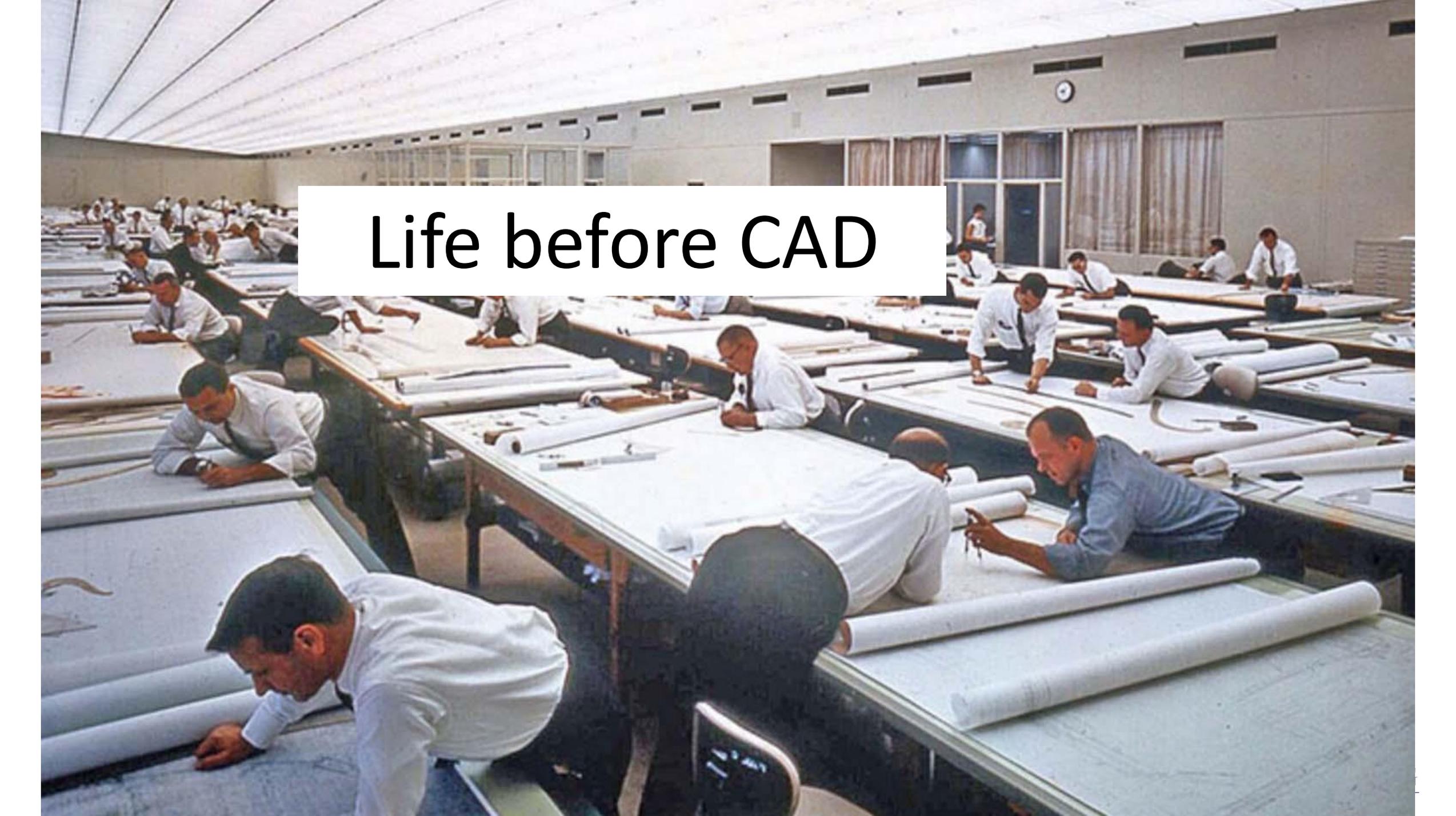


# Workforce of the Future



2026 Structural Engineering Conference

A large, brightly lit room, likely an architectural drafting studio, filled with people working at long tables. The tables are covered with large sheets of paper, likely architectural blueprints or drawings, and many rolled-up drawings are visible. The people, mostly men in white shirts and ties, are focused on their work, some leaning over the tables. The room has a high ceiling with exposed pipes and a long wall with windows in the background. The overall atmosphere is one of busy, traditional manual labor.

# Life before CAD

1990s?



2020s?



Look how big those monitors are!

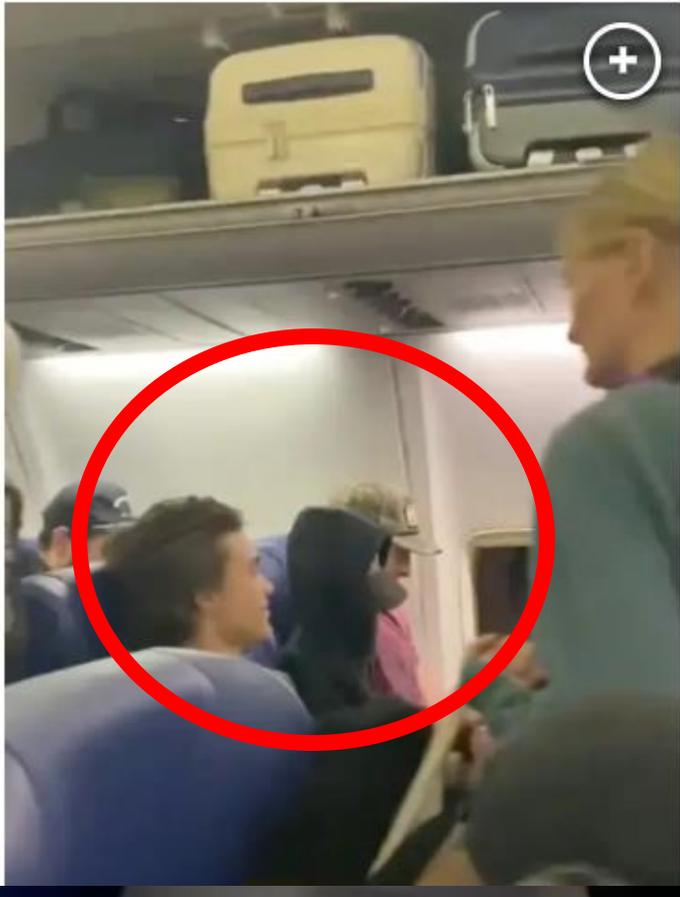


**Some things have gotten worse nowadays...**

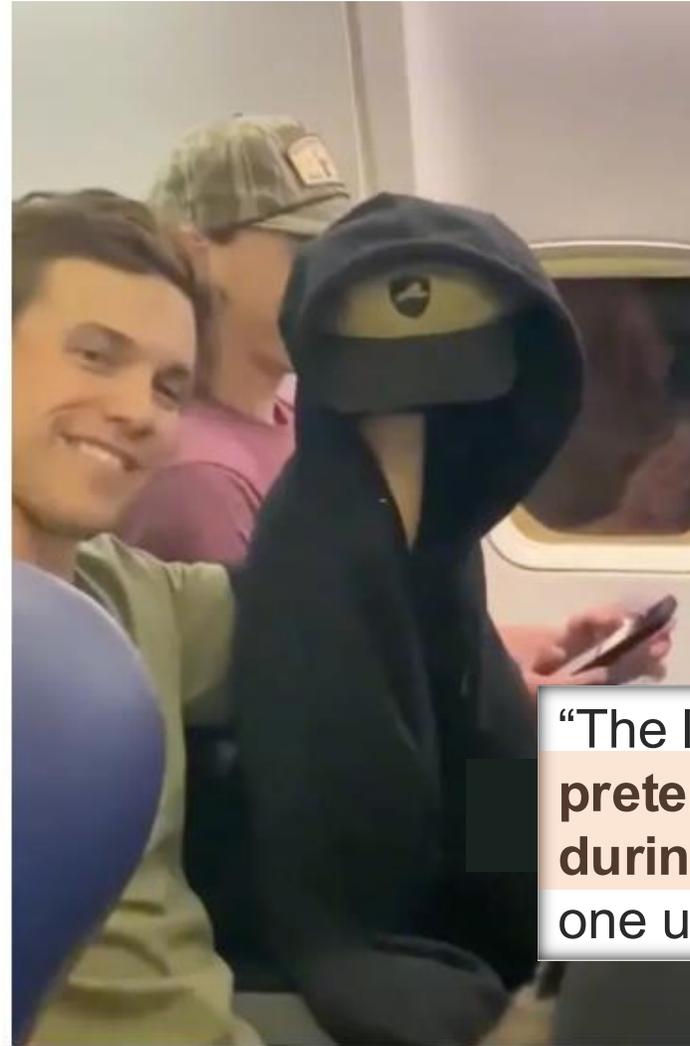
# Some things have gotten worse nowadays...



# Innovation in the face of challenging circumstances



Passengers aboard the flight can be seen walking past the man and his fake person, looking elsewhere for a seat



“The lady in the row across from me was pretending to throw up in the puke bag during the whole boarding process,” one user said in response to the video.

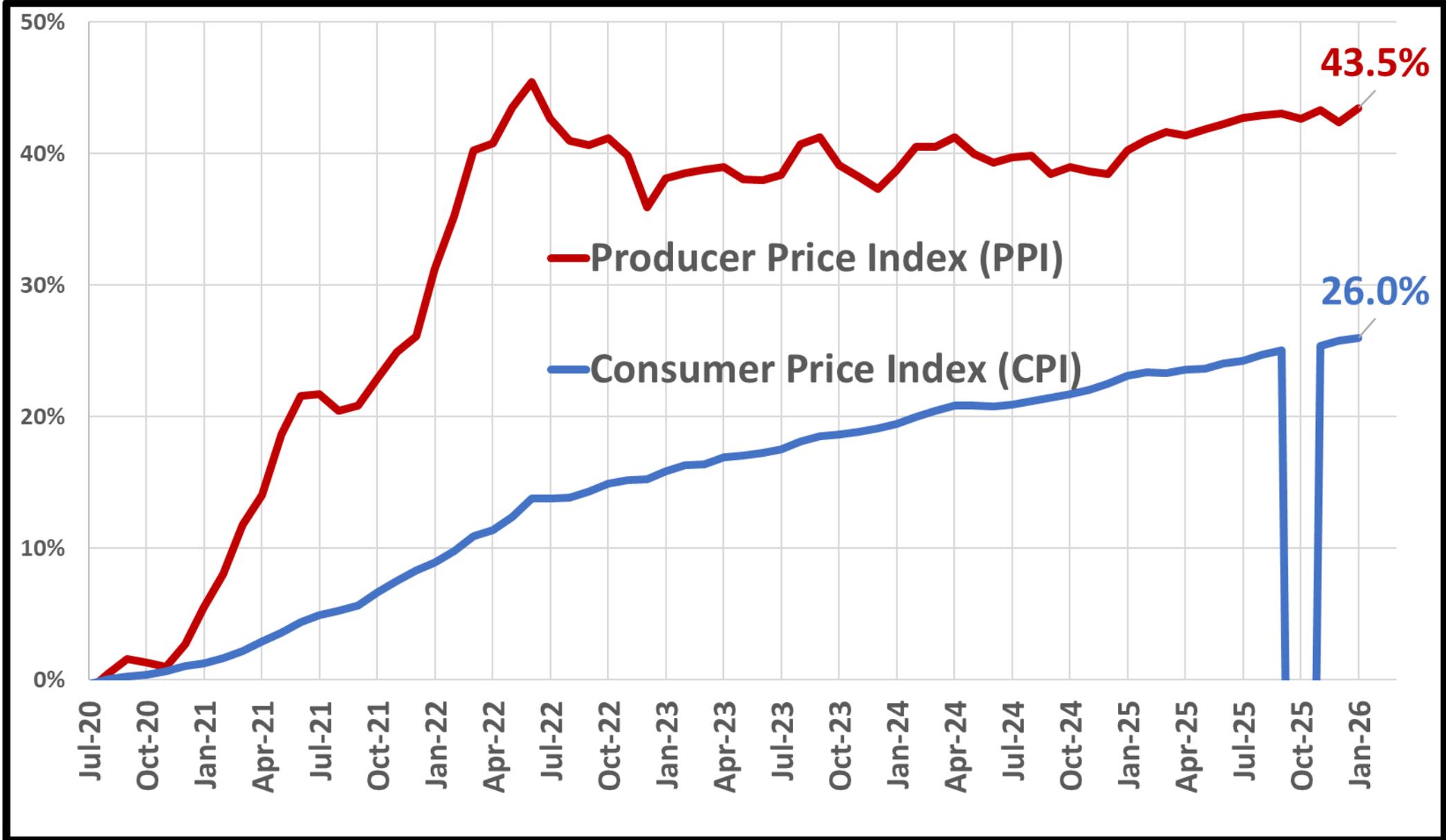
A man revealed a new way to avoid other plane passengers sitting next to him by using just a hat and hoodie.

# Agenda

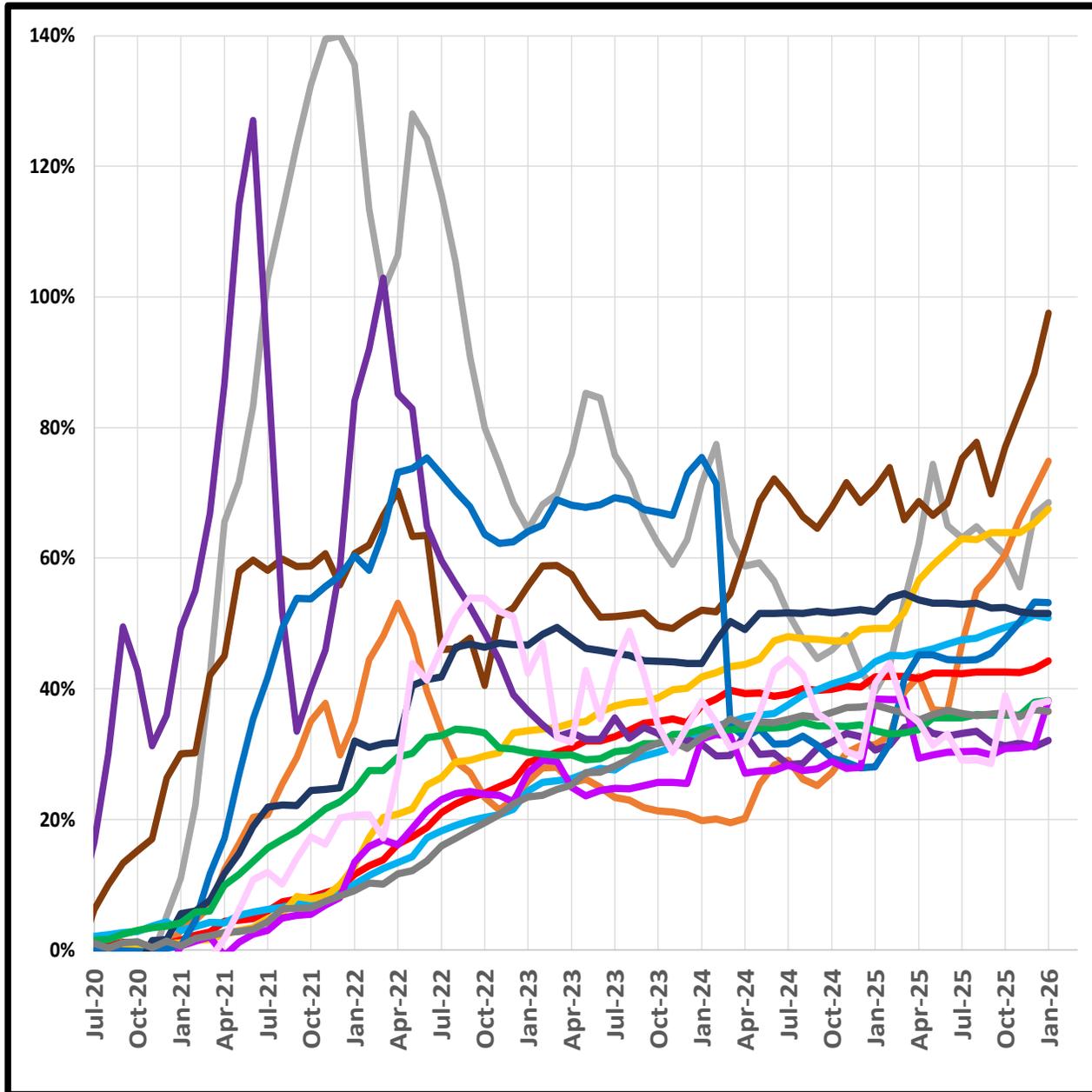
- **Recent trends & forces affecting the industry**
- **Where things are headed & how the next 10 years will experience more change than the prior 40**
- **Ideas to position your organization, workgroup, personal career for the future**

# Trends & Forces Shaping the Industry

# Everything is Much More Expensive



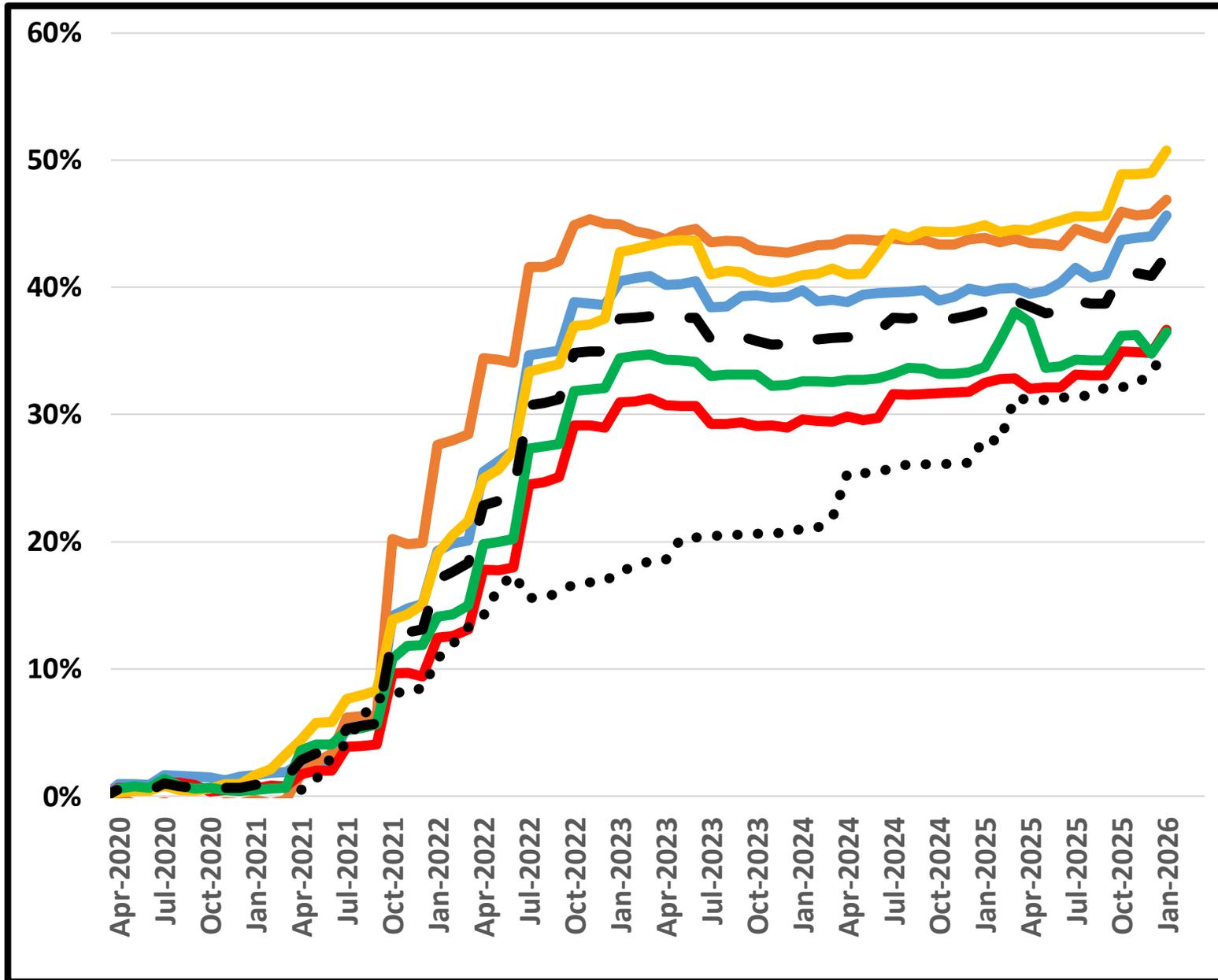
# Price Changes are Highly Volatile



## VARIETY OF COMMODITY INPUTS

	<u>% change</u> <u>from Feb 2020</u> <u>to Jan 2026:</u> <u>(nearly 6yrs)</u>	<u>Per year</u> <u>change</u>	<u>% change</u> <u>from Oct 2025</u> <u>to Jan 2026:</u> <u>(3mo)</u>	<u>Annualized rate</u> <u>from Oct 2025</u> <u>to Jan 2026:</u> <u>(3mo --&gt; 1YR)</u>
Copper & Brass Mill Shapes	98%	16%	20%	82%
Aluminum Mill Shapes	75%	12%	14%	57%
Steel Mill Products	68%	11%	8%	32%
Switchgear, Switchboard, Industrial Controls Equipment	68%	11%	4%	15%
Rebar	53%	9%	6%	22%
Gypsum Products	52%	9%	-1%	-4%
Construction Sand, Gravel, and Crushed Stone	51%	8%	1%	6%
Cement & Concrete Product Manufacturing	44%	7%	2%	7%
Plastic Construction Products	38%	6%	2%	9%
Deep Sea Transportation of Freight	38%	6%	-1%	-3%
Ready-Mix Concrete	36%	6%	0%	1%
Lumber and Plywood	32%	5%	1%	3%
Ashpalt Paving & Roofing Materias	38%	6%	0%	1%

# Pricing Impacts differ by market sector



% change  
from Feb 2020  
to Jan 2026:  
 (nearly 6yrs)

