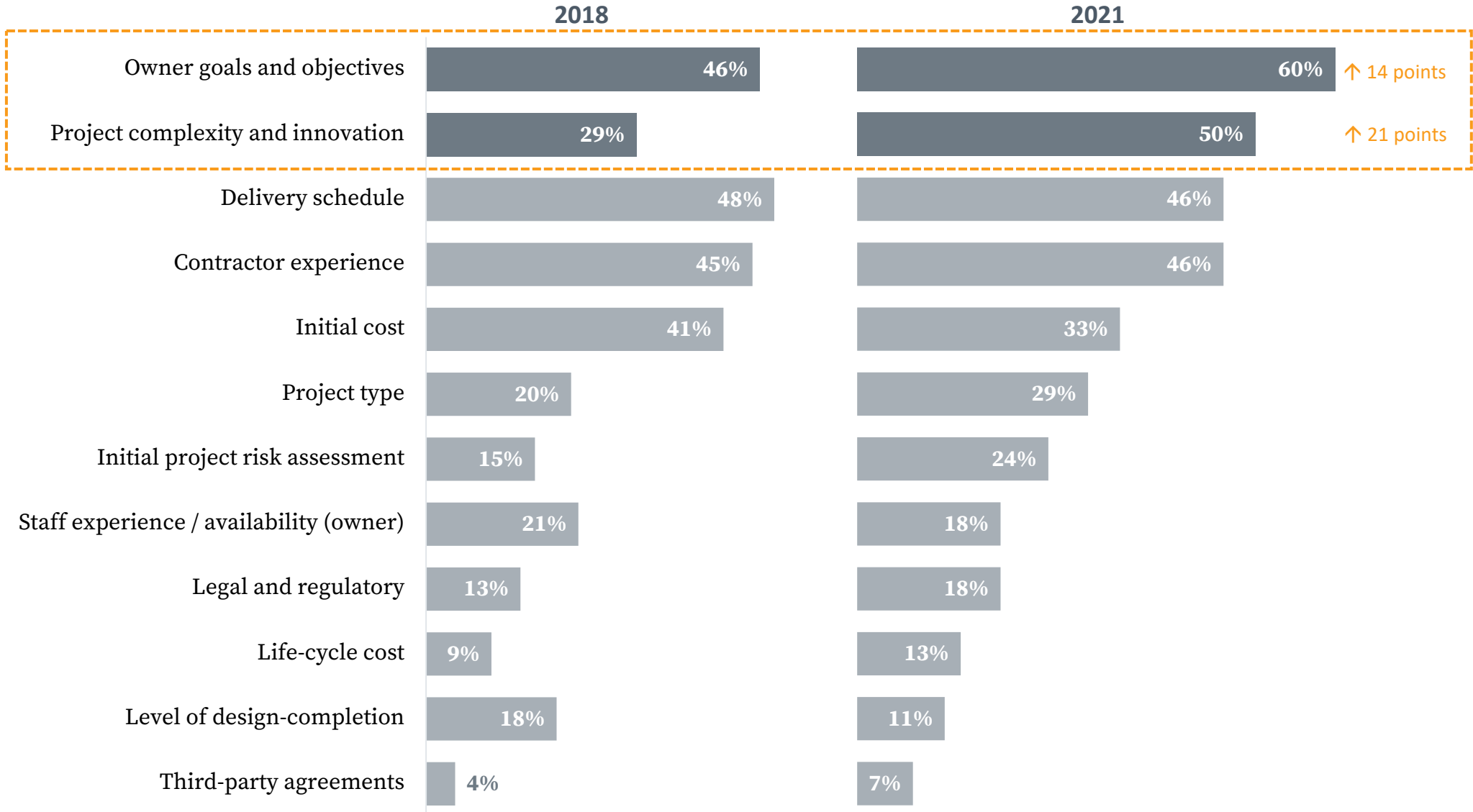
CHANGING PROJECT DELIVERY METHODS



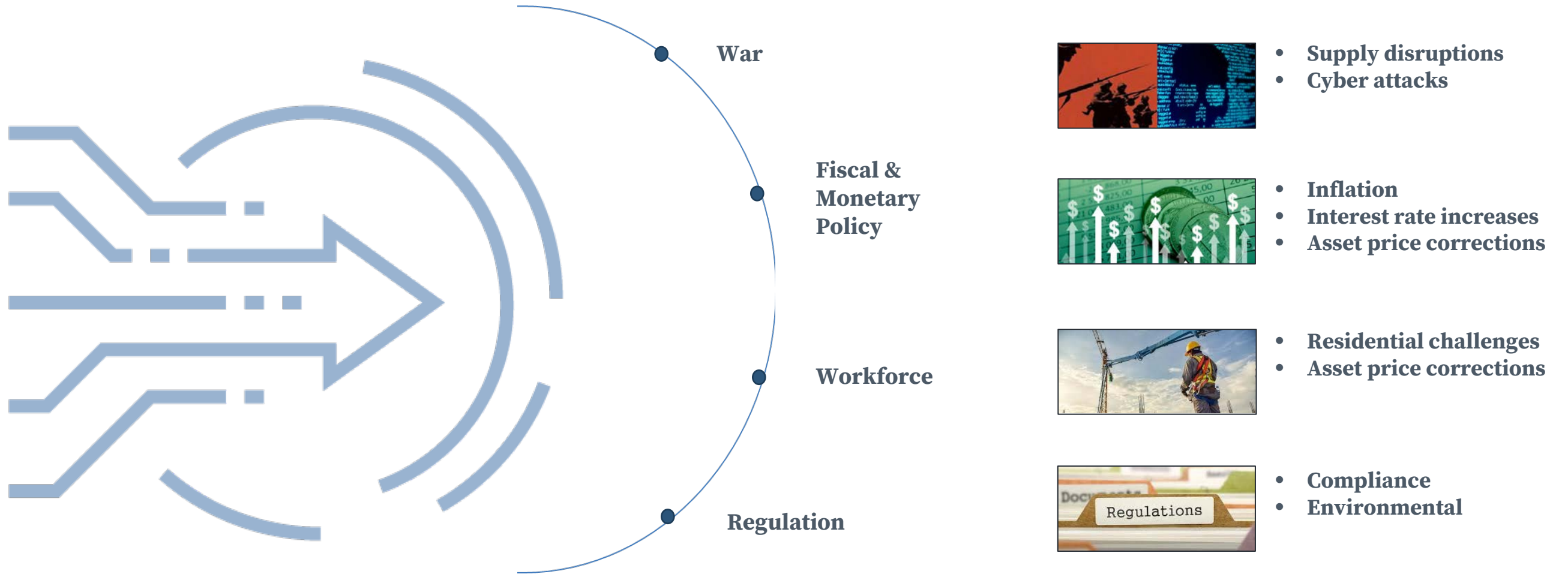
“We have seen significantly more design-build work, and I think this will continue. We are also seeing more CMGC—we are working on a significant project that is driving that growth. The success of CMGC is dependent on the owner's ability to manage the project and their ability to collaborate.”

“Virtually everything in our geography is going design-build. I can't think of a market sector that is not using design-build.”