Per year  
change

51% Office

8.5%

47% Warehouse

7.8%

46% Industrial

7.6%

43% All Non-Residential

7.1%

36% Healthcare

6.1%

37% School

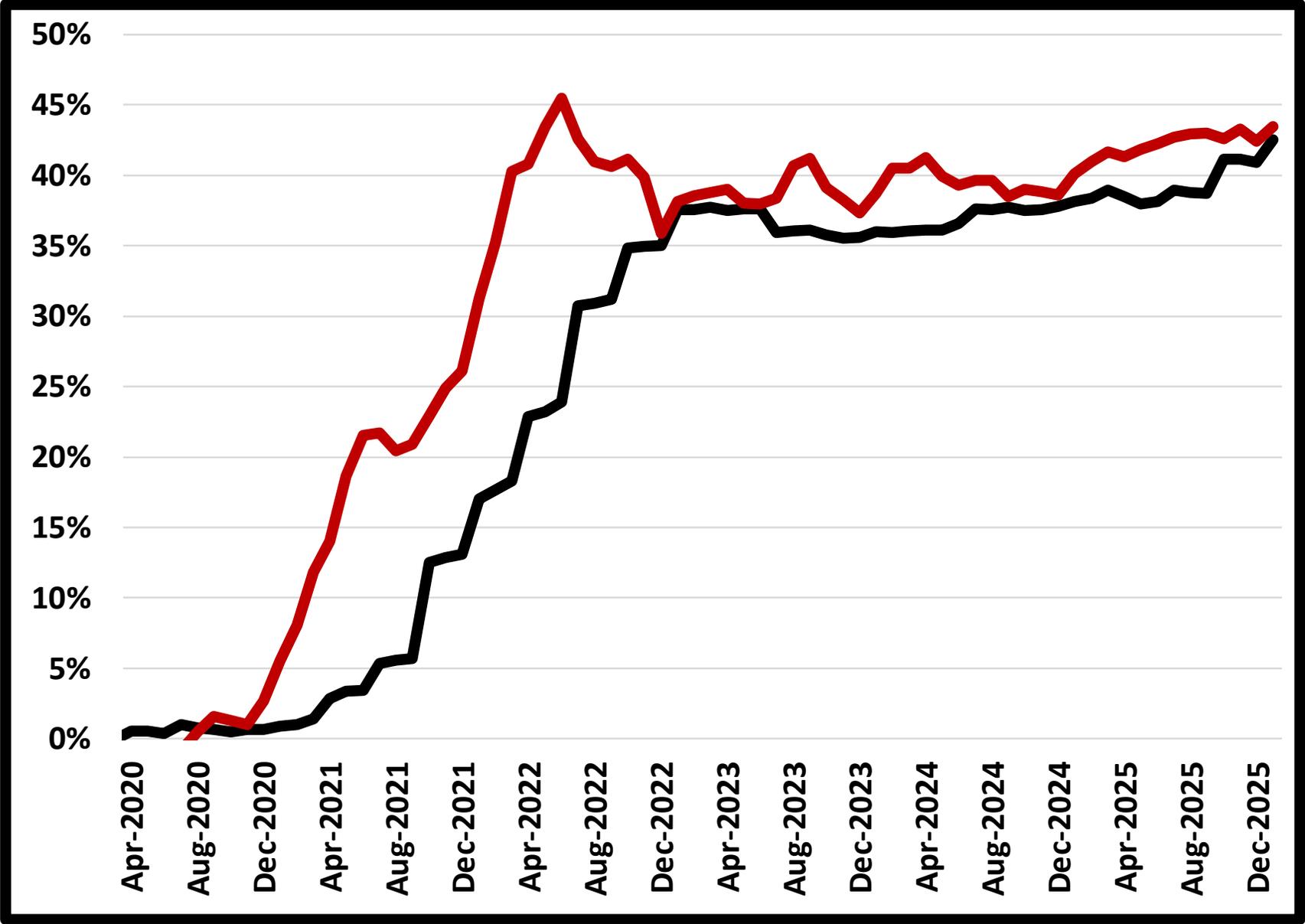
6.1%

35% Maintenance & Repair

5.9%

# Bid are nearly sync'd with Materials Escalation

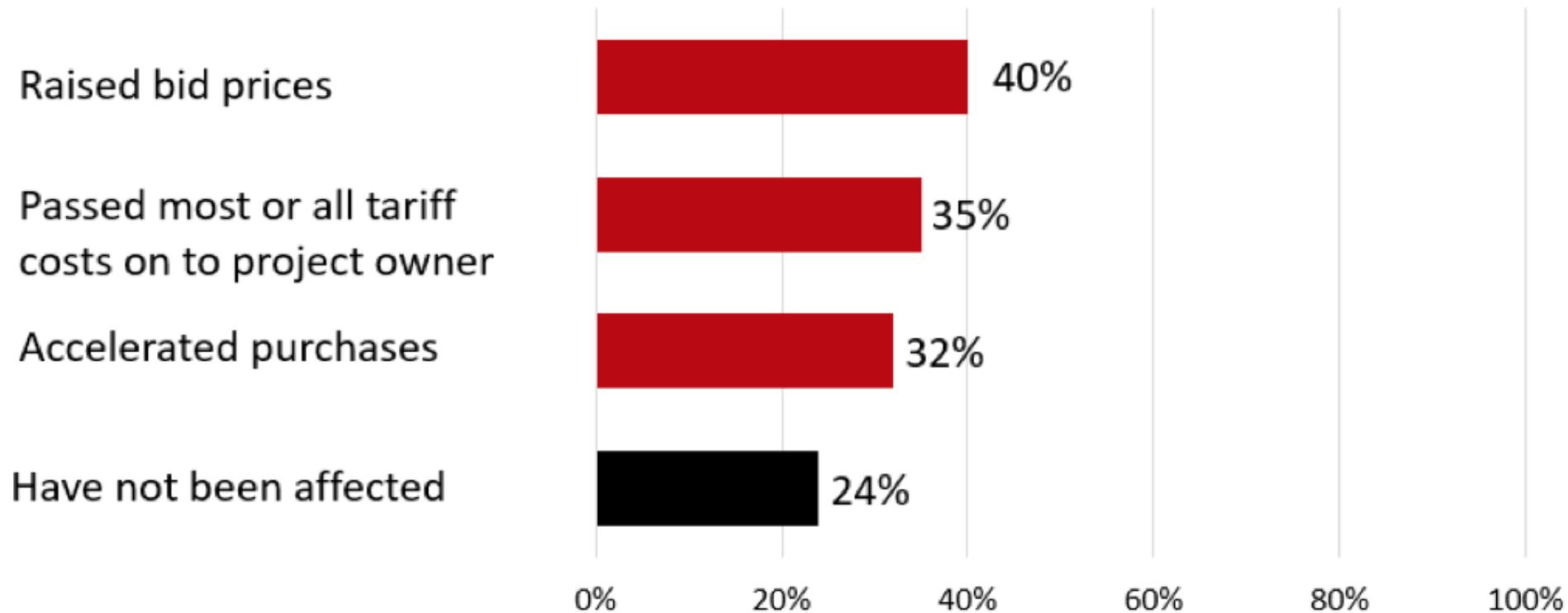
% Change  
from Feb 2020  
to Jan 2026:



**43.5% Inputs PPI (goods)**  
**42.5% Bids**

## Actions taken in response to actual or proposed tariffs

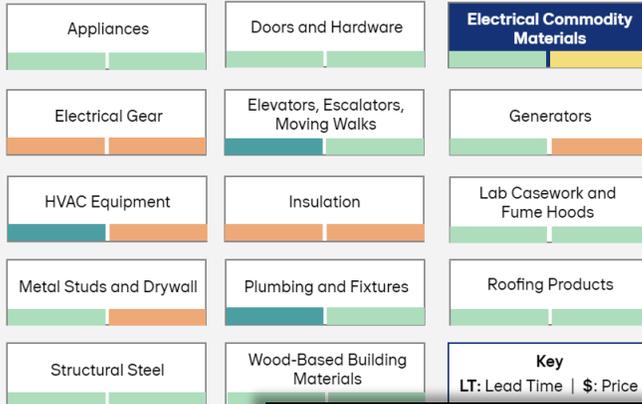
(% of firms - some respondents reported multiple actions):



Source: AGC 2026 Outlook Survey; 951 total respondents

# Lead Times Remain Elevated

## Current Lead Time and Price Forecast



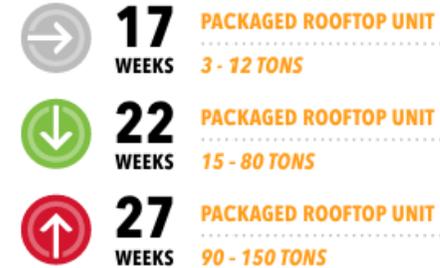
## Electrical Commodity Materials



Lead times for most commodity electrical items have stabilized. Due to high interest rates and lower current and forecasted demand, contractors and stocking distributors are actively reducing inventory levels. Although raw material prices for copper, resins, and steel are down, we expect prices to increase 3-6 percent over the next 6-12 months based on inflation.

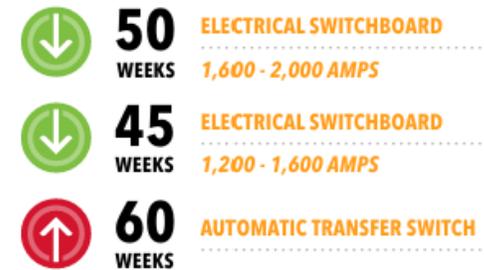


## PROCUREMENT LEAD TIME UPDATES

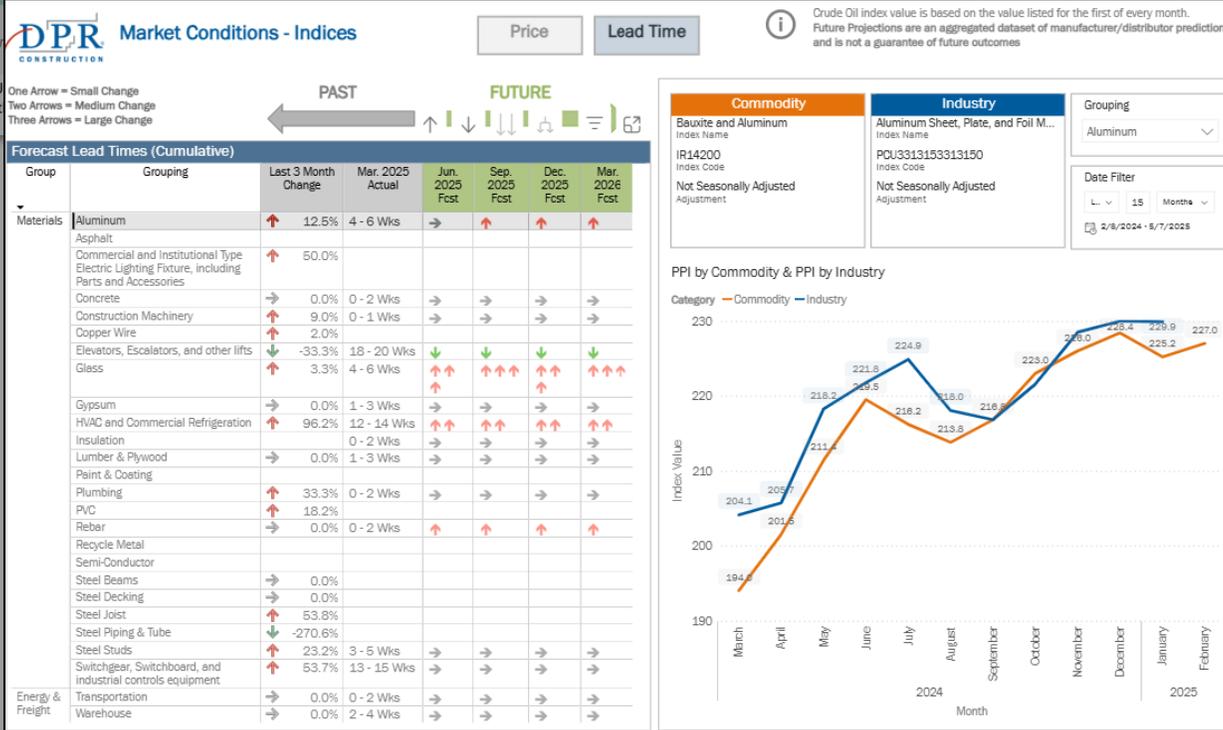


## EQUIPMENT & BUILDING MATERIAL OUTLOOK

STAINLESS STEEL PIPING	LEAD TIME
SMALL BORE: COST RISING	1-2 WKS
LARGE BORE: COST RISING	2-4 WKS
CARBON STEEL, COPPER & GALVANIZED PIPING	
SMALL BORE: COST RISING	AVAILABLE
LARGE BORE: COST RISING	1-2 WKS
IMPs: COST RISING	1-2 MOS
UTILITY TRANSFORMERS	52-60 WKS
WATER COOLED CHILLERS	18-30 WKS



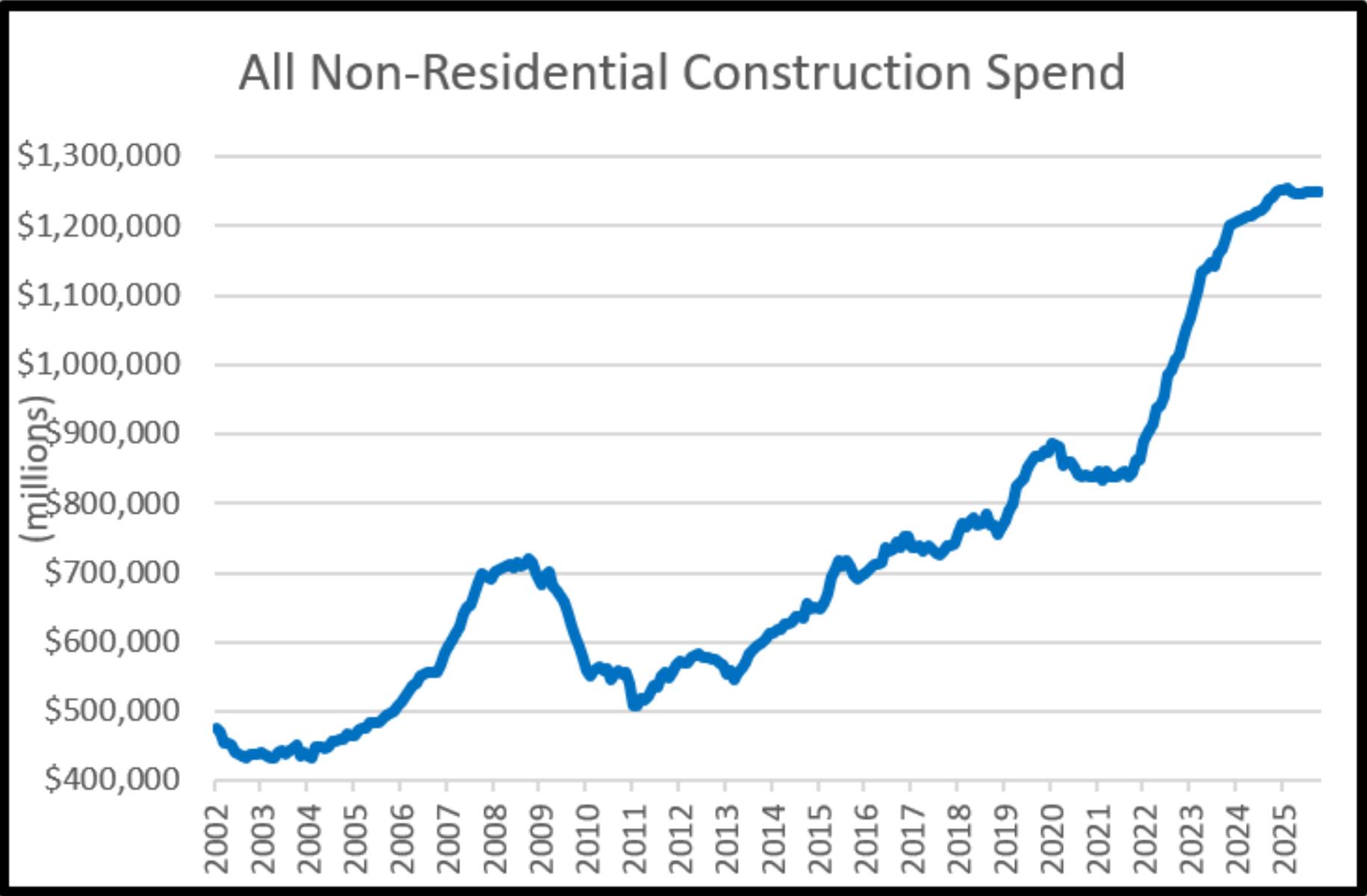
Lead times described are after fully applied



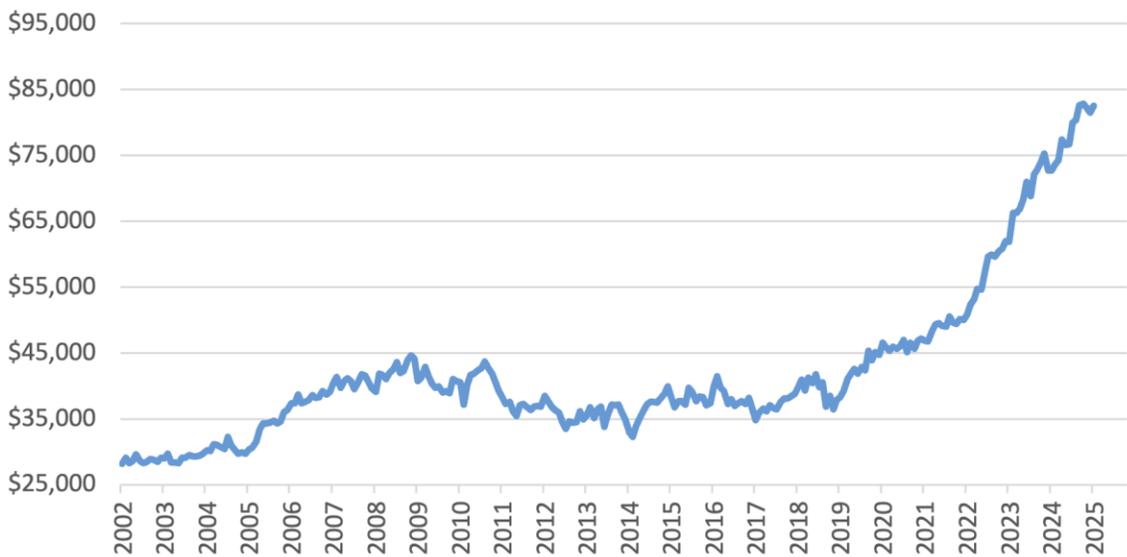
# Current Study

- **90% say supply chains are less reliable than pre-COVID**
  - Got bad, started to get better, got worse again and haven't improved much over last couple of years
- **50% say vendor delivery dates or promises are less reliable**
  - Once selected, **suppliers know they have leverage** so are incentivized to say one thing to get the job, and then change it once they have it
  - Majority of procurement/orgs are looking to make contract “tighter” or have “stricter penalties” to accommodate this
- **100% say the workforce is less reliable than pre-COVID**

# Massive Growth in Construction Spend



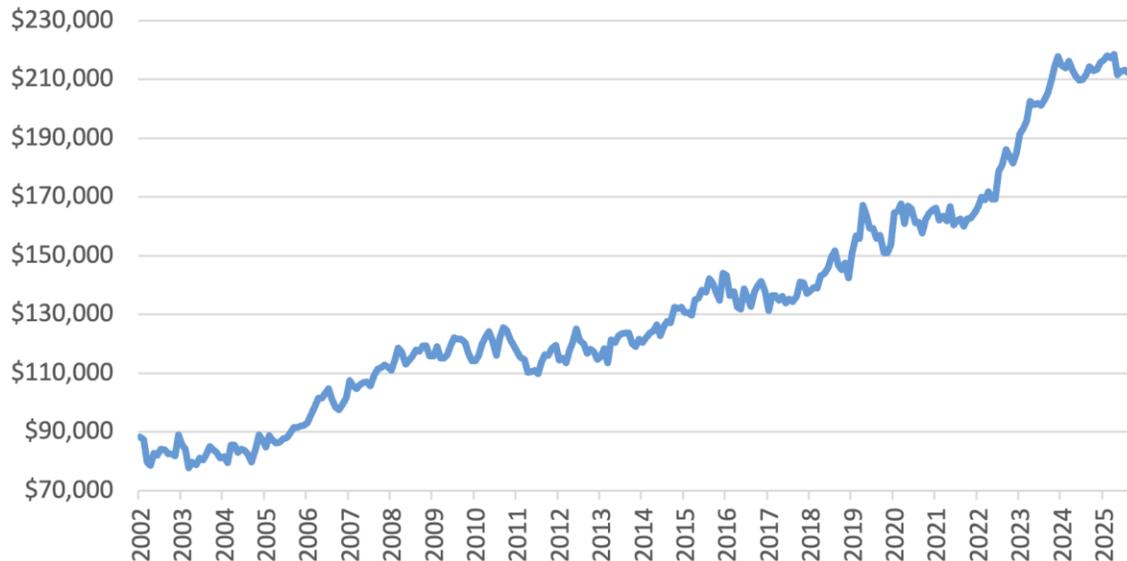
### Water & Wastewater



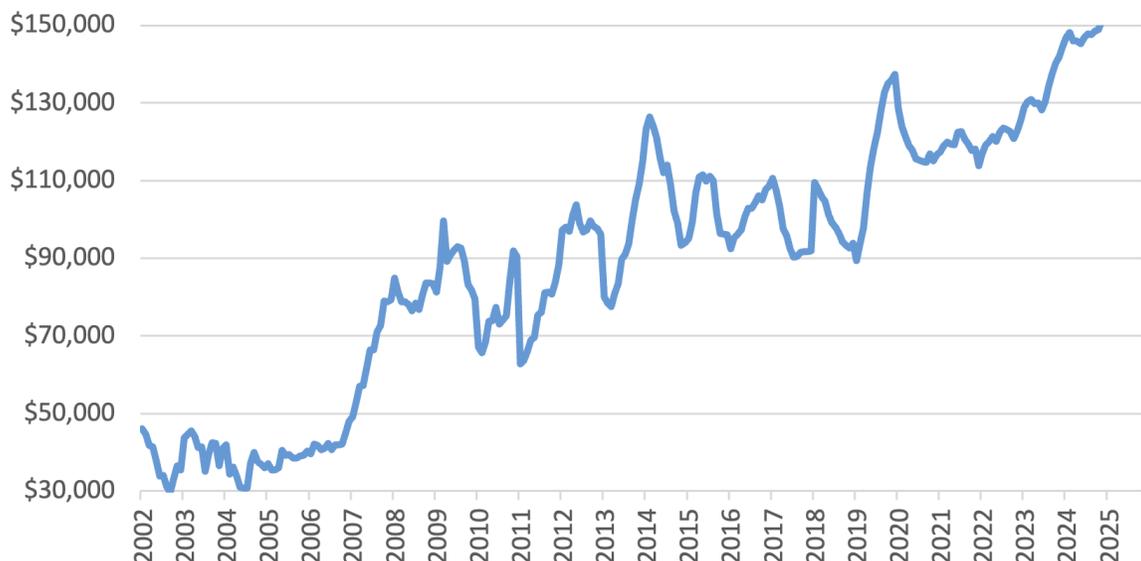
### Manufacturing



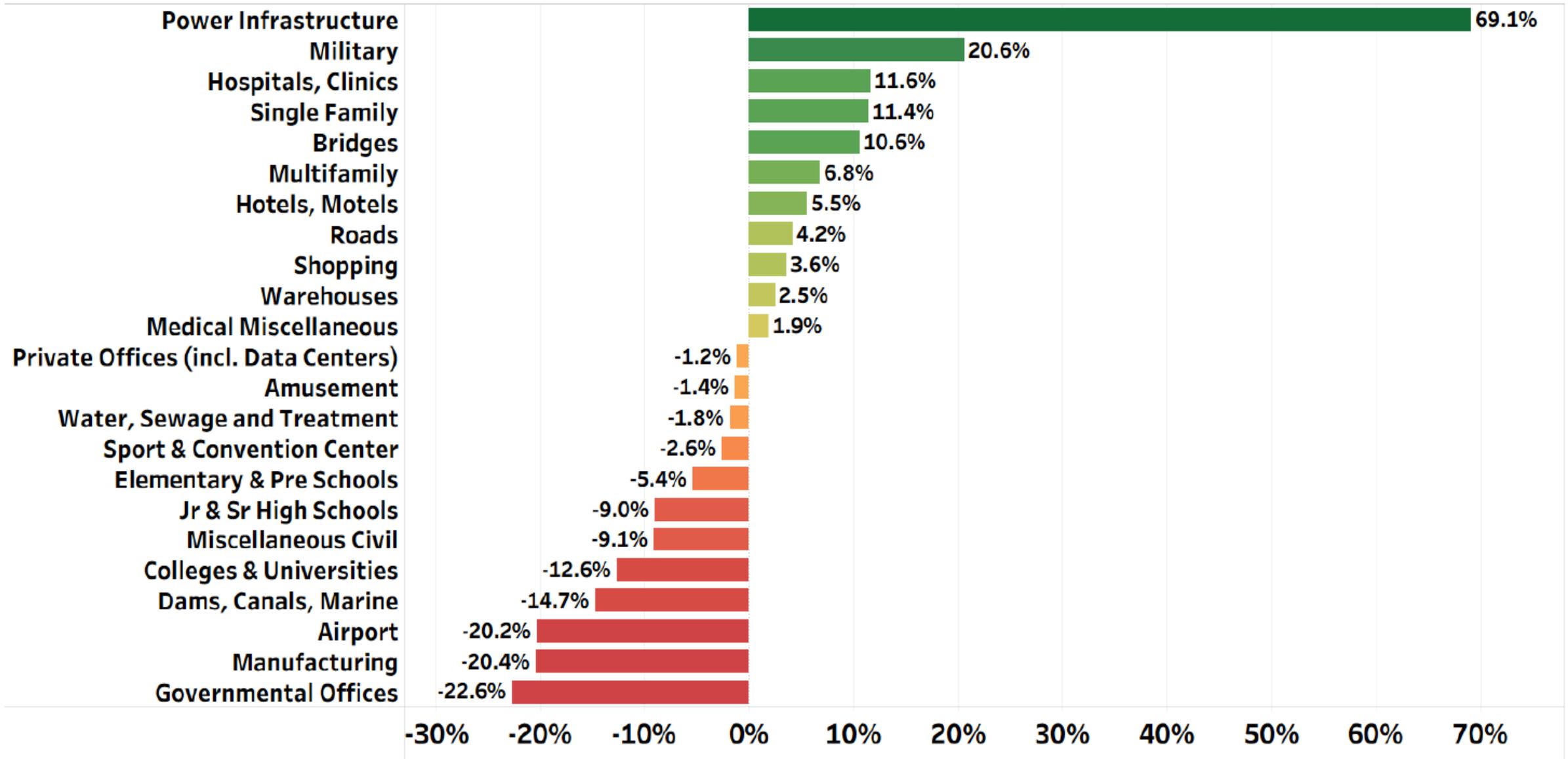
### Transportation (air, land, water, highway, road)