FACTORS INFLUENCING PROJECT DELIVERY METHODS

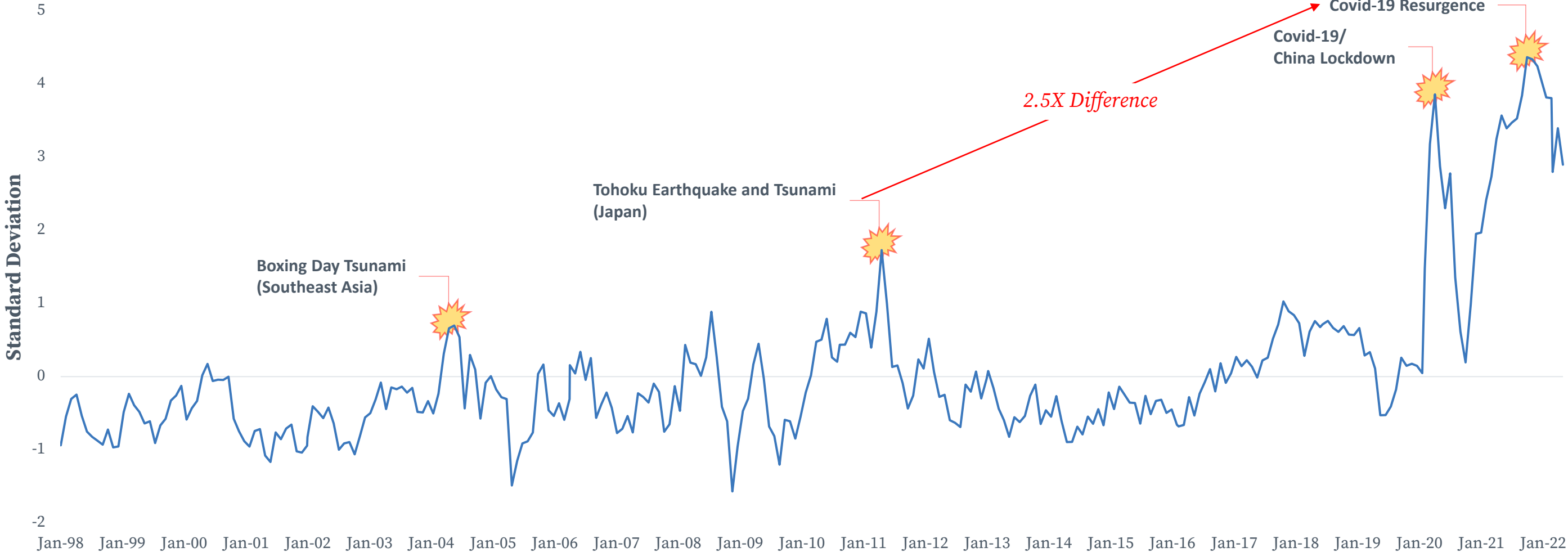


INDUSTRY HEADWINDS



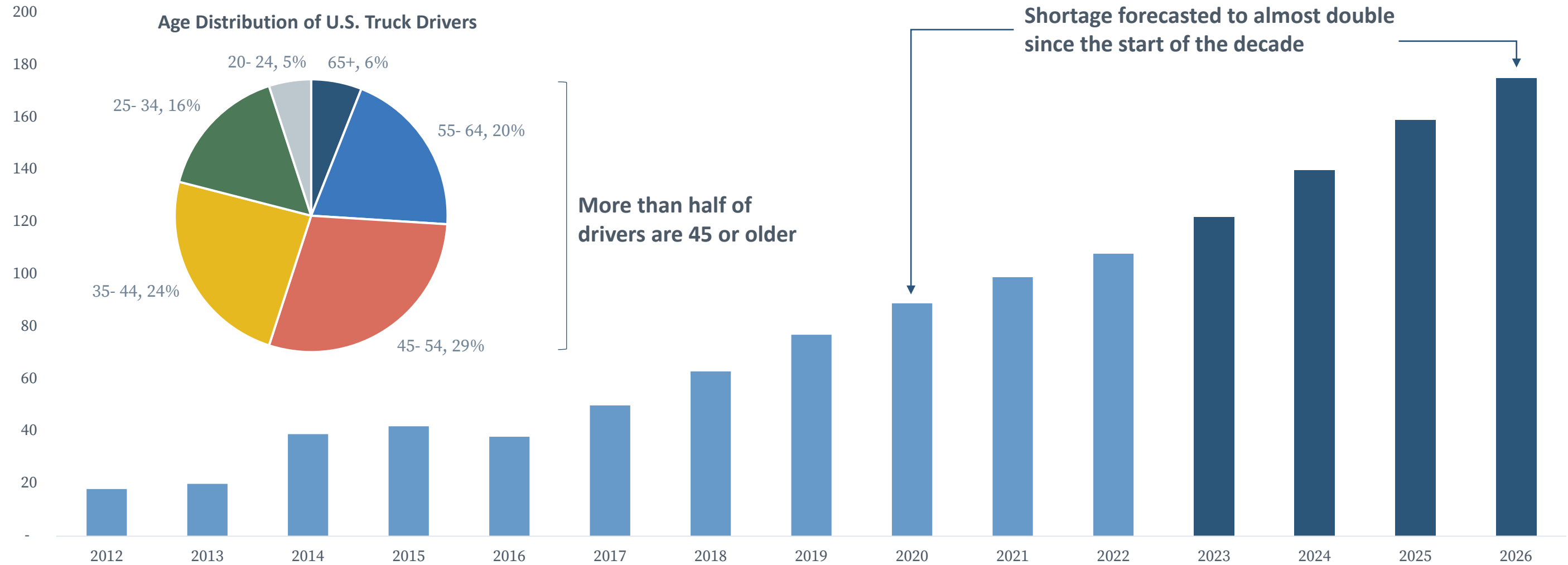
SUPPLY CHAINS ARE UNDER RECORD STRESS

Global Supply Chain Pressure Index
Standard deviation from the mean

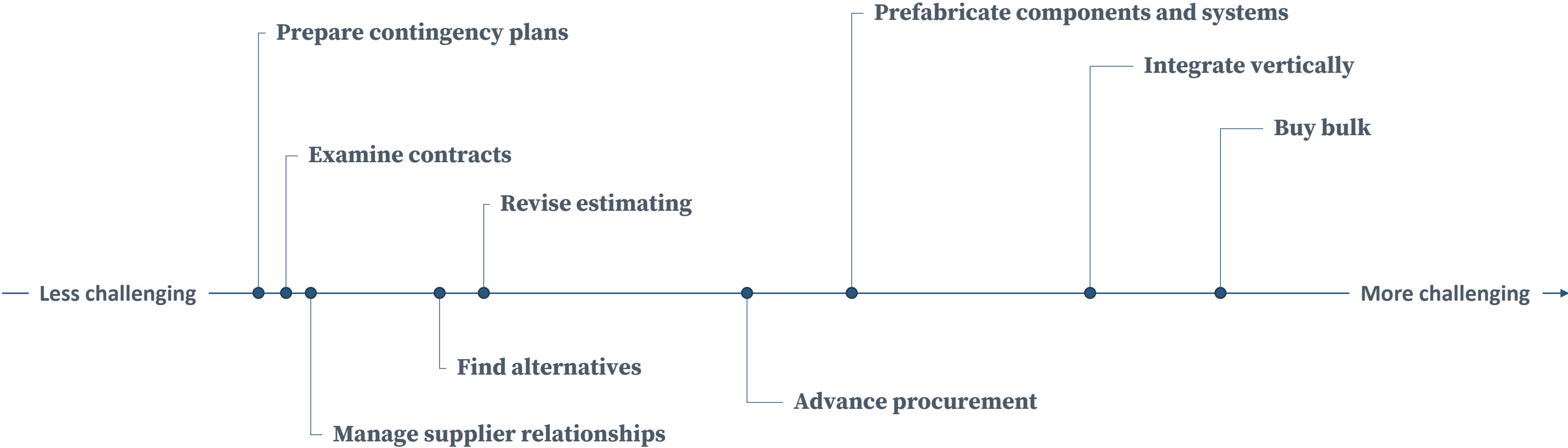


IS TRANSPORTATION THE REAL PROBLEM?

U.S. Truck Driver Shortage Thousands of drivers



SCRAMBLING FOR ANSWERS



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

LABOR CHALLENGES PERSIST AND INTENSIFY

DANIEL J. B. MITCHELL
University of California, Los Angeles

Wage Pressures and Labor Shortages: The 1960s and 1980s

As the U.S. unemployment rate fell during 1988 and early 1989 into the 5-5.5 percent range, observers worried about upward pressure on wage inflation. The concern grew naturally out of the experience of the 1970s, when wage inflation accelerated whenever the unemployment rate fell into the 6-7 percent range. But while such concern is understandable, it may be misplaced. Imagine an economic historian painting the following broad picture of the American labor market.

After two back-to-back recessions, and some adverse developments in the legal climate for unions, a period of calm descended on the labor market. Wage and price inflation receded against a background of relatively high unemployment.

The Business Roundtable
January, 1983

MORE CONSTRUCTION FOR THE MONEY

MORE CONSTRUCTION FOR THE MONEY

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N.Y. / REGION

Latest Construction Bottleneck: Shortage of Skilled Workers

By CHARLES V. BAGLI AUG. 15, 1999

John Carroll is among the most wanted men in New York.

A lean, red-haired electrician at a building project on 42d Street, Mr. Carroll and thousands of skilled construction workers like him are suddenly in short supply as the real estate boom finally ends what many in the industry describe as a brutal seven-year depression.

There are no unemployed workers at Mr. Carroll's union, the International Brotherhood of Electrical Workers, Local 3, where a short time ago many electricians were out of work for six months out of the year. Many are now working what they call "six 10's," or six days a week for 10 hours a day.

"Right now, there are no men on the bench," Mr. Carroll said. "Everybody's at full employment. You can more or less pick your job. I worked just about every day in July. I've been working for 11 years and I've never been able to get that."

Solving manpower shortage requires fresh approaches

Talk to almost any contractor in virtually any part of the country these days and you will find a common problem he is facing: finding the labor force to complete projects. The labor crunch has now become a nationwide manpower shortage, and it is the time to take concerted efforts by individuals and organizations to solve it.

Bob Miodonski | Jan 10, 2008

Labor Shortages – What do You do When You’ve Got the Work, but Nobody to do it?

April 1, 2000

Heavy Equipment Operator Jobs Faces Shortage of Skilled Labor for Construction Equipment Industry

Construction Equipment Industry is in need as the increasing demand for new construction calls attention to the equally increasing shortage of skilled labor workers to fill Heavy Equipment Operator Jobs.



CONSTRUCTION

Home > Business > Construction > Solutions to Labor shortages

Posted on January 06, 2007

Solutions to Labor shortages

According to the Bureau of Labor Statistics, demand for construction workers will grow 13.3% by 2010. Where will that work force come from?

Wanted: Skilled Labor

According to the latest numbers from the U.S. Bureau of Labor Statistics, Americans are hard at work. At last count, the total U.S. unemployment rate stood at the low 5 percent mark.

Causes of the Construction Skilled Labor Shortage and Proposed Solutions

Abdul R. Chini, Birsabano H. Brown, and Eric G. Drummond
M.B.E. Ph.D., Ph.D., Ph.D. of Building Construction
University of Florida
Gainesville, Florida

The shortage of skilled labor for the construction industry is currently recognized by a consensus of major. Changes in the construction industry have led to a demand for more skilled labor. This demand is being met by a combination of factors: the industry is growing, and the industry is becoming more competitive. The industry is growing because of the increasing demand for construction services. The industry is becoming more competitive because of the increasing demand for construction services.

Retiring Baby-Boomers = A Labor Shortage?

April 24, 2007 – January 30, 2008

The unemployment rate in 2007 averaged just 4.6%, which is low by historic standards and suggests the presence of tight labor market conditions that are related to long-running demographic trends. The oldest members of the baby-boom generation turned age 60 at the end of 2006, and every year thereafter, more of this large birth-cohort will move into the ages when workers traditionally have retired. Consequently, the business community in particular has asserted that the future supply of labor will fall short of employer demand and that U.S. economic growth and competitiveness would be put in jeopardy.

Based upon a CRS analysis of the current employment patterns of baby-boomers across industries and occupations and of occupational employment projections within industries, many industries throughout the economy (e.g., insurance, manufacturing, mining, public administration, real estate, transportation, wholesale trade, utilities) appear to be highly dependent on baby-boom workers and to face the prospect of tightening labor market conditions as more of them move into the traditional retirement ages. Baby-boom dependent industries that seek both to replace all boomers who retire from occupations critical to their operations and to train those fields could face the most intense competition for workers in the near term (services and health care services).

If workers are unlikely in the long run because companies can be expected to take various steps to offset the accelerating slowdown in labor force growth—although it appears few have yet taken such steps—the labor shortage scenario is that firms must have more workers in the future than the economy to continue to grow. Proponents of this viewpoint thus are asserting that the labor force growth and labor force growth are closely and directly linked. But, the economy historically has expanded faster than the labor supply by more efficiently utilizing the available pool of workers.

Construction worker shortage raising costs of new projects

Updated Aug 19, 2008 11:59 p.m. ET



Skilled Trades Seek Workers

Contractors, Unions Try Web, Schools, A 'Dirty Jobs' Role

By Anton Troianovski

Updated Aug 19, 2008 11:59 p.m. ET

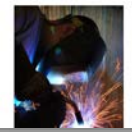
(See Corrections and Amplifications item below.)

Even as the economy slumps and unemployment rises, contractors and unions are scrambling to find enough skilled workers to plug the holes in the industry.