### Power



# 2026 US Full Year Starts Forecast by Subcategory



Source: 4Q2025 Starts forecast, ConstructConnect

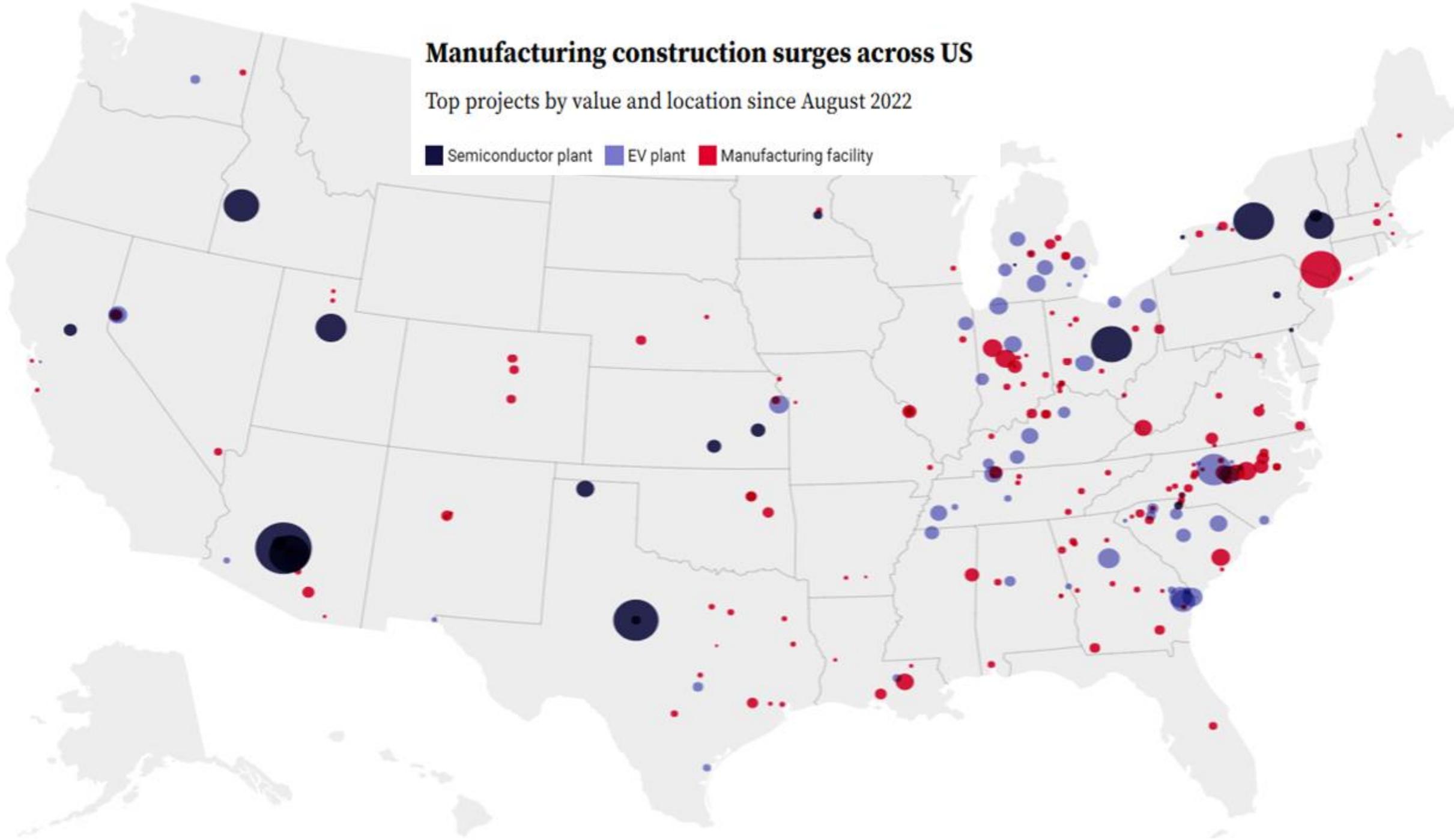
Note: **Miscellaneous Civil** includes Parks, Landscaping, Railroad & Subway, Sidewalks, Curbs, Gutters, Military Non Building, Athletic Fields & Courts, Swimming Pools, Demolition (Civil), Electrical Work (Civil), Fencing, Machinery & Supplies, Pavement Markers, Tunnels, Miscellaneous (Civil), Sitework, Oil and Gas Pipelines in addition to power infrastructure

**Medical Miscellaneous** includes Medical Offices, Outpatient Surgery Centers, Imaging Centers

# Manufacturing construction surges across US

Top projects by value and location since August 2022

■ Semiconductor plant ■ EV plant ■ Manufacturing facility



# Megaprojects As a Percentage of All Nonresidential Spending Hit Record High

Spending as a percentage of all nonresidential starts (% , Rolling 12-Months)



# More Growth?? -- Dodge Momentum Index

Monthly measure of nonresidential projects entering planning, leading indicator of construction by 1-year

\$100M+  
projects  
entering  
planning

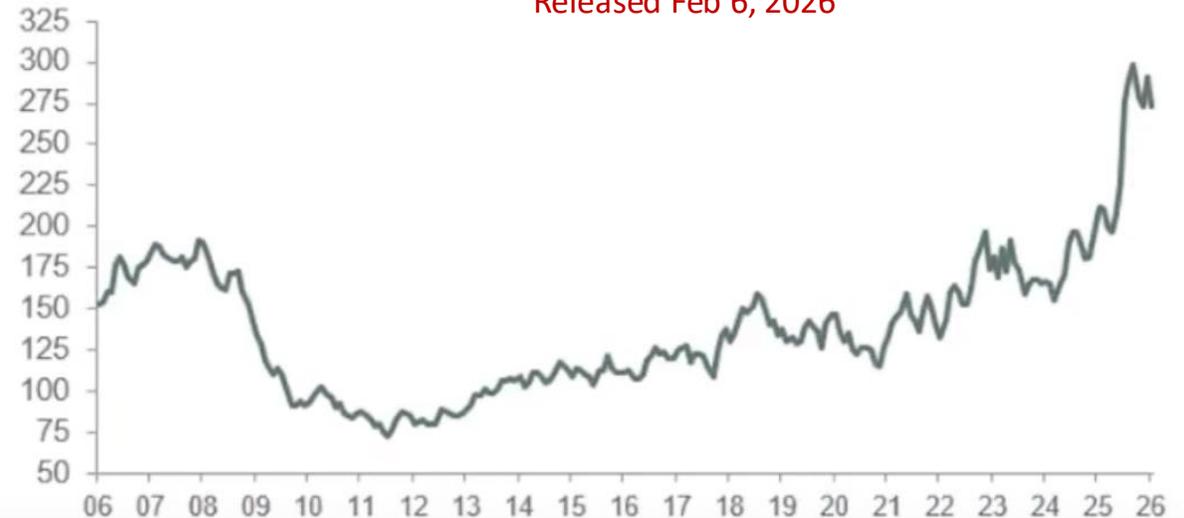
Month	#
Jan 2026	35
Dec 2025	34
Nov 2025	28
Oct 2025	45
Sept 2025	58
Aug 2025	51
July 2025	47
June 2025	40
May 2025	33

Total for last 9 mo. = 371

## DODGE MOMENTUM INDEX

(2000=100, Seasonally Adjusted)

Released Feb 6, 2026

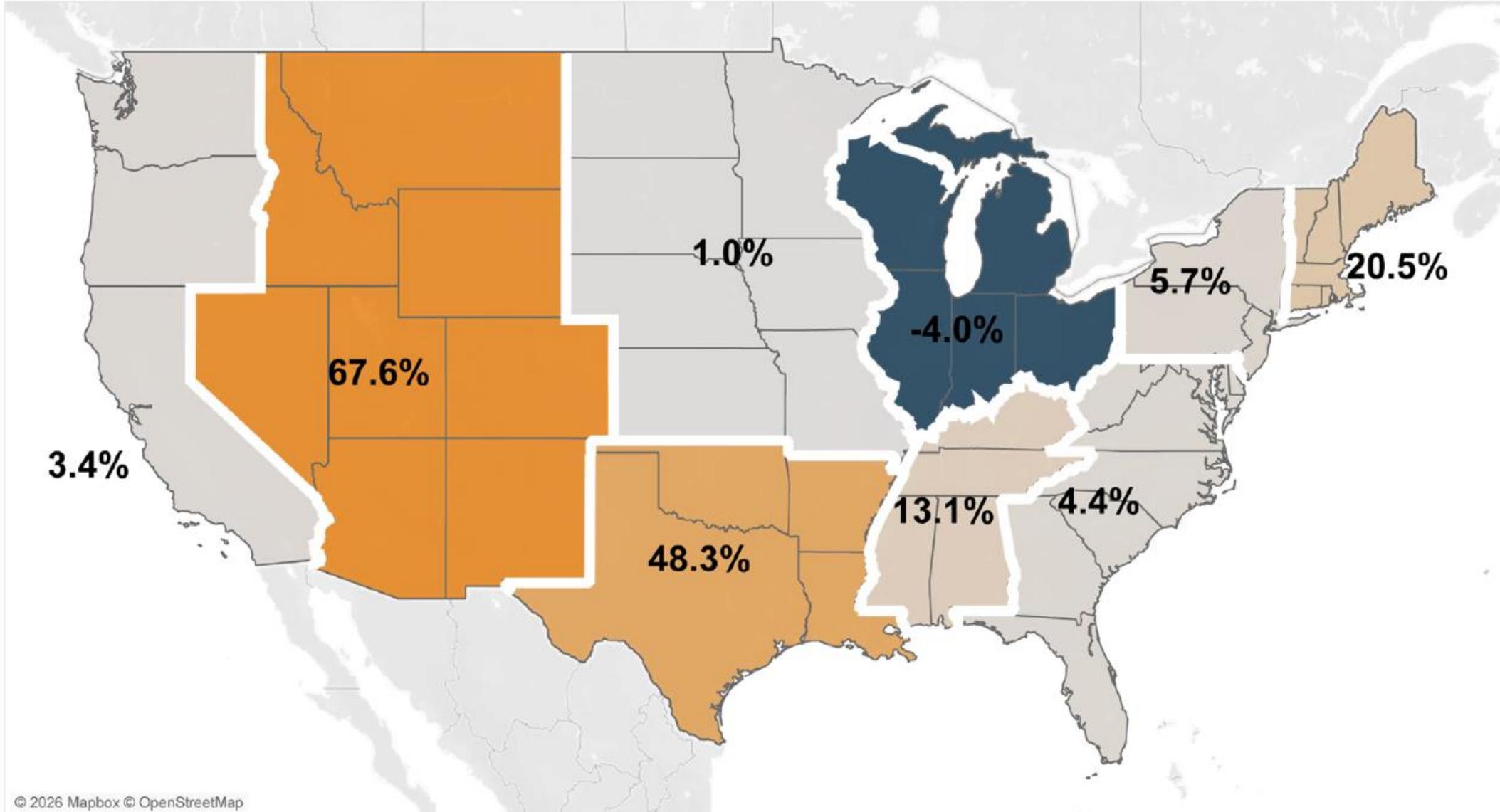


Source: Dodge Construction Network

Index was: **+29% year over year**

# Total Nonresidential Year-to-Date Starts by Census Divisions

(Year-to-Date change compared to the same period 1-year ago, %)



© 2026 Mapbox © OpenStreetMap

Source: ConstructConnect Industry Snapshot

 **constructconnect.**

SCHOOL OF  
ENGINEERING  
Civil, Environmental & Architectural Engineering

# Projects (and clients) are Experiencing....

- Hot market, Fewer bidders, Unreliable supply chains
- Budget busts being realized (as clients cycle thru their CIPs)
- Speed matters more than ever
- Dip in performance – safety, productivity, quality
- Clients realizing they are in competition with each other & have started to accept the workforce realities
- Margins are down for AEC firms

# Workforce

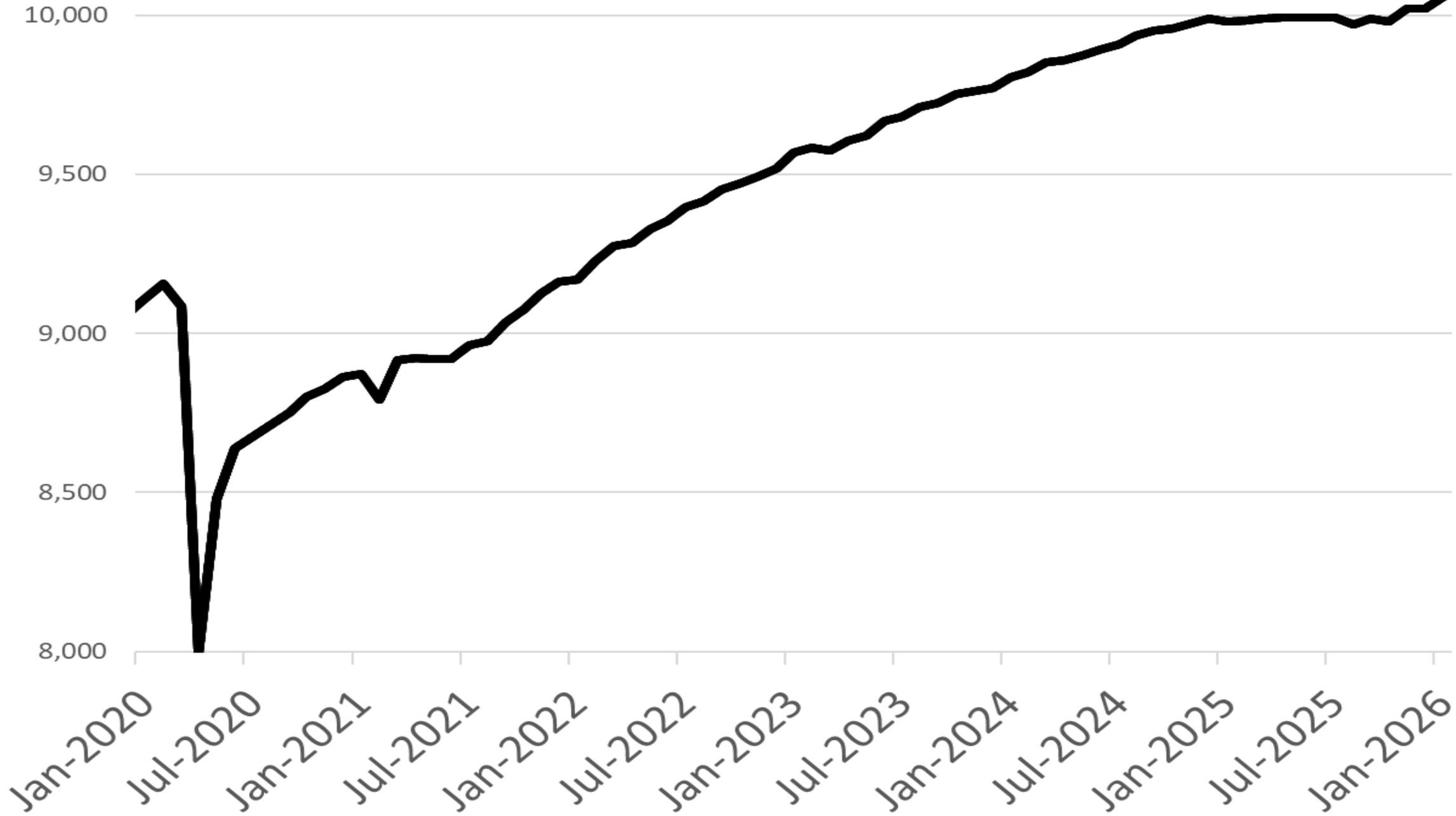
# Workforce

Also known as: **“What’s going on?”**

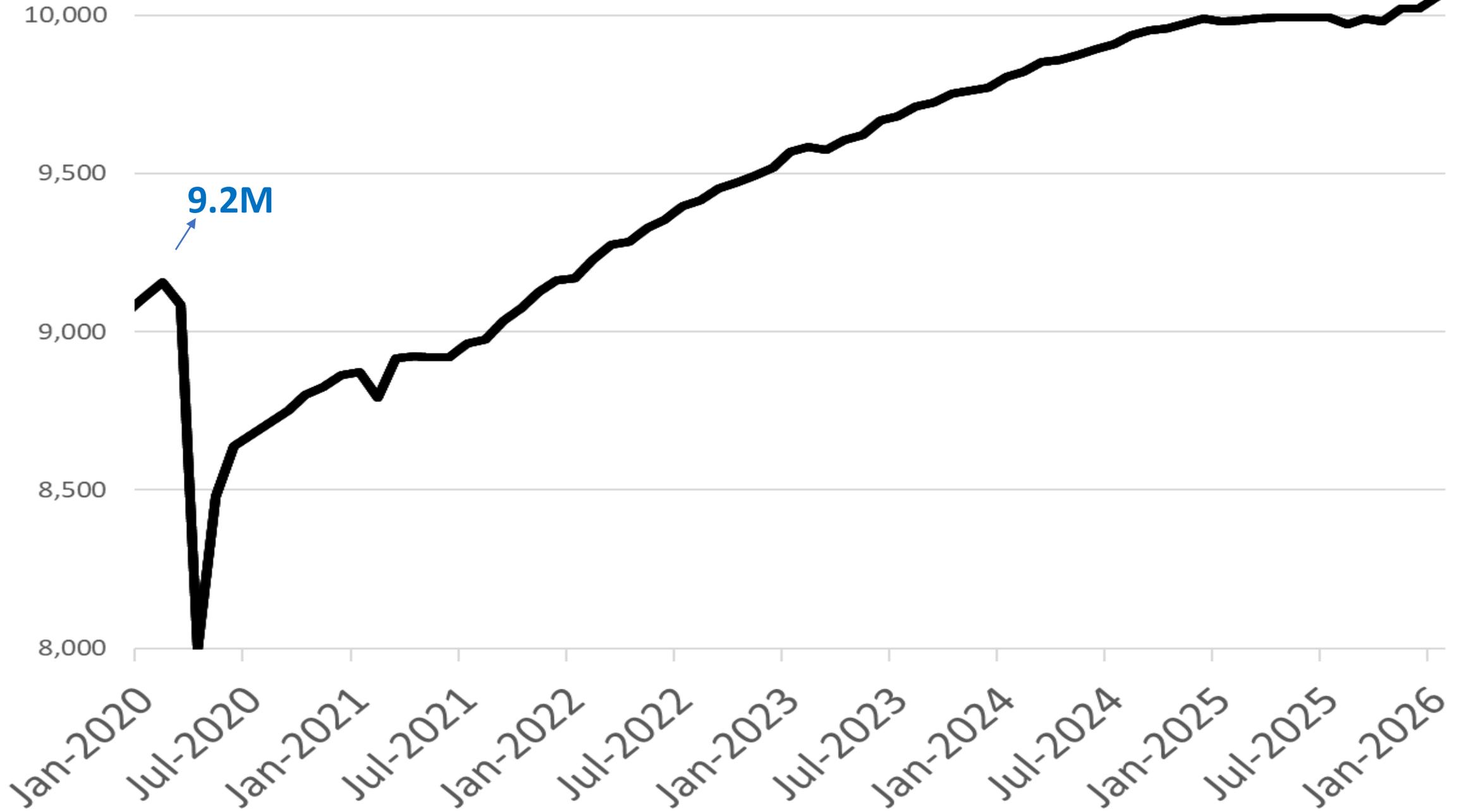
Signed,

Lawyers across the AEC industry

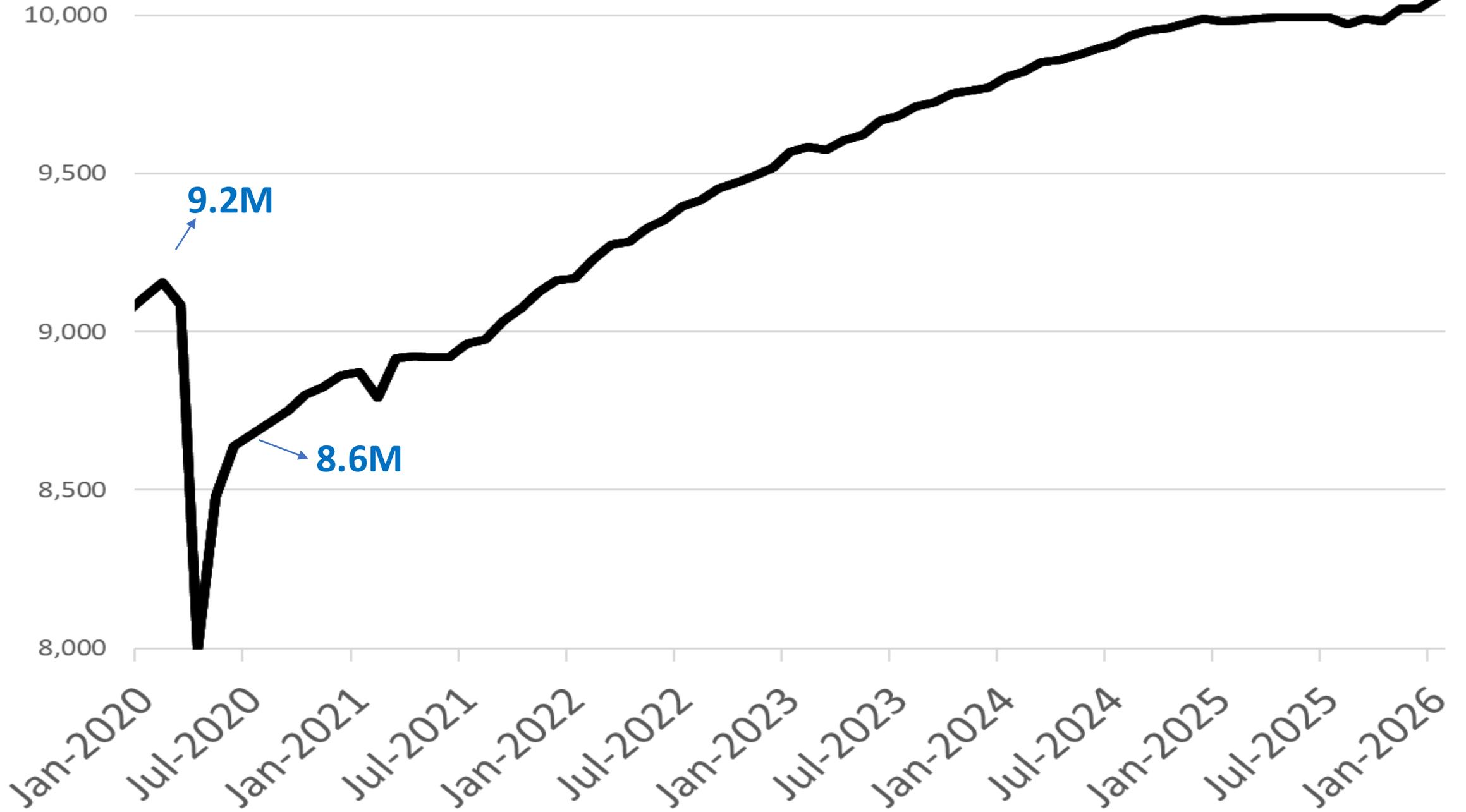
# Total AEC Employees



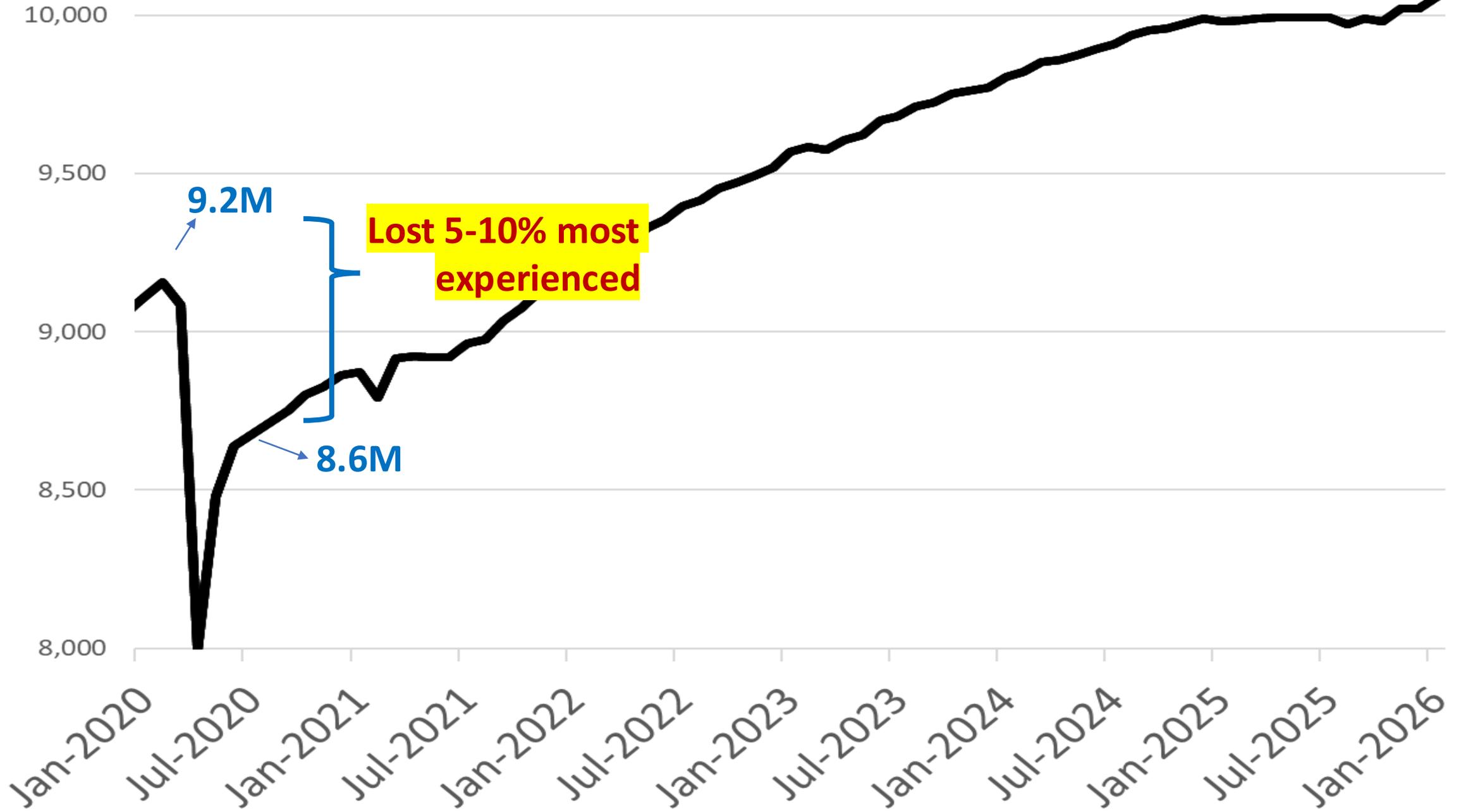
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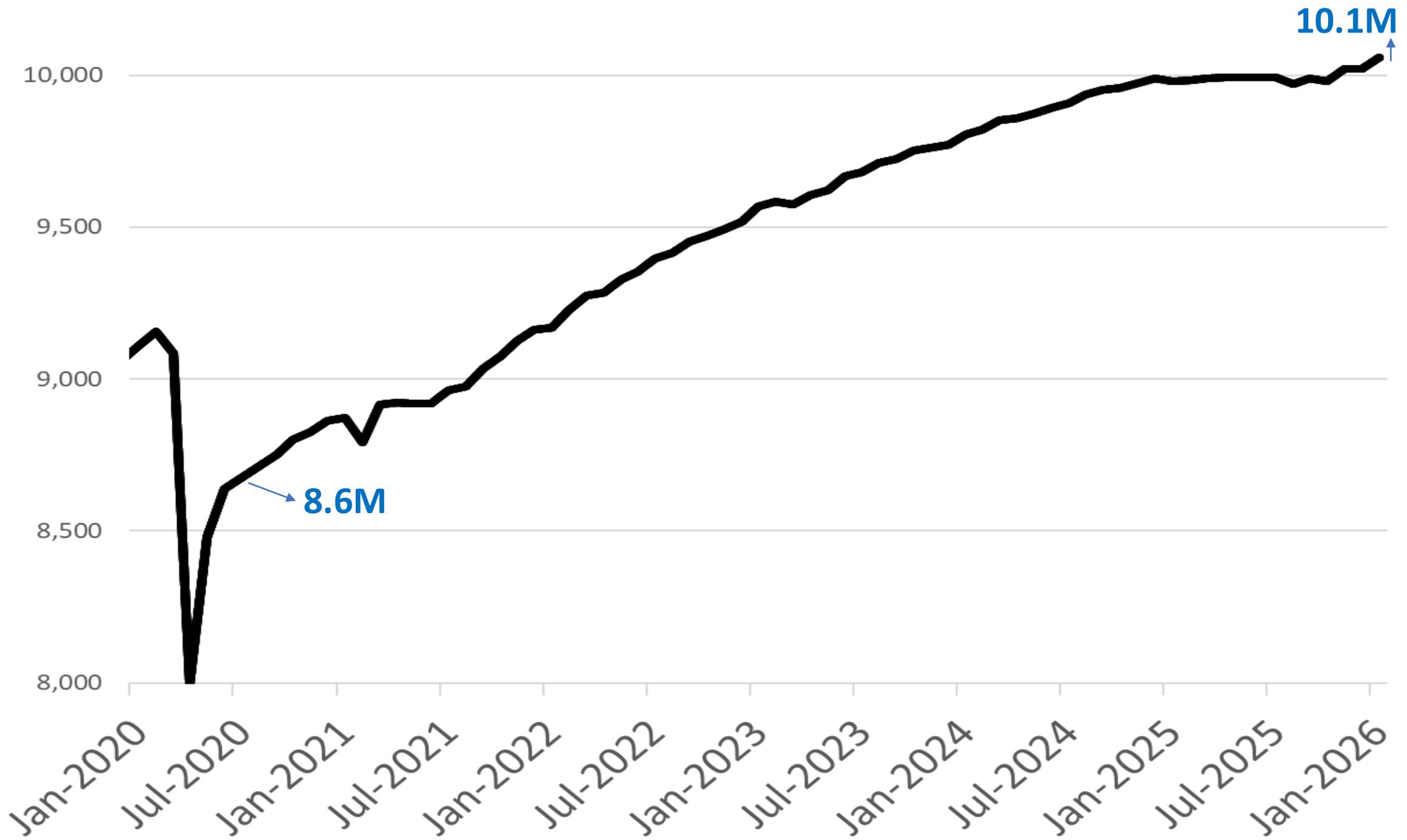
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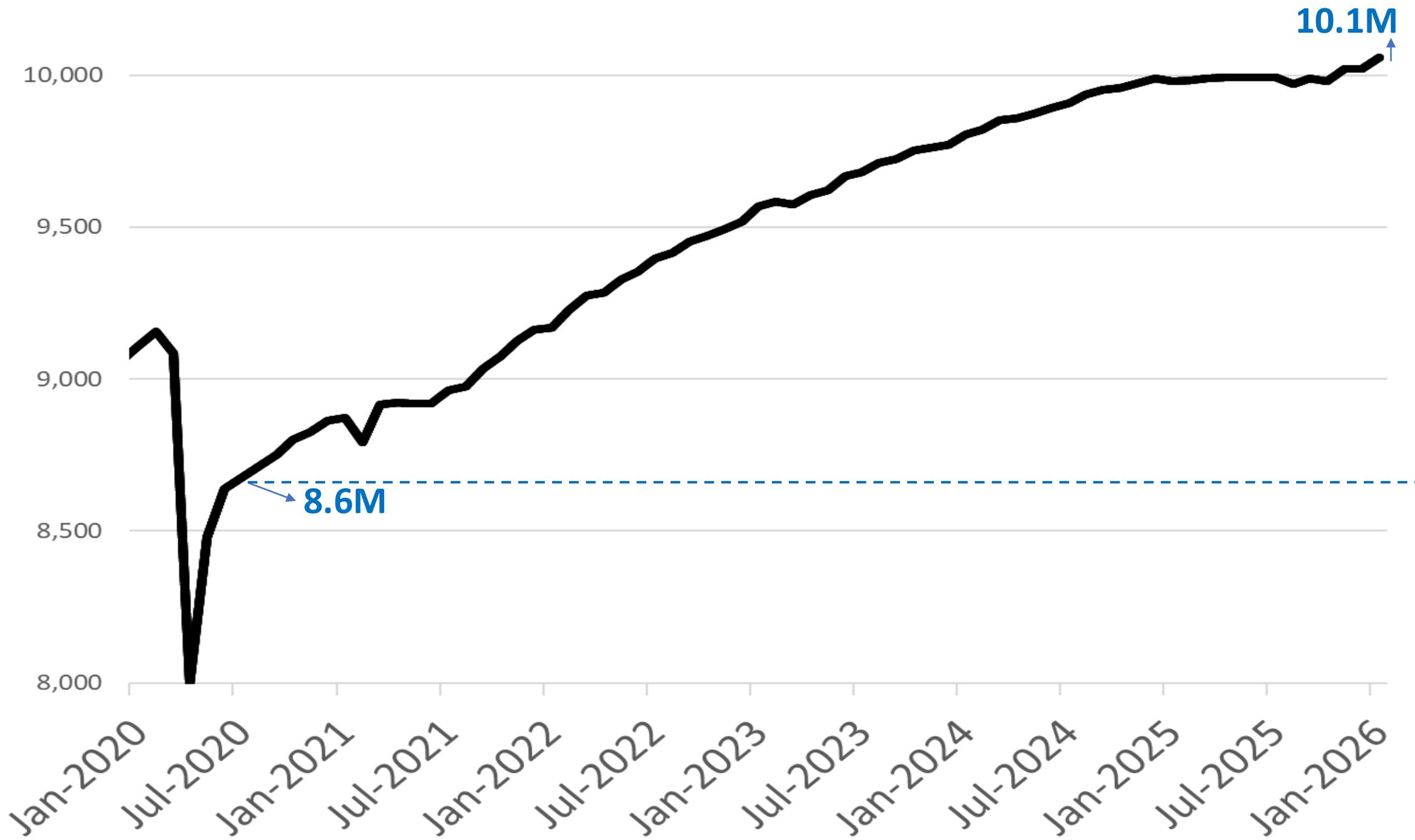
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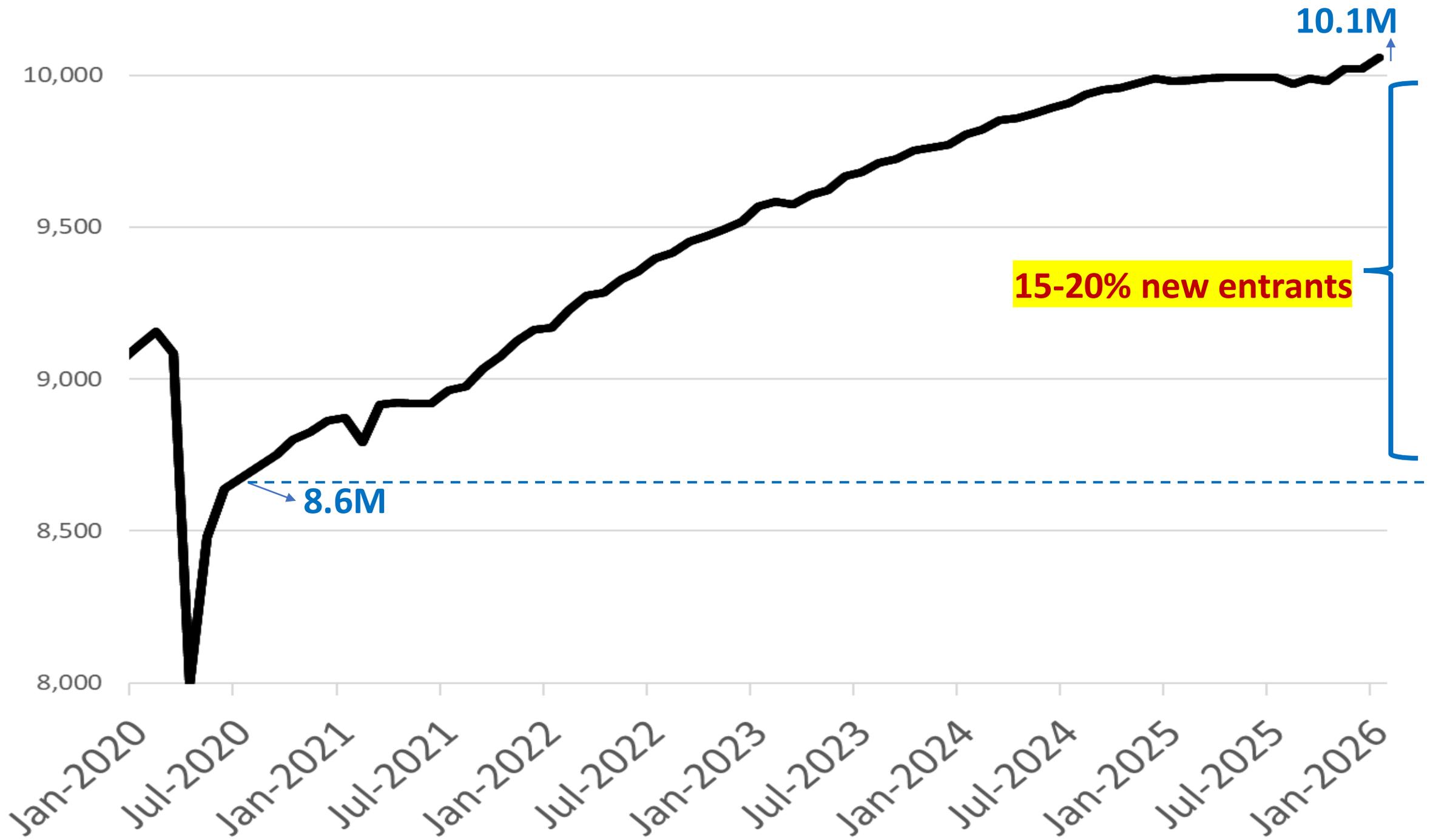
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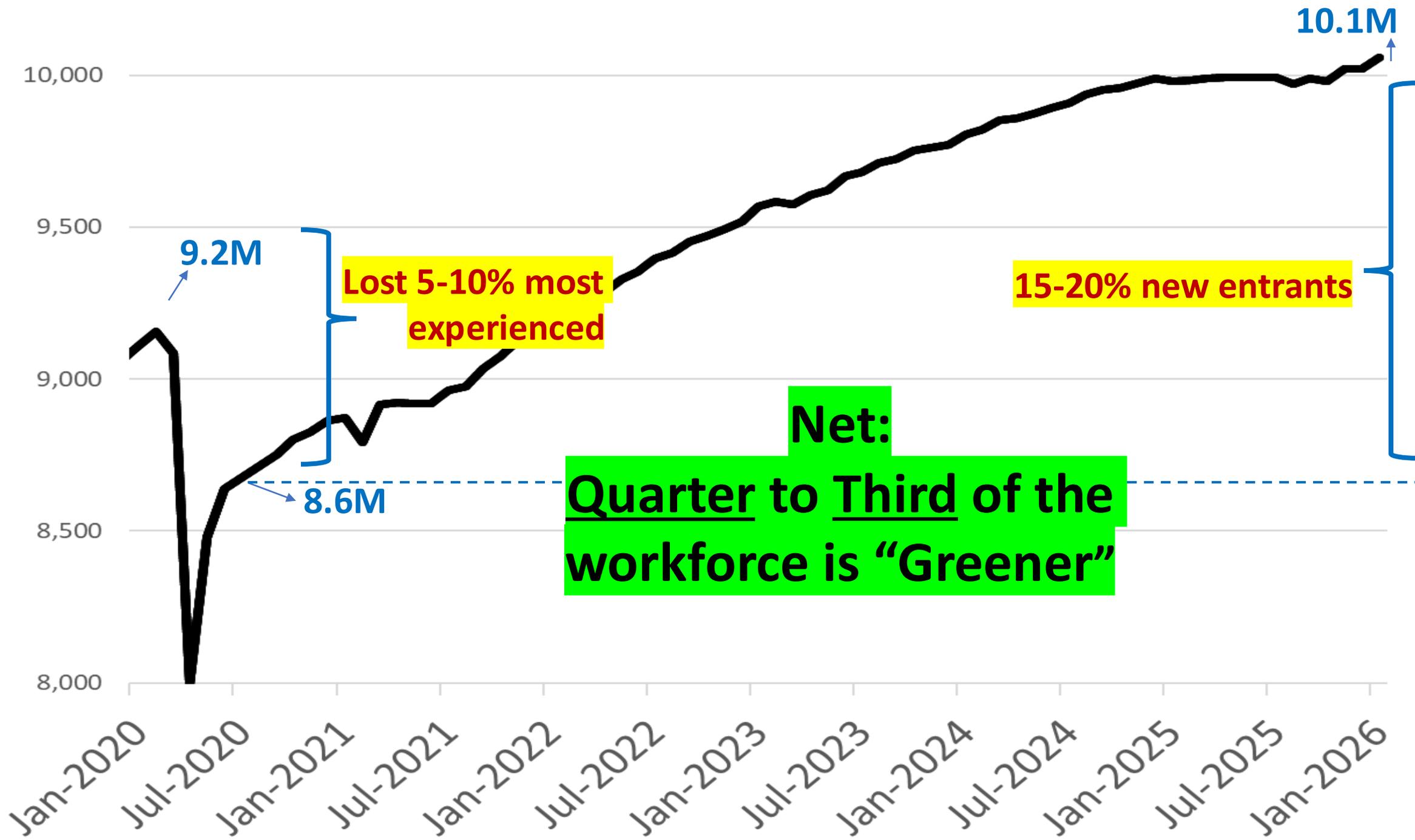
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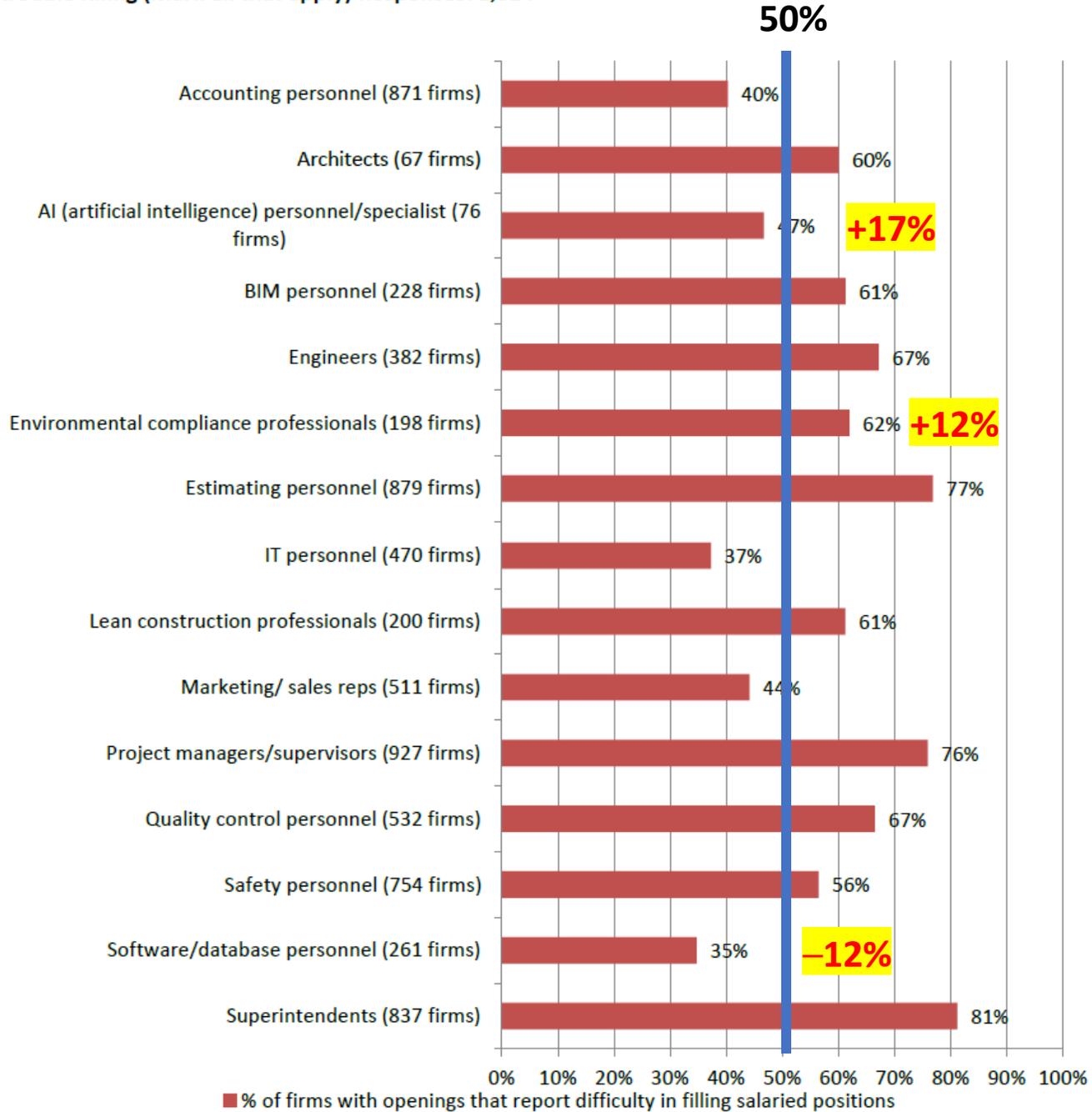
# Total AEC Employees