With the shortage of welders, pipe fitters and other workers as more of them reach retirement age, union businesses are trying to figure out how to attract more workers.

Their challenge: overcoming the stigma of "dirty jobs," offer less status, money and college education.

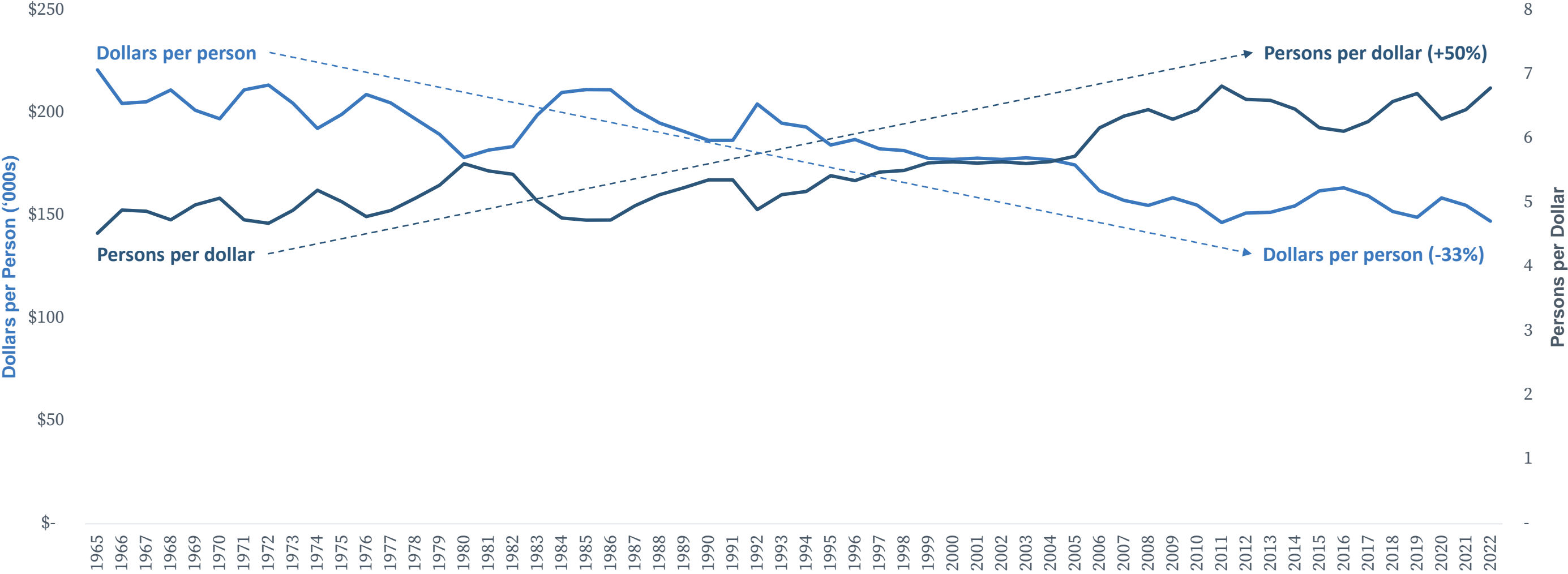
To highlight the benefits of a career in a skilled trade, sometimes, the potential payoff is significant.



The Construction Labor Shortage . . . Dealing with the Challenges -Locally & Globally

INCREASING PROJECT COMPLEXITIES DEMAND MORE LABOR

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





Many in today's construction industry have neither managed nor 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