# Total AEC Employees

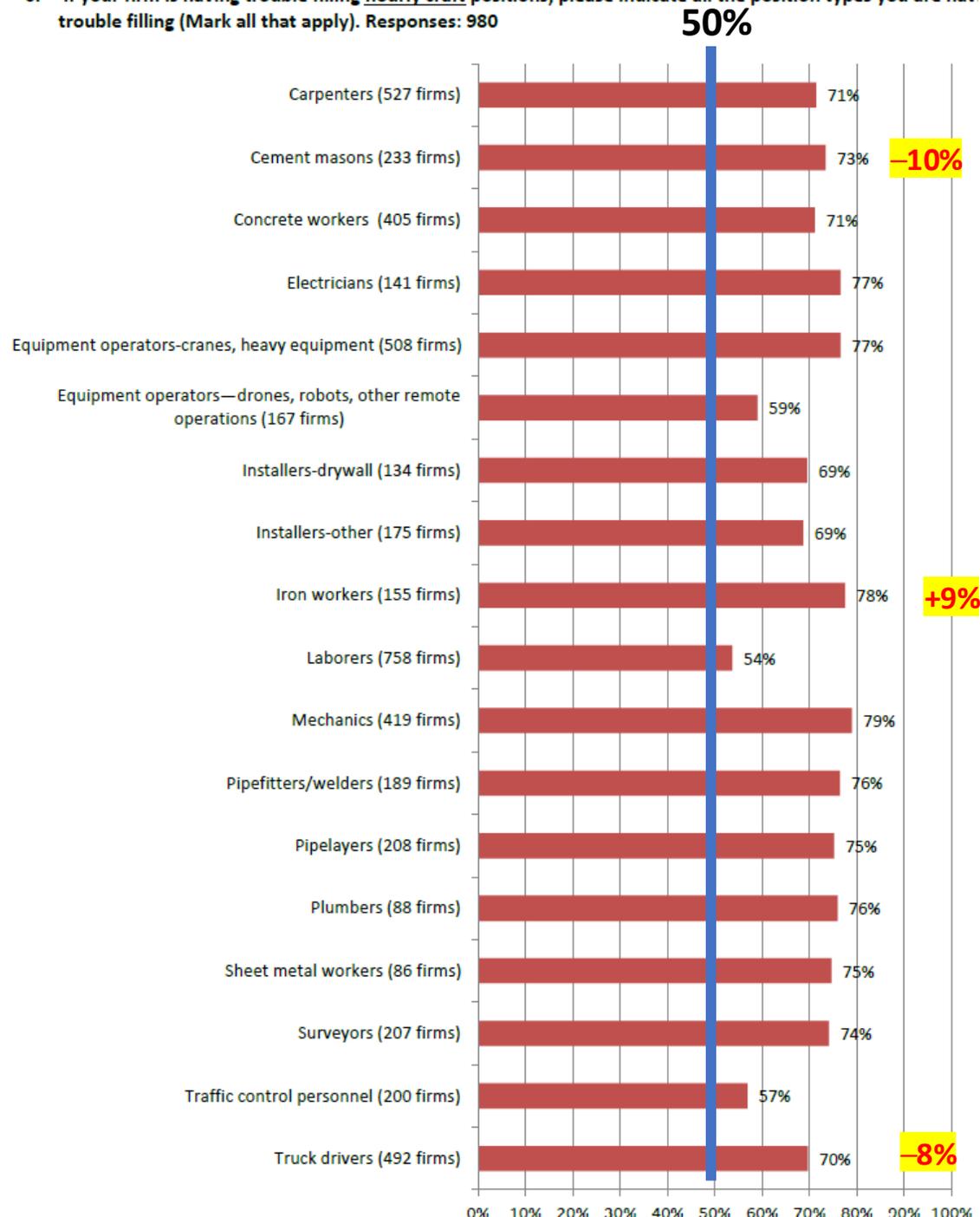


5. If your firm is having trouble filling salaried positions, please indicate all the position types you are having trouble filling (Mark all that apply) Responses: 1,024



**±10% or more  
vs. 2024**

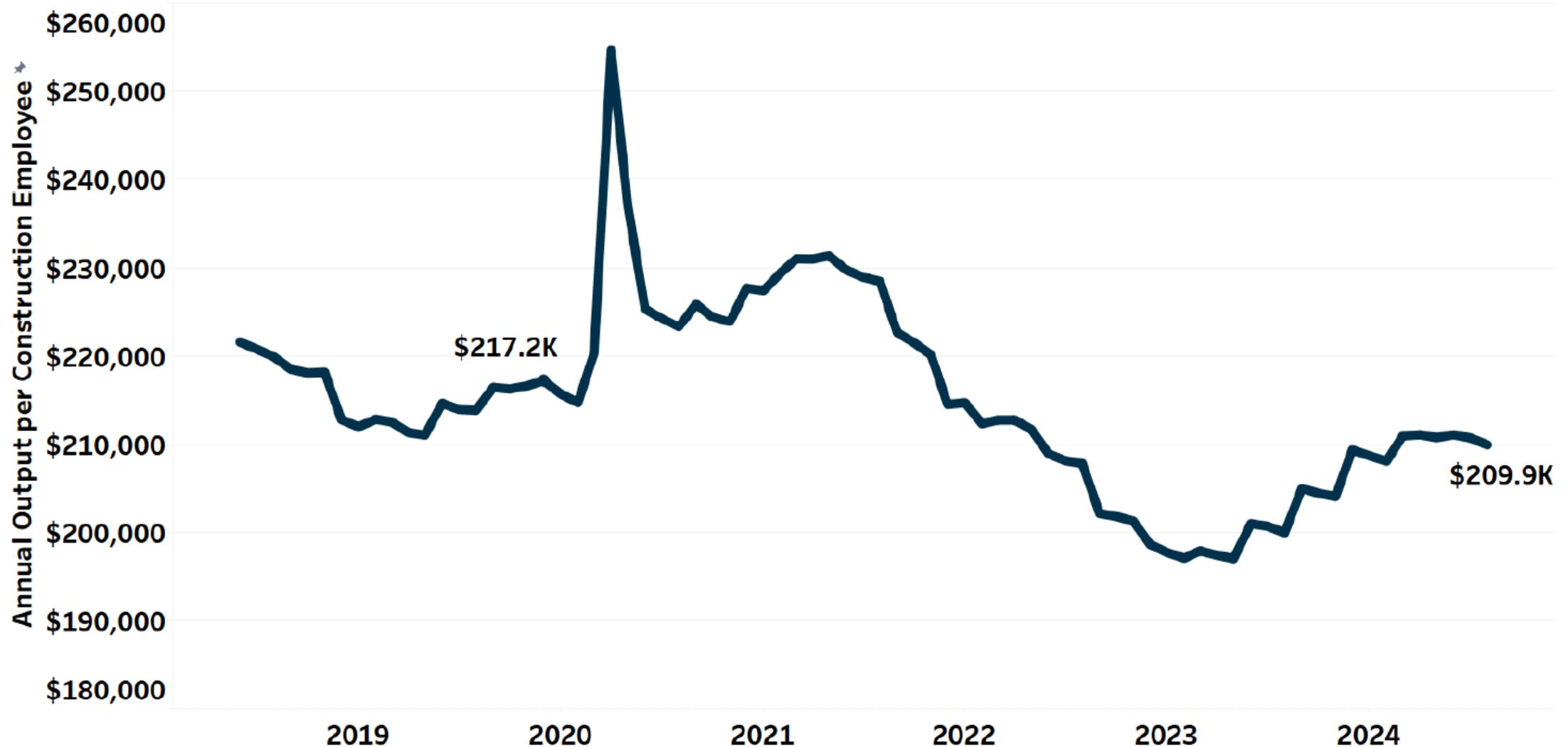
6. If your firm is having trouble filling hourly craft positions, please indicate all the position types you are having trouble filling (Mark all that apply). Responses: 980



**±10% or more  
vs. 2024**

## Output-Per-Worker Remains Below Pre-COVID Levels

Worker productivity fell by 15% in a 2-year period between 2021 and 2023



Source: Bureau of Labor Statistics and U.S. Bureau of Economic Analysis, calculations by ConstructConnect

# Tackling the Engineering Workforce Shortage

[← BACK TO BLOG](#)



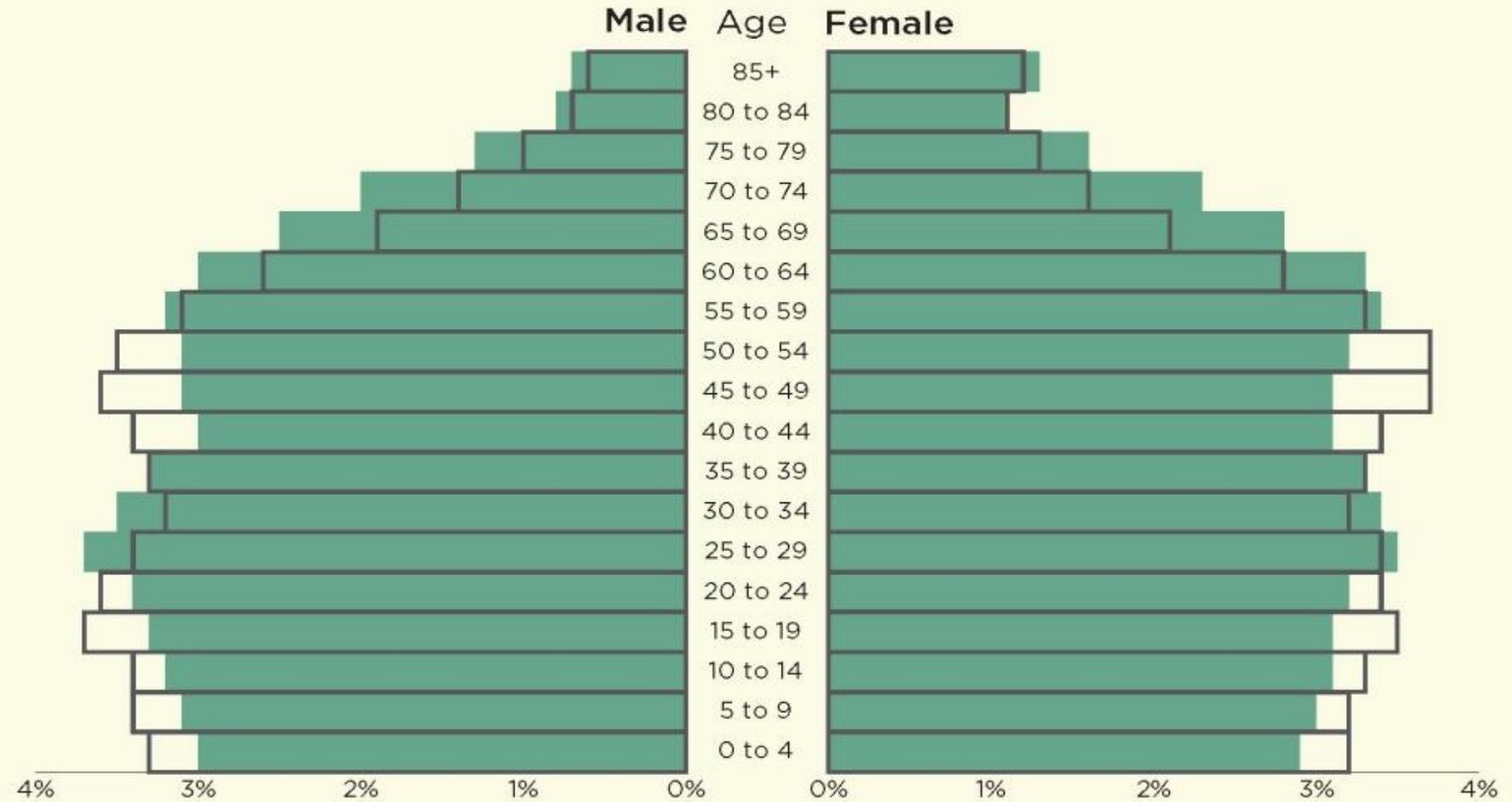
*"No single thing created the workforce shortage, so no single thing can fix it."*

DATE

April 24, 2024

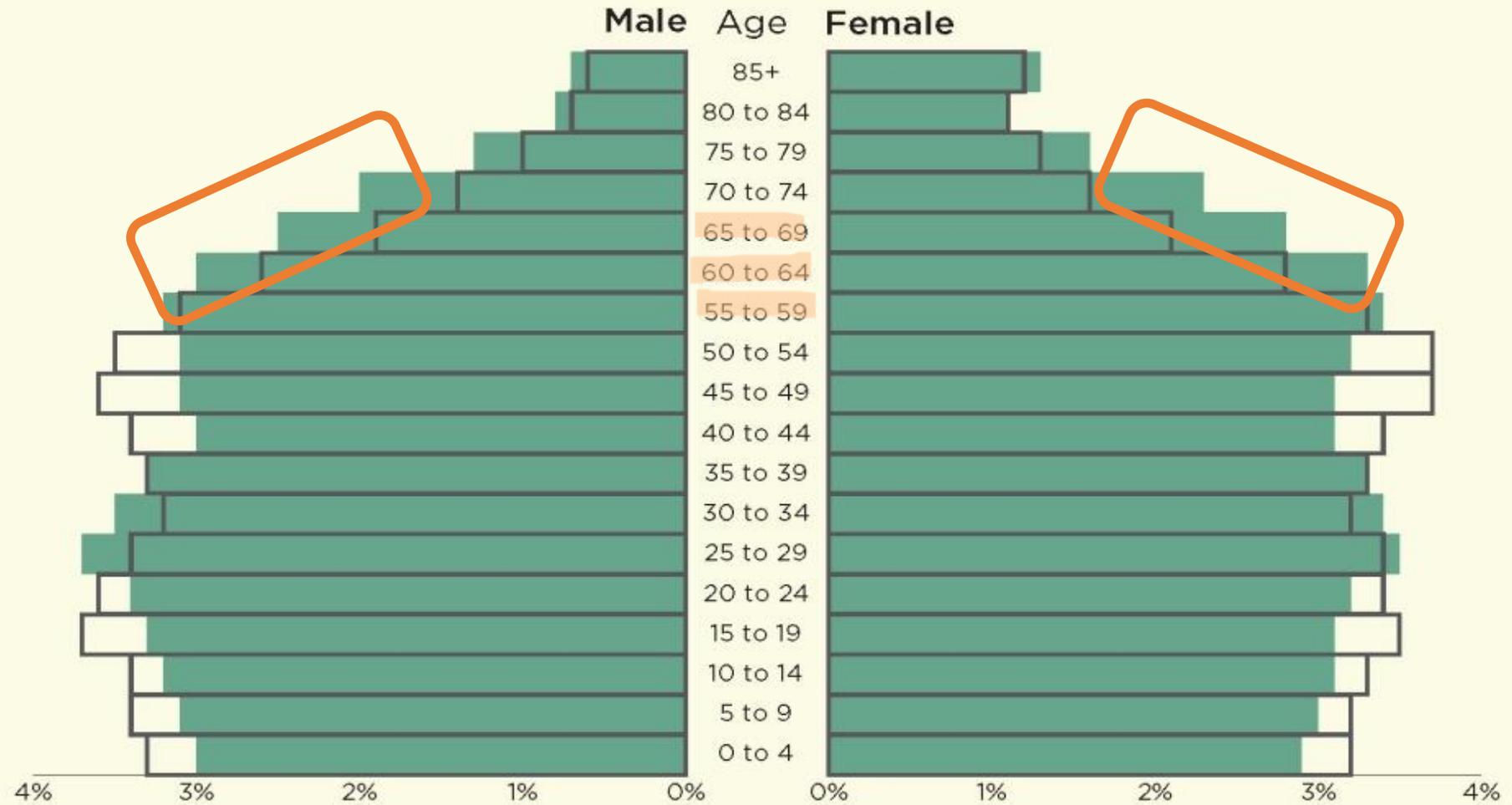
# Percent of Total Population in 2010 and 2019

□ 2010 ■ 2019



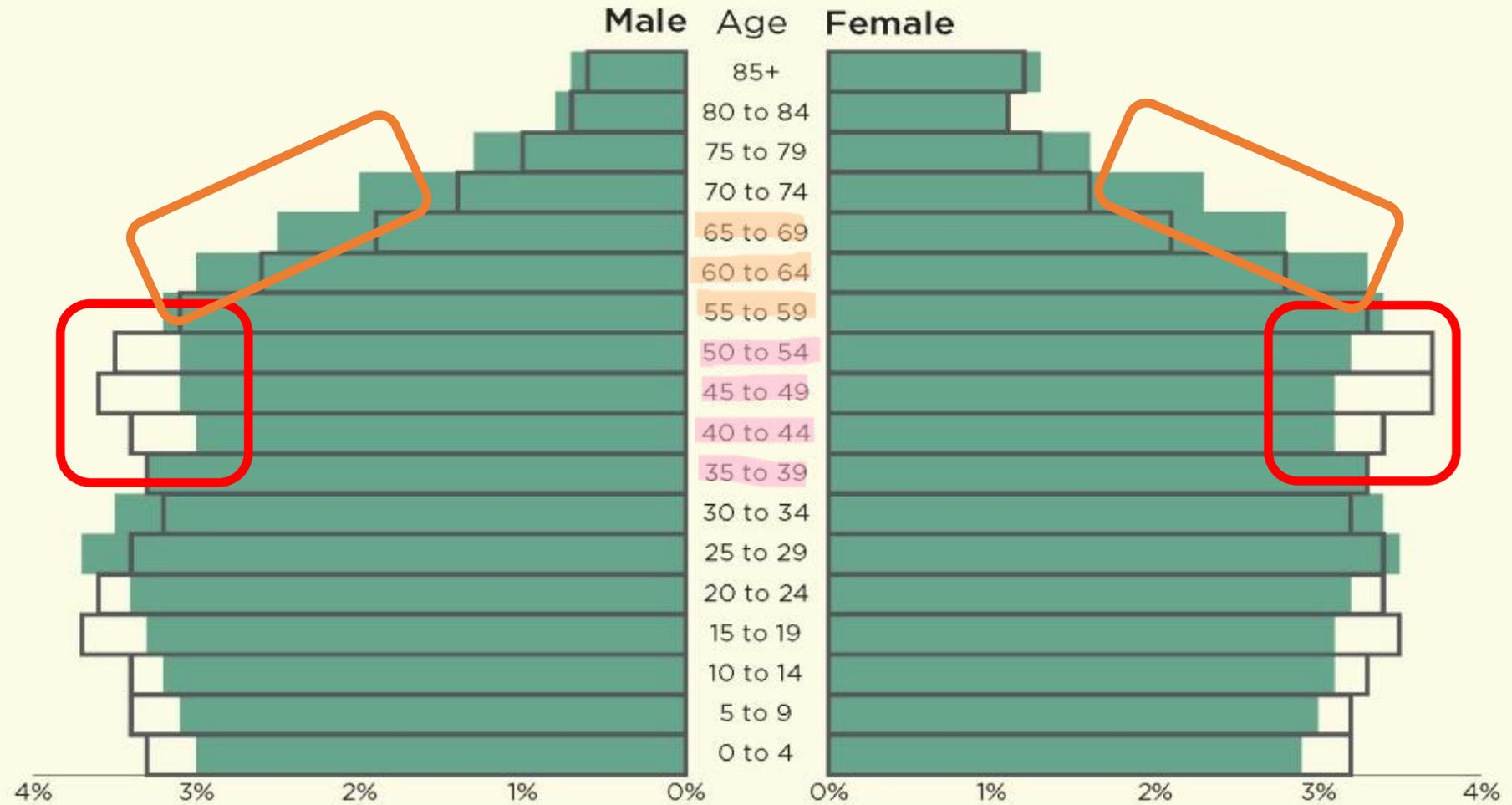
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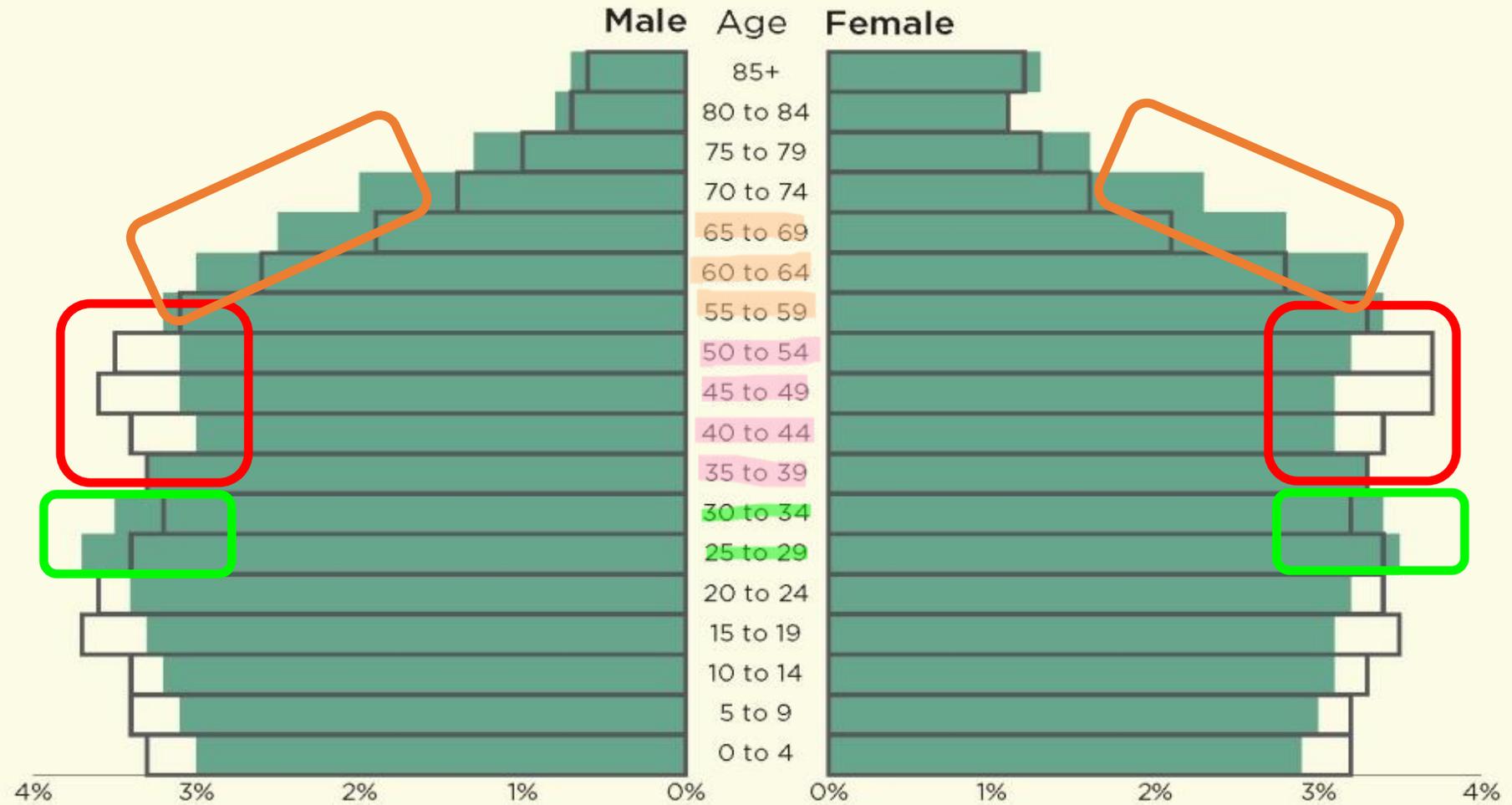
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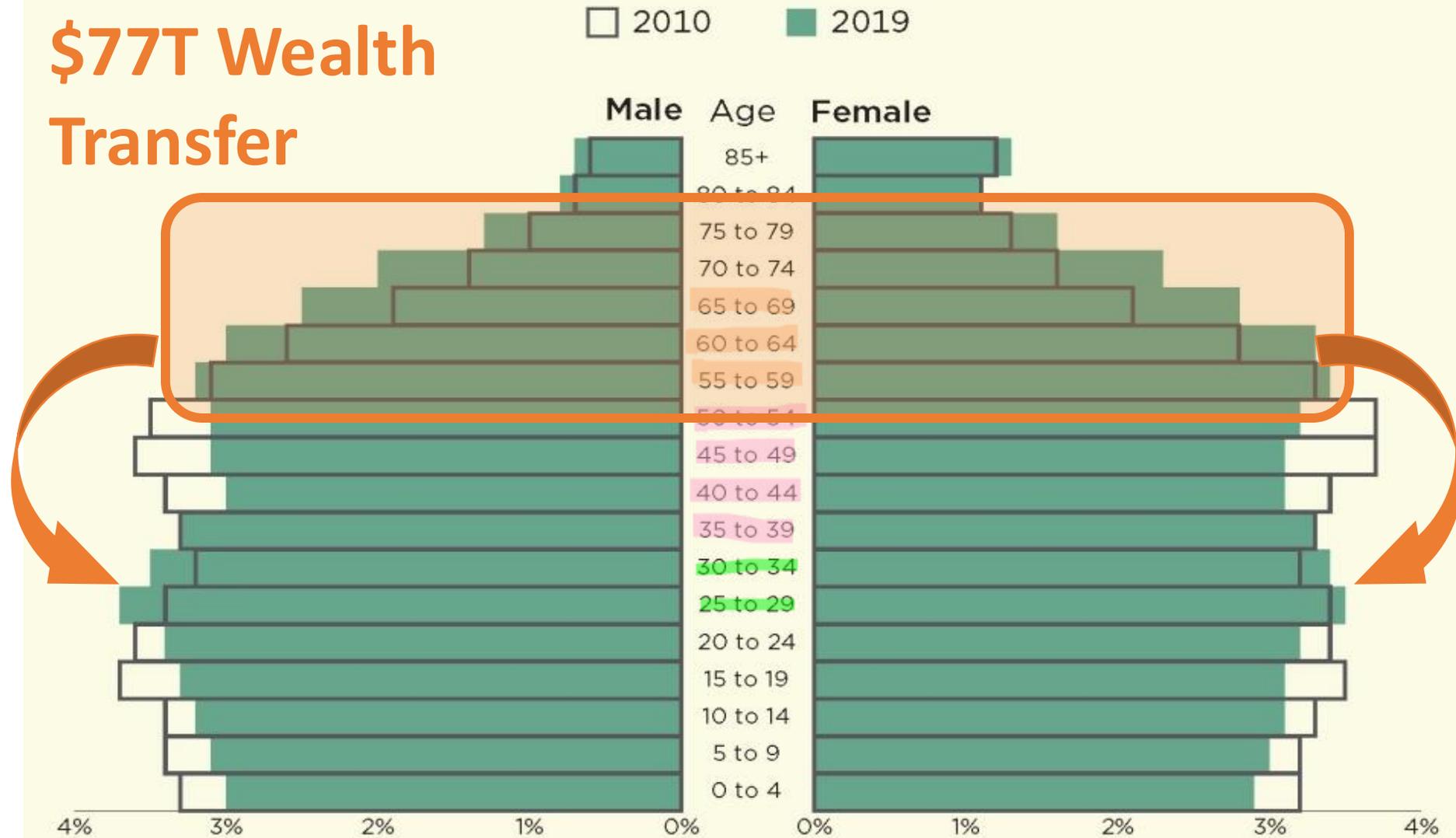


# Workforce

- **More men 25-34 yo live with parents than with spouse**
  - First time [since 1880](#)
- **Leisure hours have increased**
  - [75%](#) of which are spent [playing video and computer games](#)
- **Drugs are a big problem**
  - Robbing [nearly 1M](#) “prime-age” men [every year](#)
- **Expanding to 24-55yo**
  - Participation rate is currently [2% below](#) 1940

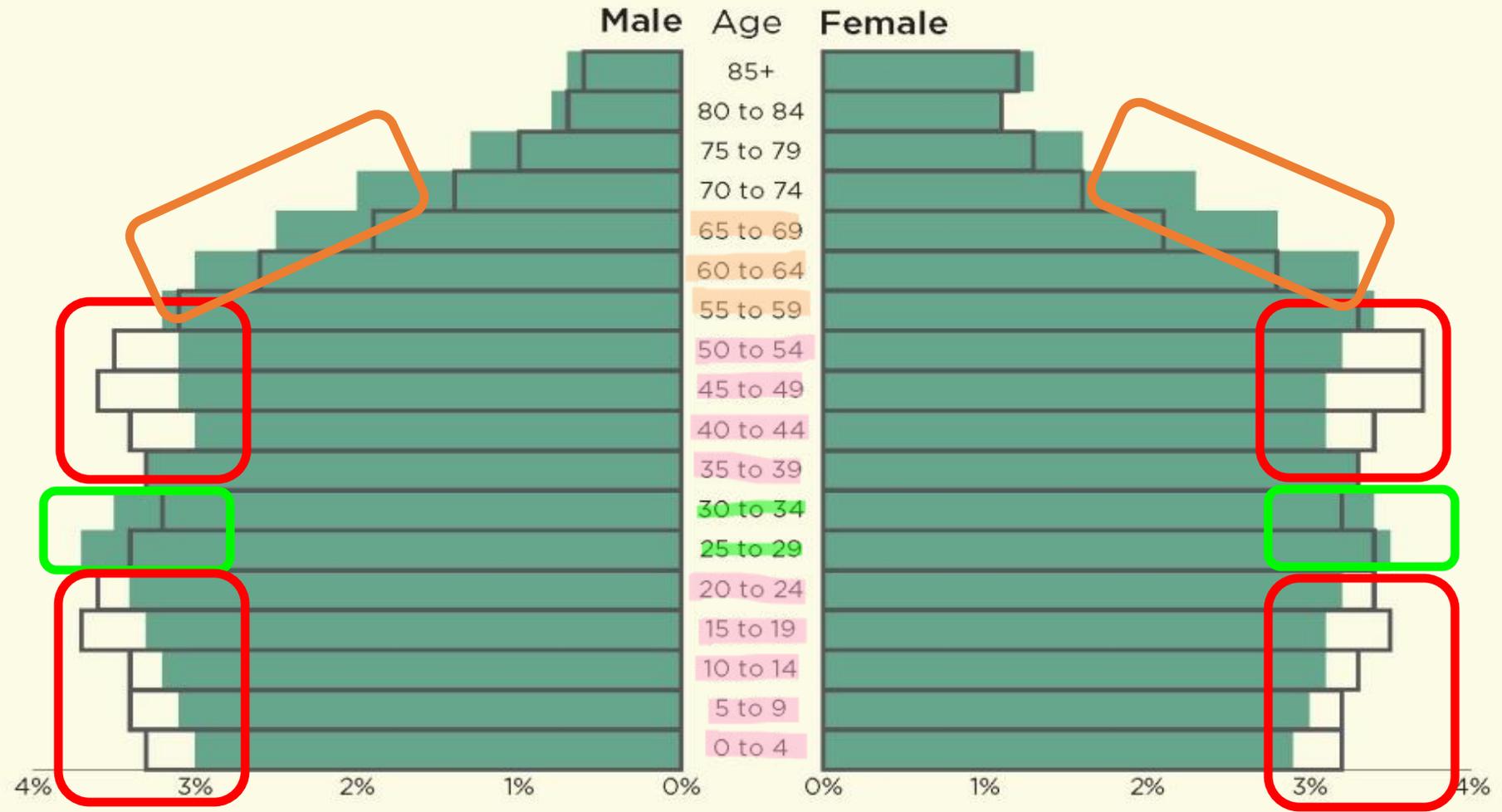
# Percent of Total Population in 2010 and 2019

## \$77T Wealth Transfer

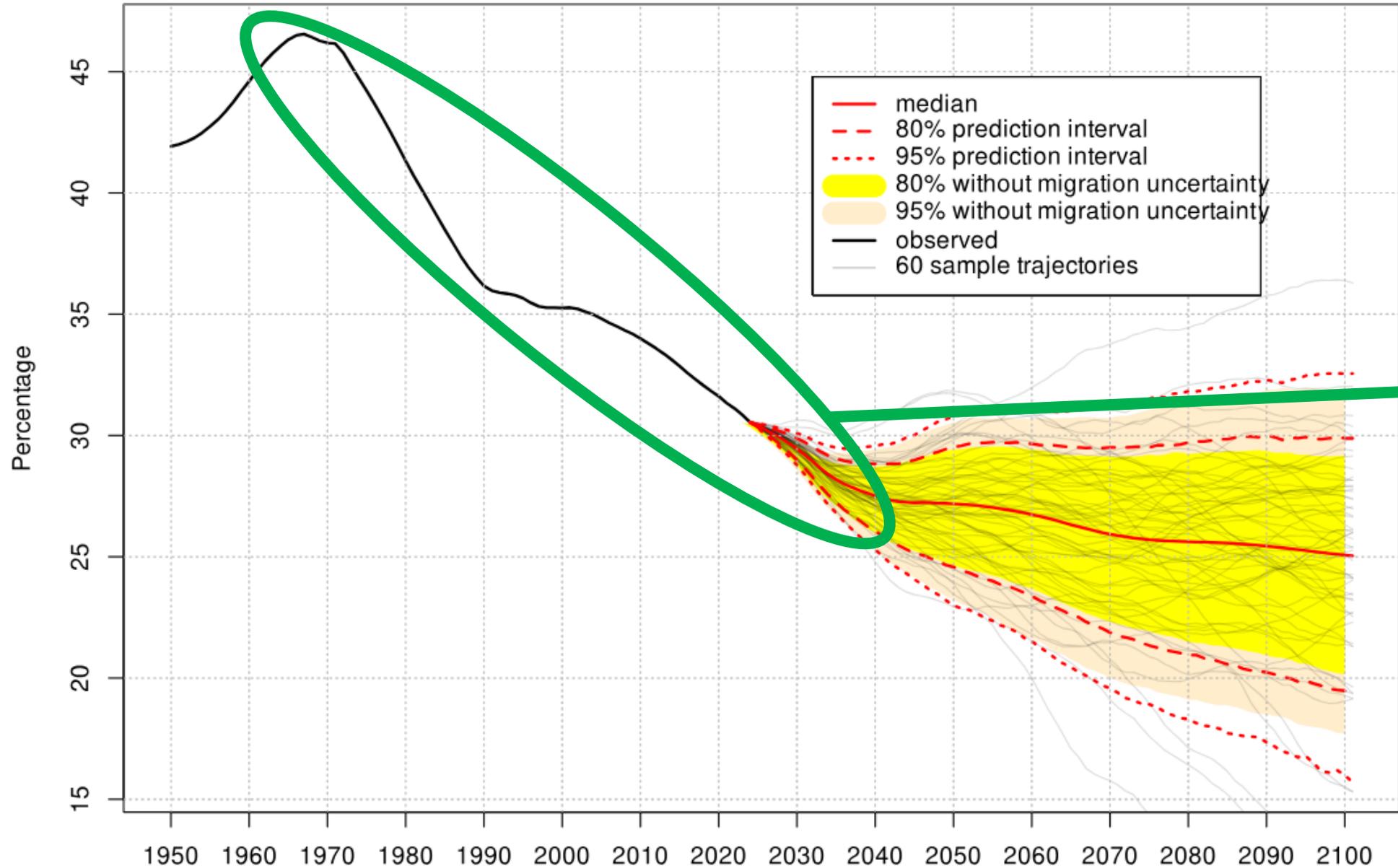


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□ 2010 ■ 2019

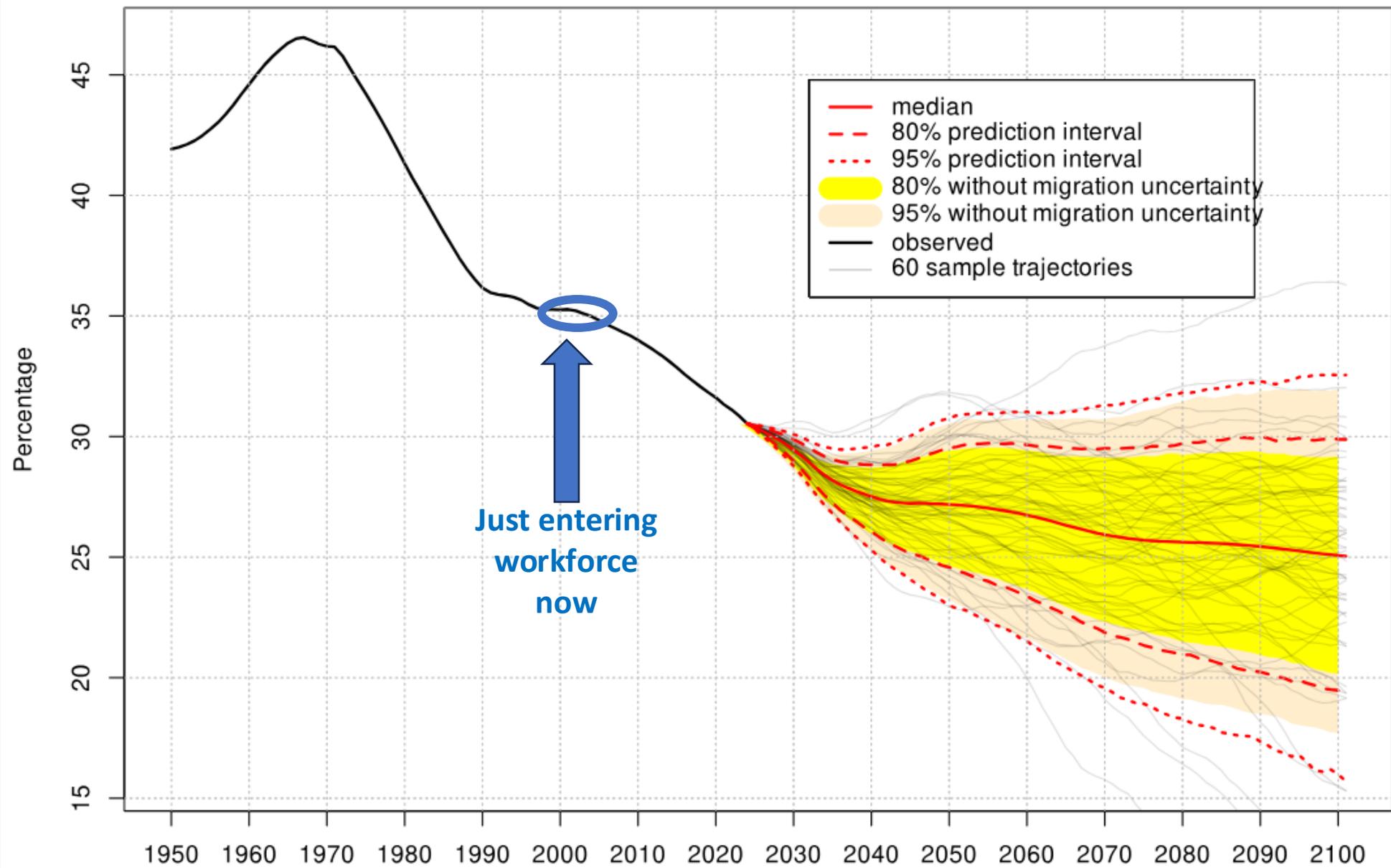


United States of America: Percentage of population under 25 years of age



**No More Senior Discounts**  
*Massive decrease in future workforce as a % of population*

# United States of America: Percentage of population under 25 years of age



# Total Births

- **79M Boomers** (born 1946-1964, ages 61-79)
- **65M Gen X'ers** (born 1965-1980, ages 45-60)
- **72M Millennials** (born 1981-1996, ages 29-44)
- **69M Gen Z** (born 1997-2012, ages 13-28)
- **45M Gen Alpha** (born 2013-2024, ages 1-12)
- **?? Gen Beta** (born 2025+, currently 3.6M/yr)

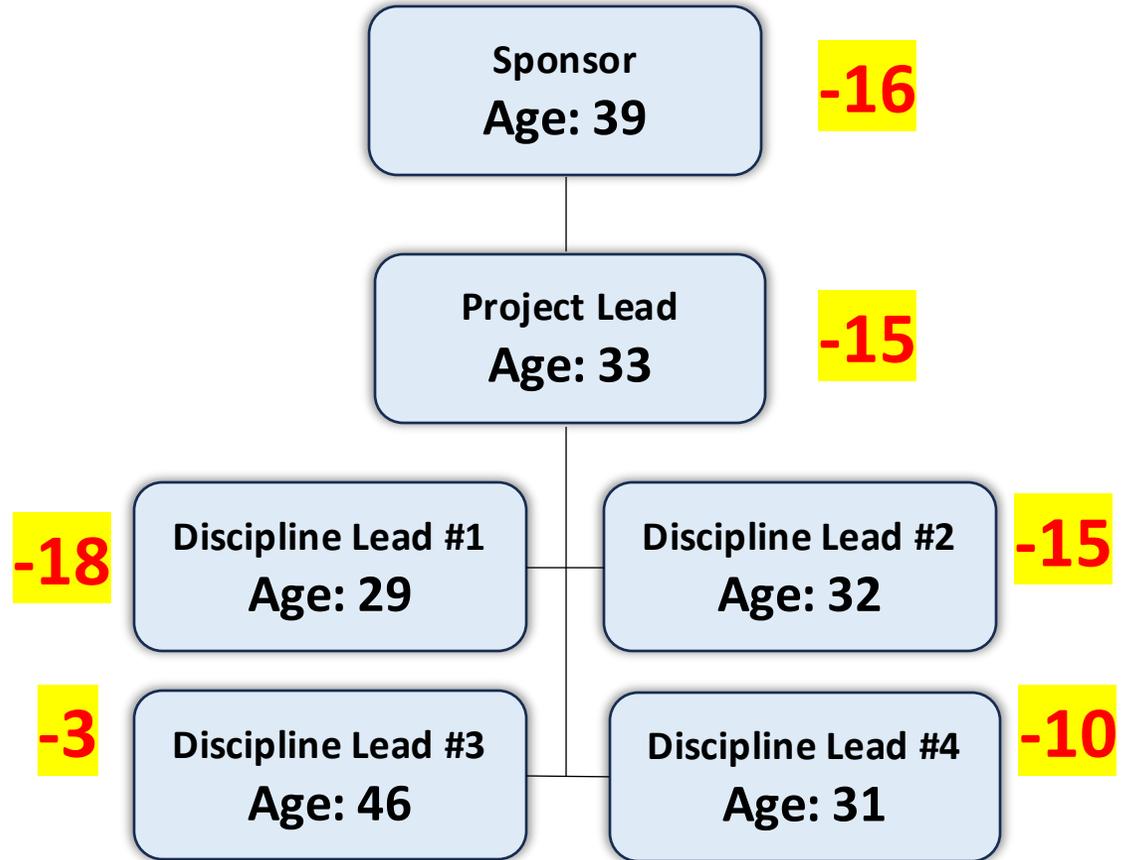
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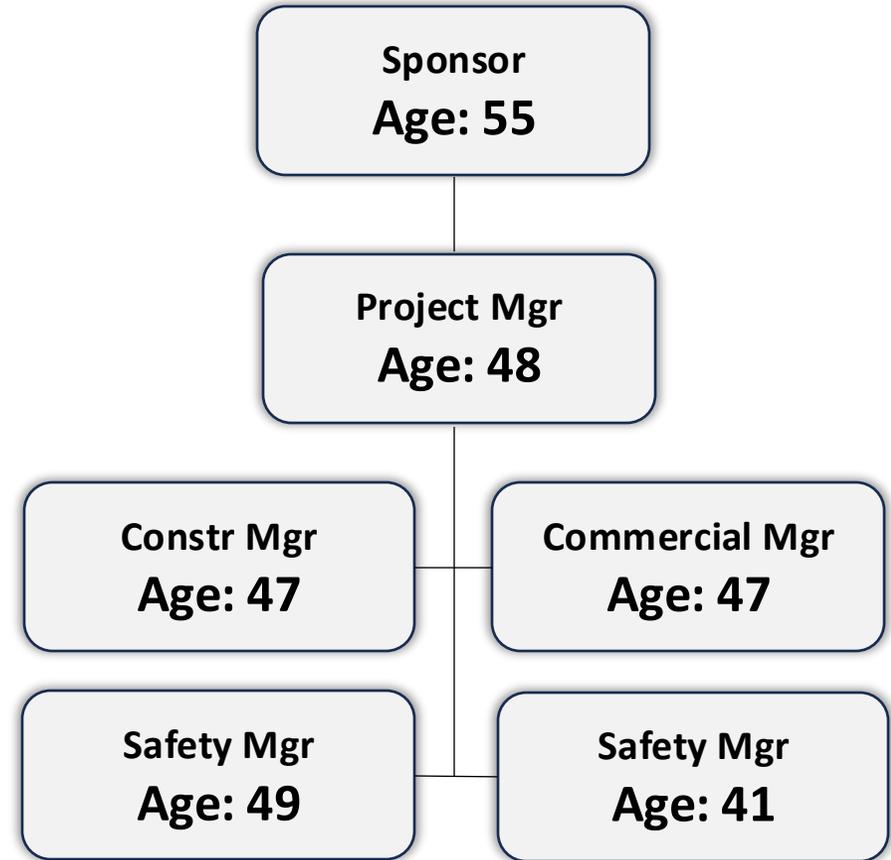
**Now: fighting over  
69M Zoomers**