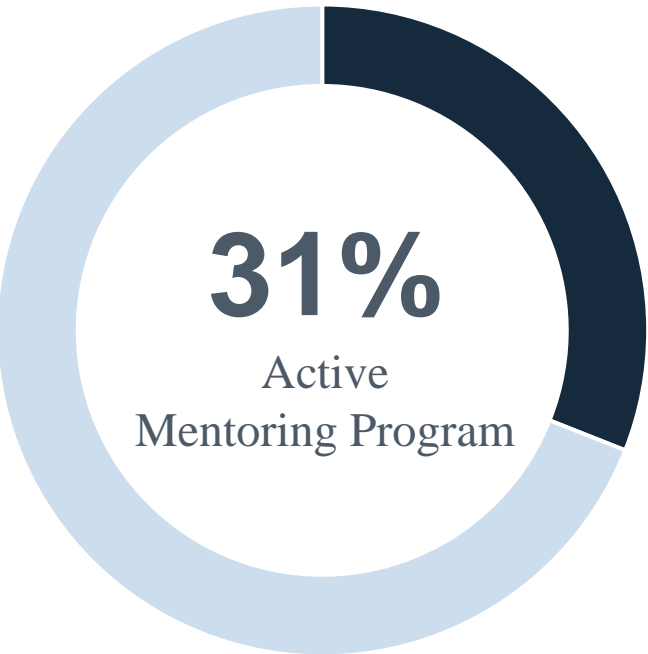
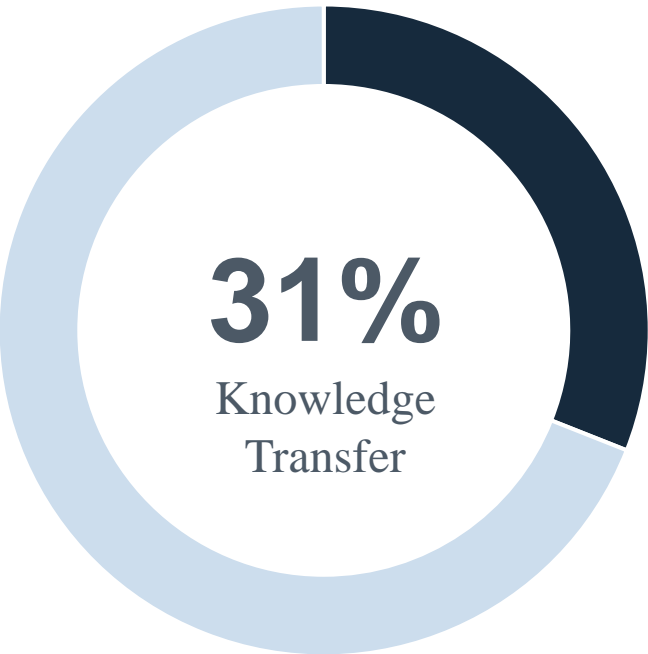
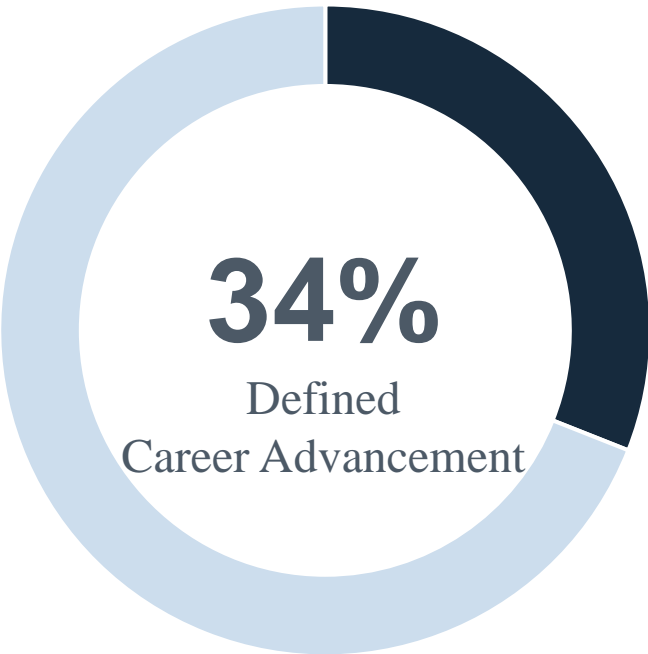
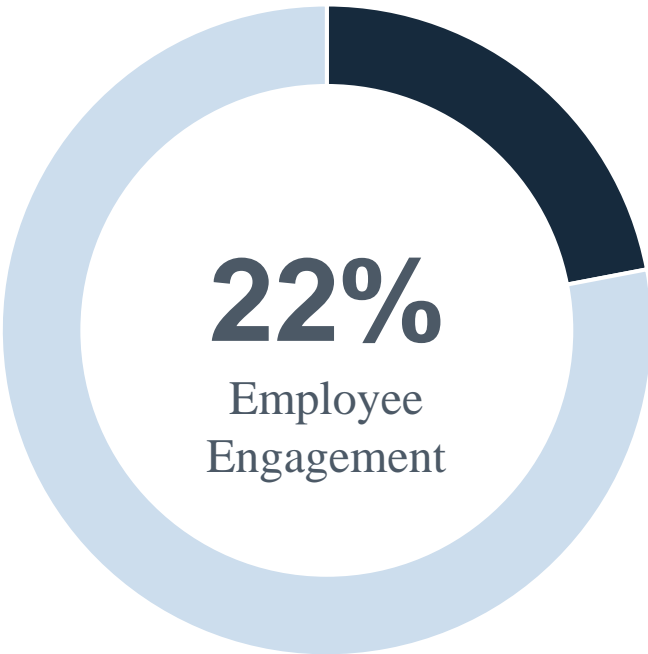
Employee retention improves by almost 40%