**Next: recruiting into  
45M Gen Alpha**

# Today



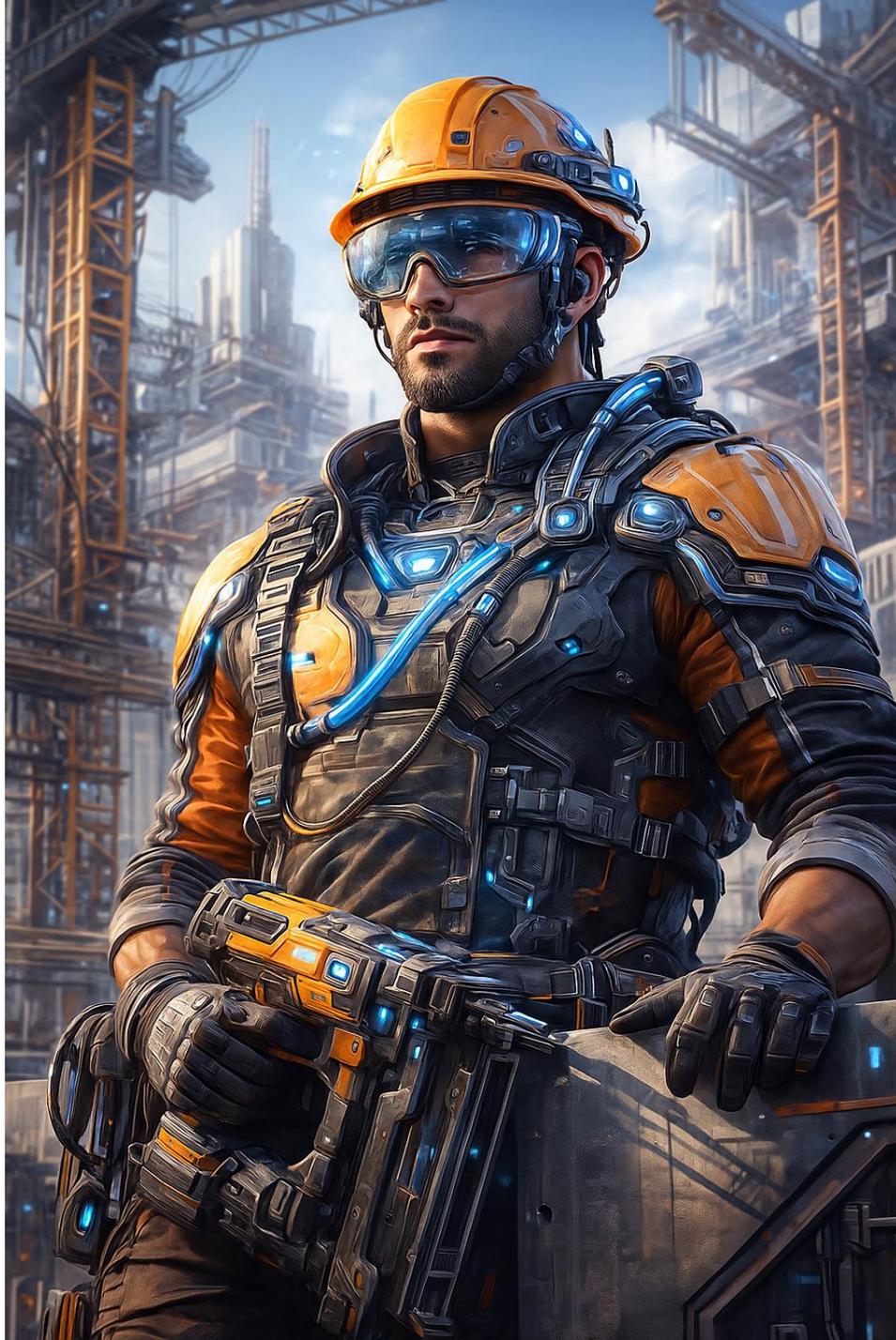
# 4 years go



# Workforce Demographics

- **Workforce will shrink for next 15-20yrs at minimum.**
- **Demand for AEC services will remain high for 15-20yrs.**
- **Right now we have 50% more volume in-flow (Gen Z new entrants) than we will have a decade from now (Gen alpha)**
- **We'll be competing with other industries as much as one another.**

# Workforce of the Future



# Gen Z workers are 'too scared to talk on the phone' and prefer to communicate via text or email, says expert

---





FUTURE OF WORK • GEN Z

## Gen Z workers say they don't want to return to the office because it means they can't binge-watch their favorite TV shows during work anymore



By **Sydney Lake**  
Associate Editor

October 30, 2025, 2:19 PM ET

[Add us on](#)



As many as 84% of Gen Z workers admitted they stream shows and movies while working from home.

GETTY IMAGES—DRAGONIMAGES

# Zoomer “Fun” Facts - *New York Post, Cigna, Others*

## Gen Z Workers

- **98% experience burnout**
- **23% face unmanageable stress**
  - Most stressed generation of all time
- **48% feel drained**
- **46% lack professionalism**
- **19% of college graduates bring a parent to a job interview**
- **39% lack communication skills**
- **75% of companies say some or all of Gen Z workers are unsatisfactory**
- **50% of companies say Gen Z lacks motivation**
- **37% of Gen Z workers have low productivity (if boss is 12yrs older it goes to 56%)**
- **6 out 10 employers have fired Gen Z workers within one month of hiring**
- **1 out 7 employers indicate they may not hire Gen Z workers in 2025**
- **41% born to single mothers**
- **65% have mental health issues (33% are depressed) (missing 24% of workdays)**

# New Study on Gen Z Values (Sept 2025)

## “The Values Bridge” Assessment

7,500+ Gen Z responses vs. 2,100 US Hiring Managers

[source](#)

# New Study on Gen Z Values (Sept 2025)

## Hiring Managers

1. Achievement
2. Learning & Action
3. Workcentrism

# New Study on Gen Z Values (Sept 2025)

## Hiring Managers

1. Achievement
2. Learning & Action
3. Workcentrism

## Gen Z

1. Self-Care & Well-Being
2. Expressing Authentic Self
3. Helping Others

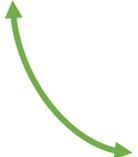
# New Study on Gen Z Values (Sept 2025)

## Hiring Managers

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3. Helping Others

- 
- Barely cracked Top 10 for Gen Z
  - 2% of Gen Z had all 3 in their Top 5
  - 25% of Gen Z had 1 in their Top 5

# New Study on Gen Z Values (Sept 2025)

## Hiring Managers

1. Achievement
2. Learning & Action
3. Workcentrism

## Gen Z

1. Self-Care & Well-Being
2. Expressing Authentic Self
3. Helping Others

- Barely cracked Top 10 for Gen Z
- 2% of Gen Z had all 3 in their Top 5
- 25% of Gen Z had 1 in their Top 5

Gen Z has unusually high  
“Negative Variance” with these  
Top 3

# Boomer Legacy in the Workplace

- “*Boomerism*” → current business assumptions and models are built around boomer workforce characteristics from 1980s-2000s.
- **Historical context:**
  - Boomers entered workforce during period of *more people than jobs*
  - Created loyalty-based work culture with hierarchical military-style management structures.
- **Current procurement & contracting models assume *available skilled workforce, stable supply chains, and stable pricing - assumptions no longer valid.***

# Challenges with Boomer Exodus

- **Great recession (2008) delayed boomer retirements by 10-15 years, preventing natural workforce transition.**
  - Artificially extended average career cycle
- **Most productive employees (55+) compensated for millennial productivity gaps but are now retiring in masses.**
  - Millennials are the least productive generation in the history of the country
  - Zoomers are joining the workforce now and they might be worse!

# Solutions?



- Embrace the reality! Change your expectations!
  - workplace ethics, flexibility, and technology
- Don't go searching for something that doesn't exist →  
**Like a Zoomer that thinks like a Boomer!**

# Major Takeaways

- **Change your hiring and mentorship model.**
  - Zoomers & young Millennials are not the younger version of you!
  - Provide career pathing and transparent promotion timelines
- **Leadership needs flexibility, explicit instructions, and clear communication → more coaching, less directive**
  - Empathy is highly valued, regular check-ins, substantive feedback
  - Promote the importance of mental health support and ethical leadership.
- **Gen Z brings energy, values, & tech fluency**
  - Gen Z willing to learn, need supportive & transparent workplaces.
  - Gen Z is quick to learn from failures when supported → make mistakes, learn, & have chance to grow.
- **Create a culture that encourages questions & iterative problem-solving → do not punish every error.**
- **Work with them on developing their soft skills.**

# Gen Z says AI has made their college degrees irrelevant

New-to-market job seekers are feeling the effects of fervent adoption more acutely than any other generation, according to Indeed.

Published April 21, 2025

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In survey of 772 US Adult Workers with Associates Degree or Higher:

- Half of Gen Z job hunters think their college education has lost value in the job market thanks to AI.
- One-third of Millennials agreed
- 20% of Boomers
- Sorry Gen X, you weren't even mentioned

# Gen Z is Terrified That AI Will Take Their Jobs

Fear that AI is going to take their jobs is impacting more than 60% of Gen Zers, a new US and UK study has revealed.



Written by  
**Katie Scott**

Published on  
 **November 25, 2024**

## Most Gen Zers are terrified of AI taking their jobs. Their bosses consider themselves immune

BY CHLOE BERGER

November 24, 2024 at 6:00 AM EST



Gen Zers worry about their job prospects when it comes to AI.

FG TRADE—GETTY IMAGES

# The rise of 'bai lan': why China's frustrated youth are ready to 'let it rot'

Phrase bai lan gains popularity as severe competition and social expectations leave many young people despondent



📷 Young Chinese in Beijing. Shrinking economic opportunities and mounting uncertainties have fuelled a sense of hopelessness in their ranks.

[Home](#) / [World News](#) / Bai Lan movement: Why Chinese youth are 'lying flat' and 'letting it rot'

## Bai Lan movement: Why Chinese youth are 'lying flat' and 'letting it rot'

*The West 'quiet quits', the Chinese choose 'Bai Lan': How youth is rejecting hustle culture amid rising unemployment*

### From 996 to 'bai lan': Why China's young workers are choosing to 'rot' than work hard

BEIJING: Li Xiaolin leads a "tedious" life. He goes to work at his uncle's vehicle inspection factory at 9am, six days a week. After completing his tasks — checking for mechanical faults like worn tires or fuel leaks — he's headed home by 5pm to eat and sleep.

If his boss tells him to do something, he might say: "Can I do it tomorrow?" "Can you ask someone else to do it?" "Can I not do it?"

And if all else fails, "I'll just do it, (but) I won't do it well".

CAREERS

## 'I accept being ordinary': China's youth are turning their backs on hustle culture

"Tang ping" and "bai lan" reflect the intense competition faced by young Chinese today,

# Technological Revolution?



Compared to 2024, will your firm’s 2025 investment in the following technologies change? (mark all that apply) Responses: 965

	Increase	Decrease	No change
Artificial intelligence	44%	1%	55%
Document management software	40%	2%	58%
Accounting software	36%	1%	63%
Estimating software	35%	2%	63%
Project management software	35%	2%	63%
Fleet tracking/management software	28%	2%	70%
Human resources (HR) software	27%	2%	71%
Building Information Modeling (BIM)	26%	1%	73%
Client relationship management (CRM) software	26%	2%	72%
Drones	26%	2%	72%
Tool/asset management/tracking	25%	2%	74%
Scheduling software	24%	1%	74%
Payroll software	21%	2%	77%
Project collaboration software	21%	2%	77%
Offsite production	17%	2%	81%
Subcontractor bid management/ITB software	17%	1%	82%
Autonomous equipment or vehicles	15%	2%	84%
Prequalification software	14%	2%	83%
Service management software	12%	2%	86%
Robotics	7%	2%	91%

**AI is #1 growth tech**

# Intro – Basics of AI

$$J = \frac{1}{n} \sum_{i=1}^n (\text{pred}_i - y_i)^2$$

$$J = \frac{1}{n} \sum_{i=1}^n (a_0 + a_1 \cdot x_i - y_i)^2$$

$$\frac{\partial J}{\partial a_0} = \frac{2}{n} \sum_{i=1}^n (a_0 + a_1 \cdot x_i - y_i) \implies \frac{\partial J}{\partial a_0} = \frac{2}{n} \sum_{i=1}^n (\text{pred}_i - y_i)$$

$$\frac{\partial J}{\partial a_1} = \frac{2}{n} \sum_{i=1}^n (a_0 + a_1 \cdot x_i - y_i) \cdot x_i \implies \frac{\partial J}{\partial a_1} = \frac{2}{n} \sum_{i=1}^n (\text{pred}_i - y_i) \cdot x_i$$

# OpenAI's AI reasoning model 'thinks' in Chinese sometimes and no one really knows why

PODCASTS / UNEXPLAINABLE

## Even the scientists who build AI can't tell you how it works

"We built it, we trained it, but we don't know what it's doing."

by **Noam Hassenfeld**  
Jul 15, 2023, 4:00 AM PDT



Kyle Wiggers — 7:05 AM PST · January 14, 2025

MIT  
Technology  
Review

ARTIFICIAL INTELLIGENCE

## Nobody knows how AI works

It's still early days for our understanding of AI, so expect more glitches and fails as it becomes a part of real-world products.

By **Melissa Heikkilä**

March 5, 2024

**Technology**

## AI models work together faster when they speak their own language

Letting AI models communicate with each other in their internal mathematical language, rather than translating back and forth to English, could accelerate their task-solving abilities

By **Matthew Sparkes**

📅 15 November 2024

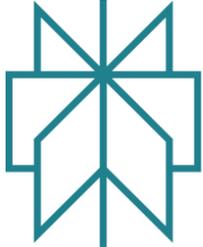
 Claude

 Gemini

 ChatGPT

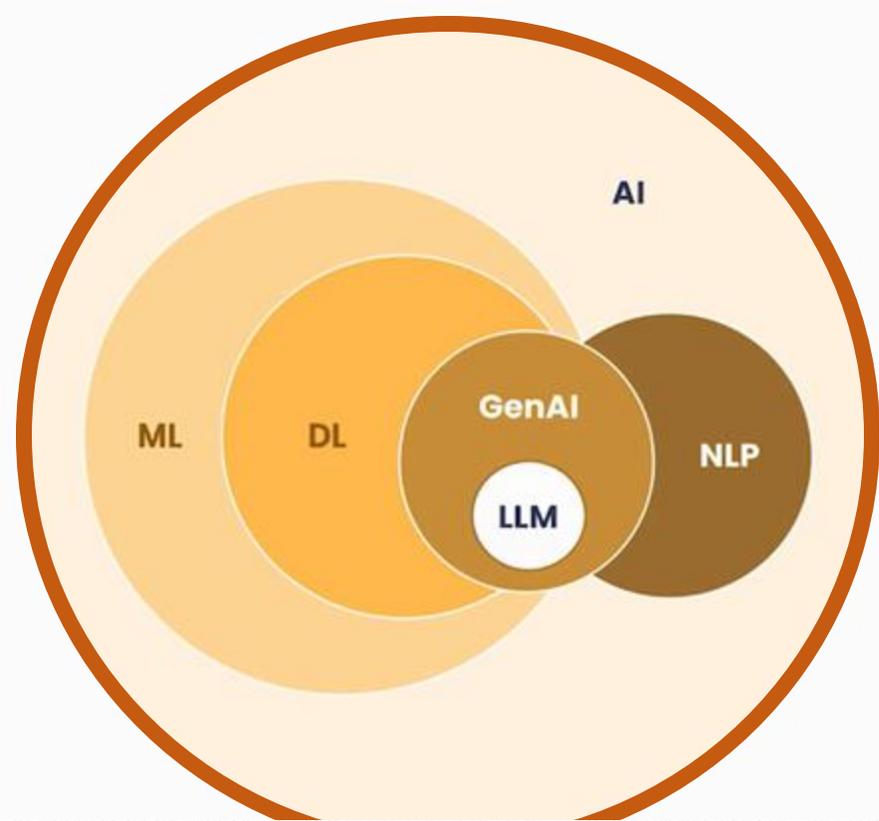
 Copilot

 deepseek

 perplexity

 LLaMA 

*+ Many More...*



WRITING	CHATGPT	GRAMMARLY	COPY.AI
DESIGN	CANVA	PNGBA	BRANDBERRY
PAYMENT	DUNSQUAD	LEMON SQUEEZY	PADDLE
WEBSITES	TYPEDREAM	WEBFLOW	FRAMER
PRESENTATION	PITCH	TOME	SLIDEBEAN
PRODUCTIVITY	NOTION	LOOP	CODA
AUTOMATION	ZAPIER	MAKE	N8N

<b>Artificial Intelligence</b>	Artificial Intelligence, is the development of computer systems that mimic human intelligence to perform tasks like learning, problem-solving, and decision-making.
<b>Machine Learning</b>	<b>Supervised Learning</b> : Supervised learning is a type of machine learning where a model is trained on a labelled dataset, making predictions based on input features and adjusting through iterative feedback.
	<b>Unsupervised Learning</b> : Unsupervised learning discovers patterns in data without labelled guidance, allowing the model to identify inherent structures or relationships autonomously.
	<b>Reinforcement Learning</b> : Reinforcement learning is where an agent learns by interacting with an environment, optimizing decisions based on received rewards or penalties.
<b>Deep Learning</b>	Deep learning employs neural networks with multiple layers to automatically learn and extract hierarchical features from data.
<b>Gen AI</b>	Generative AI, creates original content or solutions autonomously, extending beyond mimicking human intelligence to generate novel and creative outputs.

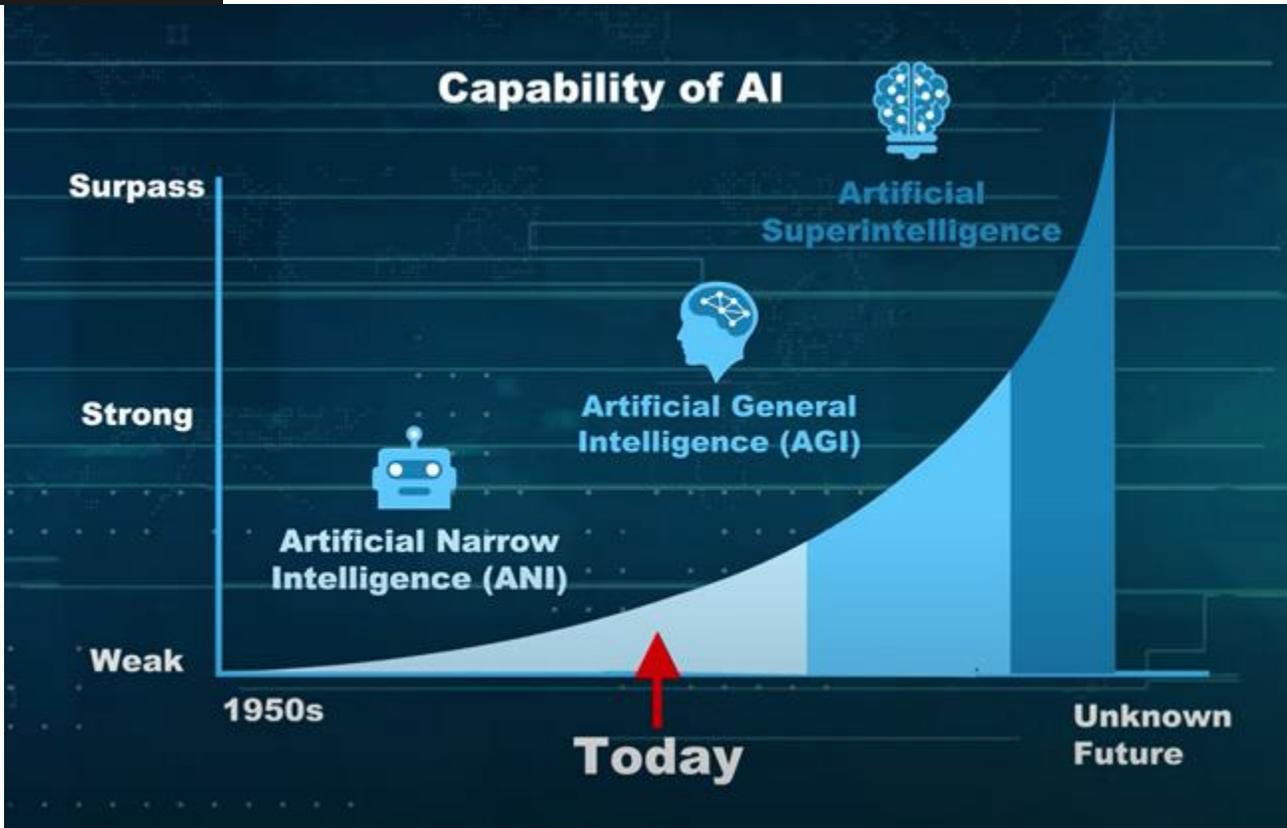


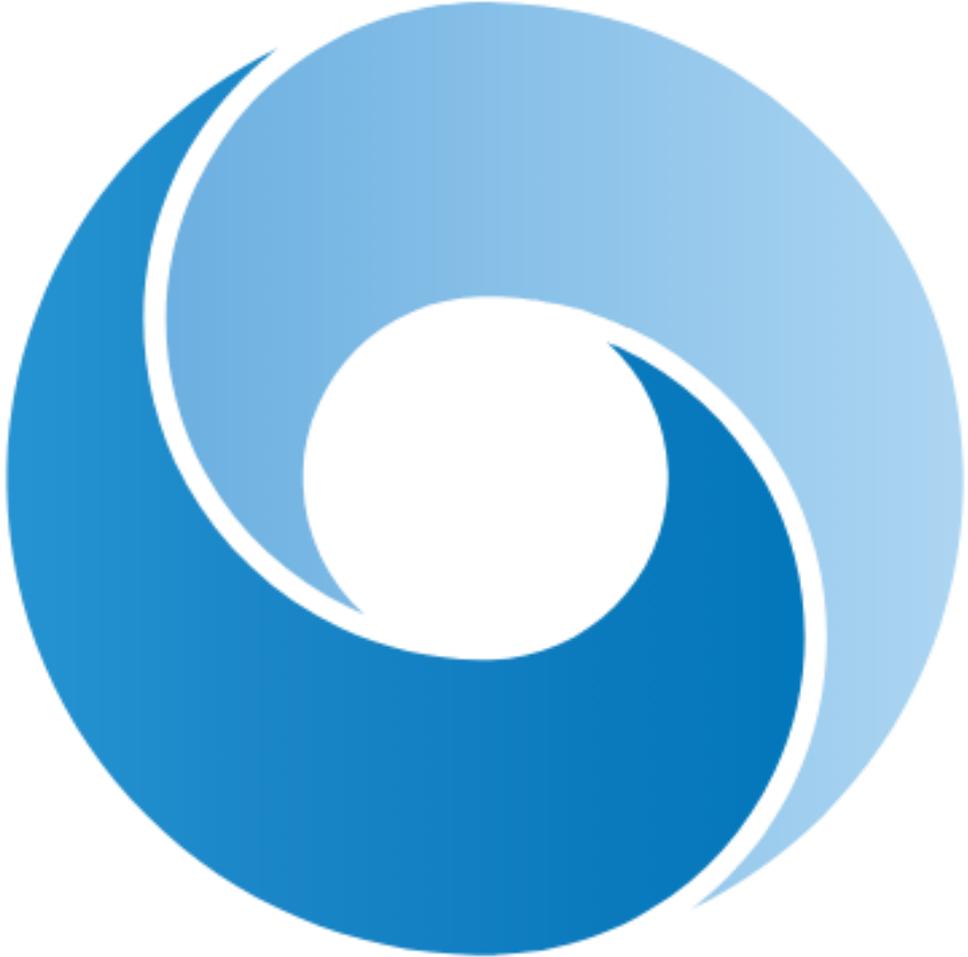
### Artificial Intelligence

Contact [info@venturescanner.com](mailto:info@venturescanner.com) to see all 957 companies