7. Greater profitability

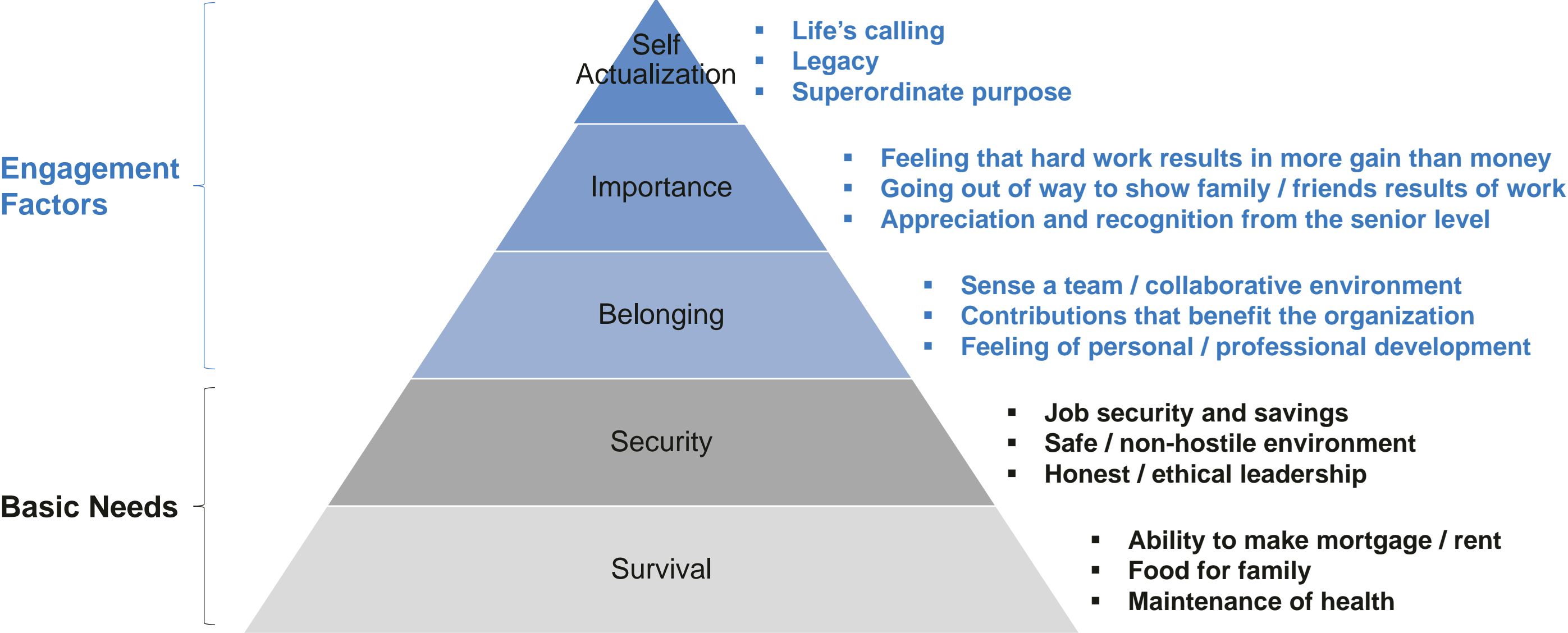
Contractors with highly engaged employees experience 20% to 25% greater job profitability

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



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 5 to 10 years
-  7 Focus on the WIN – “What’s Important Now?”

Thank you



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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.

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