<b>Machine Learning-Gen (123 Companies)</b> 	<b>Machine Learning-App (260 Companies)</b> 	<b>Computer Vision-Gen (106 Companies)</b> 	<b>Computer Vision-App (83 Companies)</b> 	<b>Smart Robots (65 Companies)</b> 
<b>Virtual Personal Assistants (92 Companies)</b> 	<b>Artificial Intelligence</b> Contact <a href="mailto:info@venturescanner.com">info@venturescanner.com</a> to see all 957 companies			<b>NLP-Speech Recog. (78 Companies)</b> 
<b>Speech to Speech Trans. (15 Companies)</b> 				<b>NLP-General (154 Companies)</b> 
<b>Context Aware Comp. (28 Companies)</b> 	<b>Gesture Control (33 Companies)</b> 	<b>Recommendation Eng. (60 Companies)</b> 	<b>Video Content Recog. (14 Companies)</b> 	

Venture Scanner







“Chess has  
been shaken to  
its roots by  
AlphaZero”

---

- Garry Kasparov

*Chess Grandmaster*

*World Champion (1985 to 2000)*

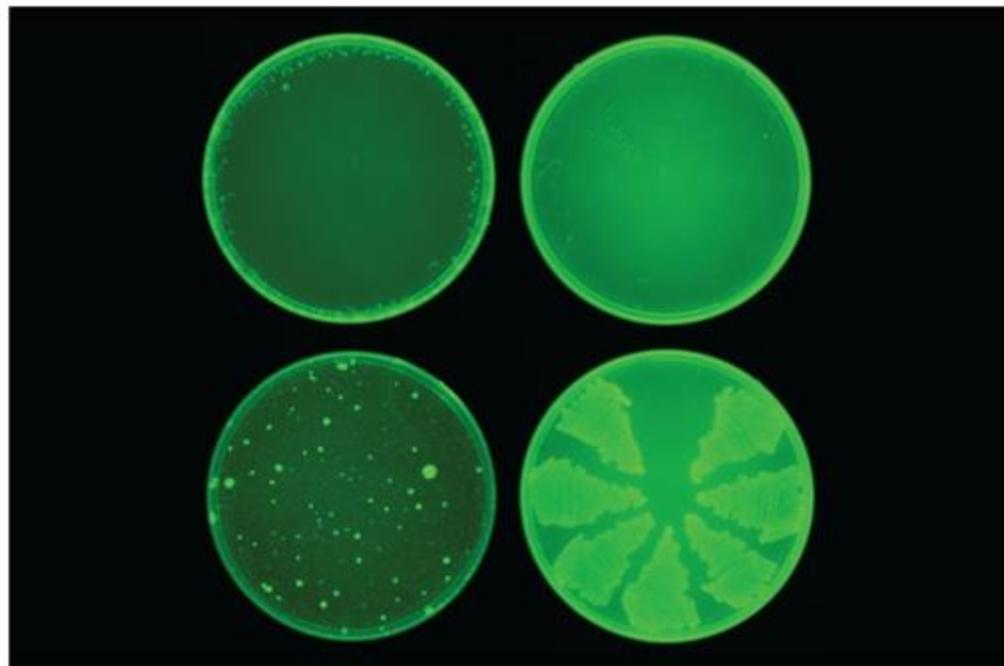
*Ranked #1 for 255 Consecutive Months*



## Artificial intelligence yields new antibiotic

A deep-learning model identifies a powerful new drug that can kill many species of antibiotic-resistant bacteria.

Anne Trafton | MIT News Office  
February 20, 2020



> [Antibiotics \(Basel\)](#). 2021 Dec 2;10(12):1480. doi: 10.3390/antibiotics10121480.

## Assessment of the Antibacterial Efficacy of Halicin against Pathogenic Bacteria

Rayan Y Booq <sup>1</sup>, Essam A Tawfik <sup>1 2</sup>, Haya A Alfassam <sup>2</sup>, Ahmed J Alfahad <sup>1</sup>, Essam J Alyamani <sup>1</sup>

Affiliations + expand

PMID: 34943692 PMID: [PMC8698312](#) DOI: [10.3390/antibiotics10121480](#)

### Abstract

Artificial intelligence (AI) is a new technology that has been employed to screen and discover new drugs. Using AI, an anti-diabetic treatment (Halicin) was nominated and proven to have a unique antibacterial activity against several harmful bacterial strains, including multidrug-resistant bacteria. This study aims to explore the antibacterial effect of halicin and microbial susceptibility using the zone of inhibition and the minimum inhibition concentration (MIC) values while assessing the stability of stored halicin over a period of time with cost-effective and straightforward methods. Linear regression graphs were constructed, and the correlation coefficient was calculated. The new antibacterial agent was able to inhibit all tested gram-positive and gram-negative bacterial strains, but in different concentrations-including the *A. baumannii* multidrug-resistant (MDR) isolate. The MIC of halicin was found to be 16  $\mu\text{g}/\text{mL}$  for *S. aureus* (ATCC BAA-977), 32  $\mu\text{g}/\text{mL}$  for *E. coli* (ATCC 25922), 128  $\mu\text{g}/\text{mL}$  for *A. baumannii* (ATCC BAA-747), and 256  $\mu\text{g}/\text{mL}$  for MDR *A. baumannii*. Upon storage, the MICs were increased, suggesting instability of the drug after approximately a week of storage at 4 °C. MICs and zones of inhibition were found to be high ( $R = 0.90$  to  $0.98$ ), suggesting that halicin has a promising antimicrobial activity and may be used as a wide-spectrum antibacterial drug. However, the drug's pharmacokinetics have not been investigated, and further elucidation is needed.



VISTA

X-62

AF 86 048

Calspan  
AEROSPACE

USAF Test Pilot School

In-Flight Simulator

Crew: Sabrina "Rico" Rubin

Scott "Bill" Gray

***Air Force Secretary Frank Kendall***

“At the end of the hourlong flight, Kendall climbed out of the cockpit grinning. He said he’d seen enough during his flight that he’d trust this still-learning AI with the ability to decide whether or not to launch weapons in war.”



## ChatGPT correctly diagnosed a 4-year-old's mysterious disease after 17 doctors failed

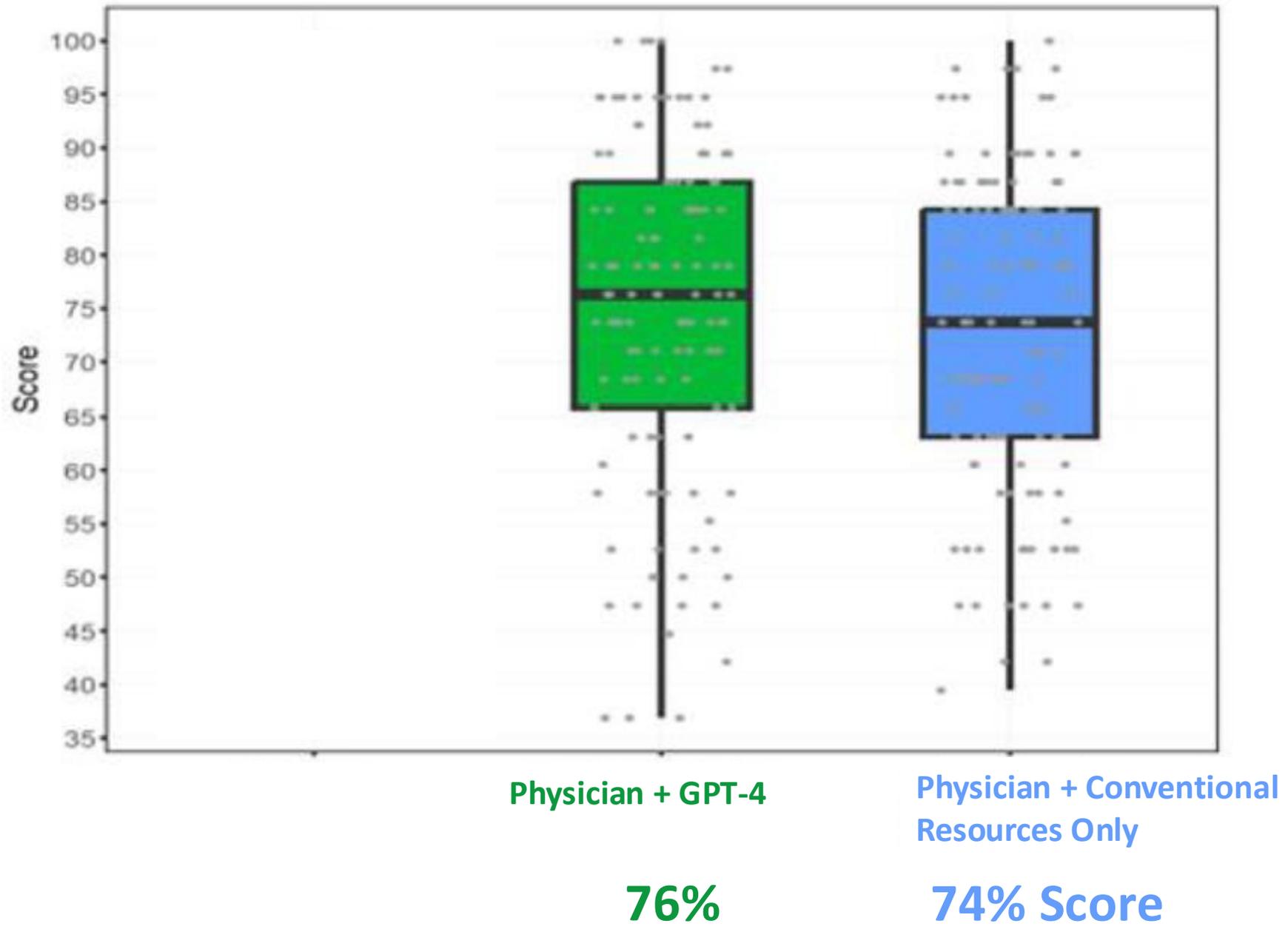
Kate Hull | Sep 12, 2023, 3:20 PM MST

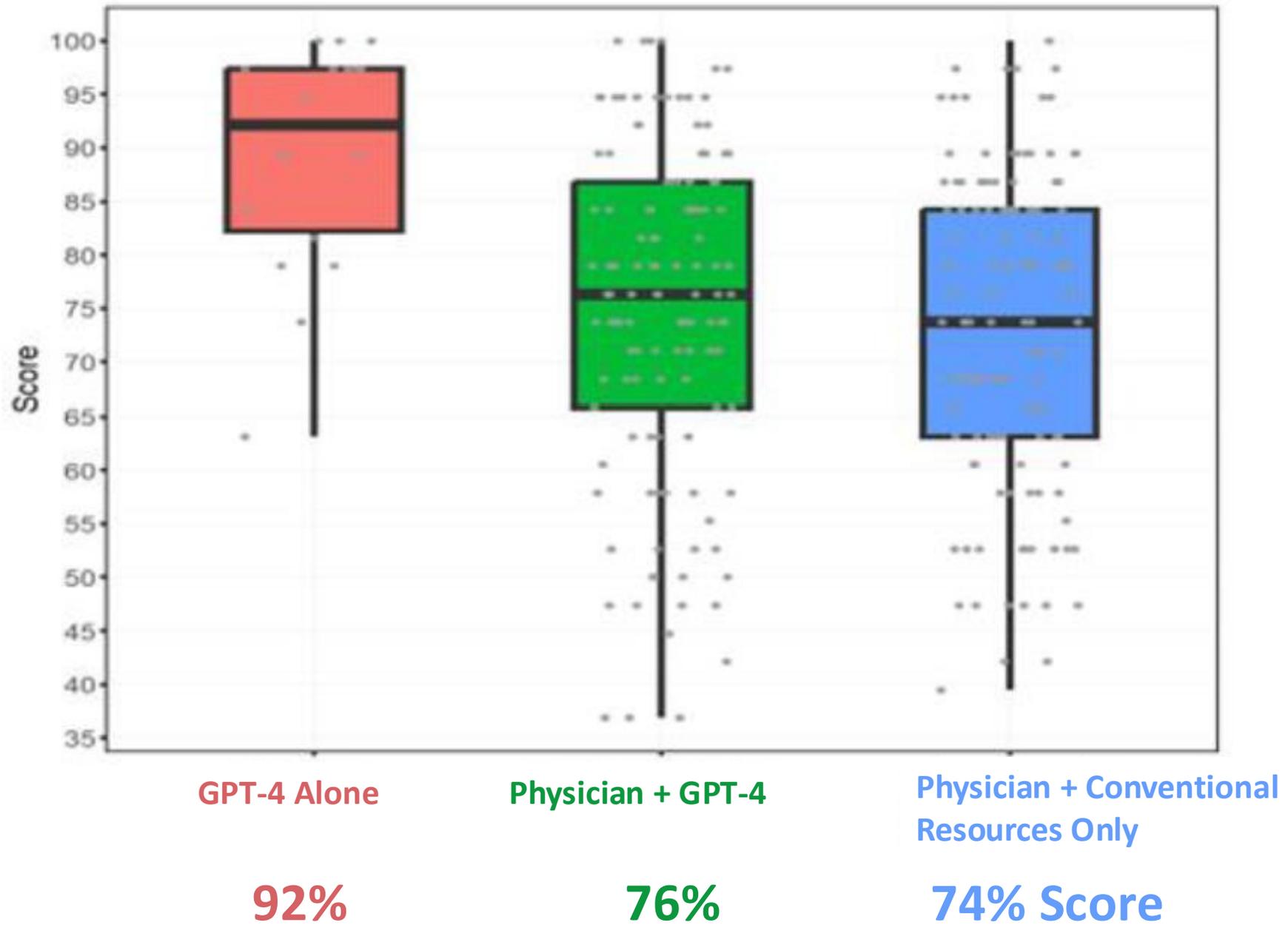
Share Save



“I went line by line of everything that was in his (MRI notes) and plugged it into ChatGPT,” she says. “I put the note in there about ... how he wouldn’t sit crisscross applesauce. To me, that was a huge trigger (that) a structural thing could be wrong.” (Mother)







# Where AI Has Been the past 12 months

- **Key: What you hear in the news everyday is about 8-12 months old + accelerating acceleration**
- **General models have improved by about 30-40% in just the past three months**
- **Rise of AI enabled applications**
- **6000-8000 new AI start-up per year, last two years**
- **Introduction of “near-capable” AI Agents**
- **Massive gains in quantum computing (MS-Majorana-1, Google Willow)**
- **Significant innovation in Robotics (AI/ML enhancing robot autonomy, humanoid robots, cobots)**

# Where AI Has Been the past 12 months

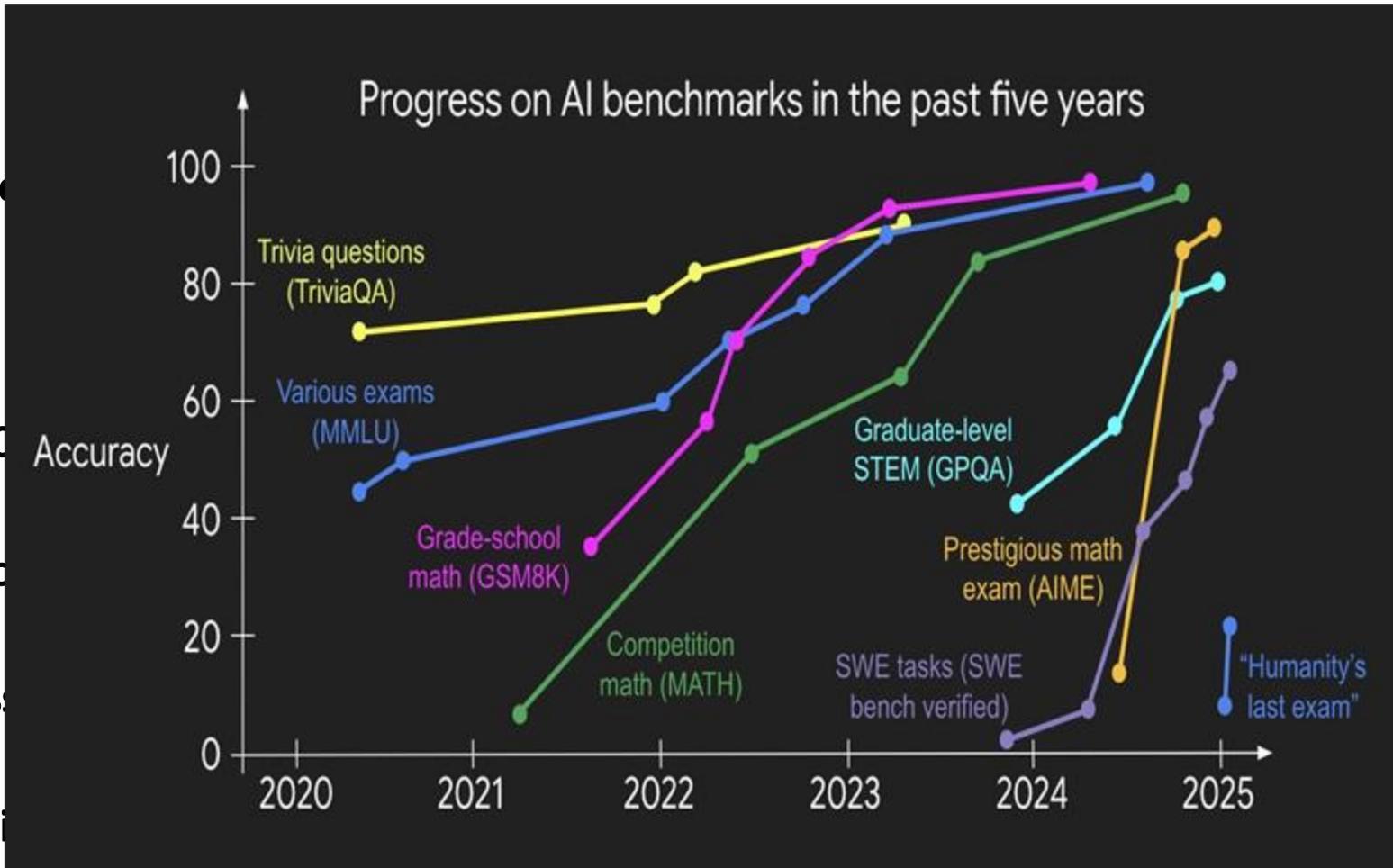
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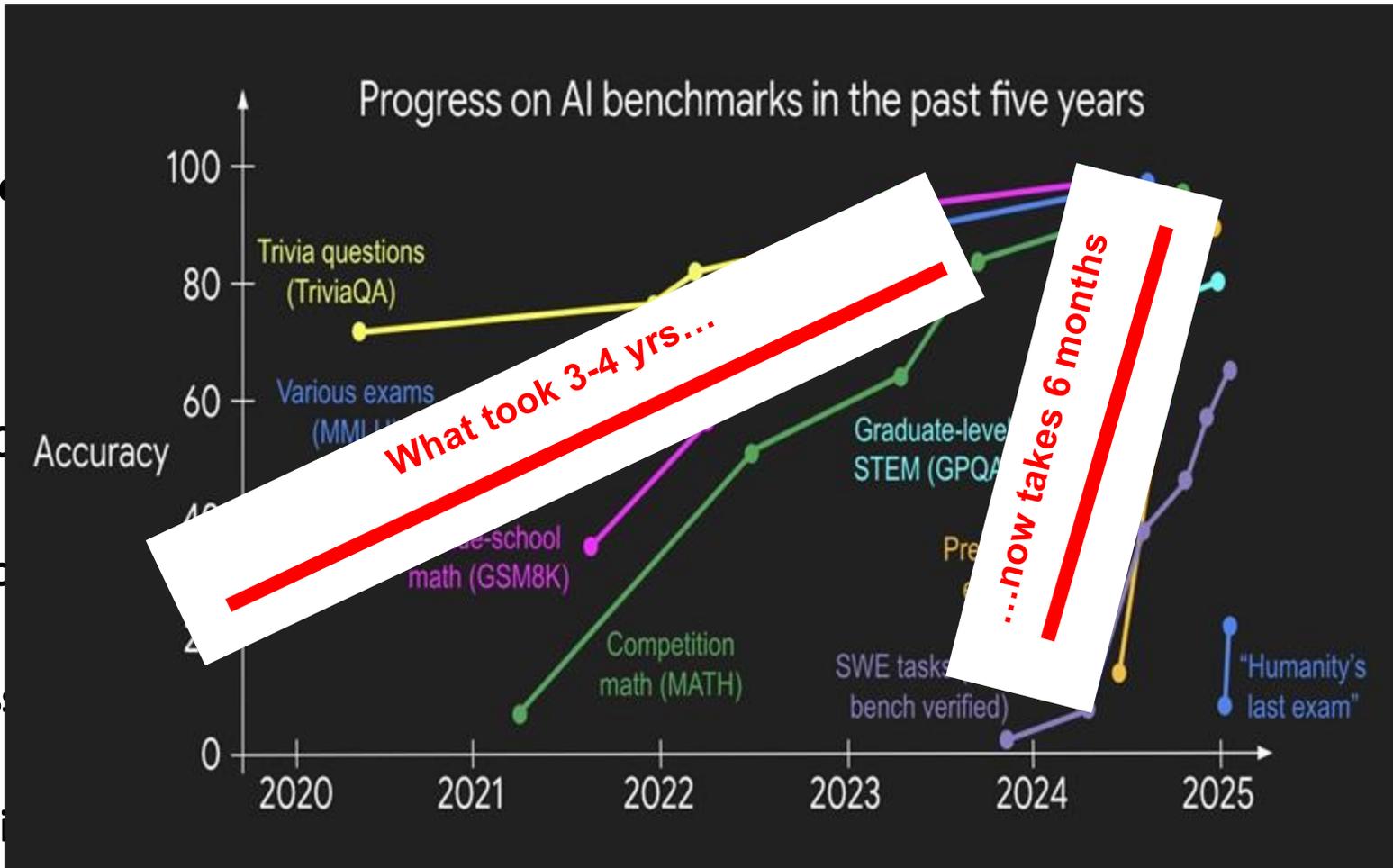
(ts)



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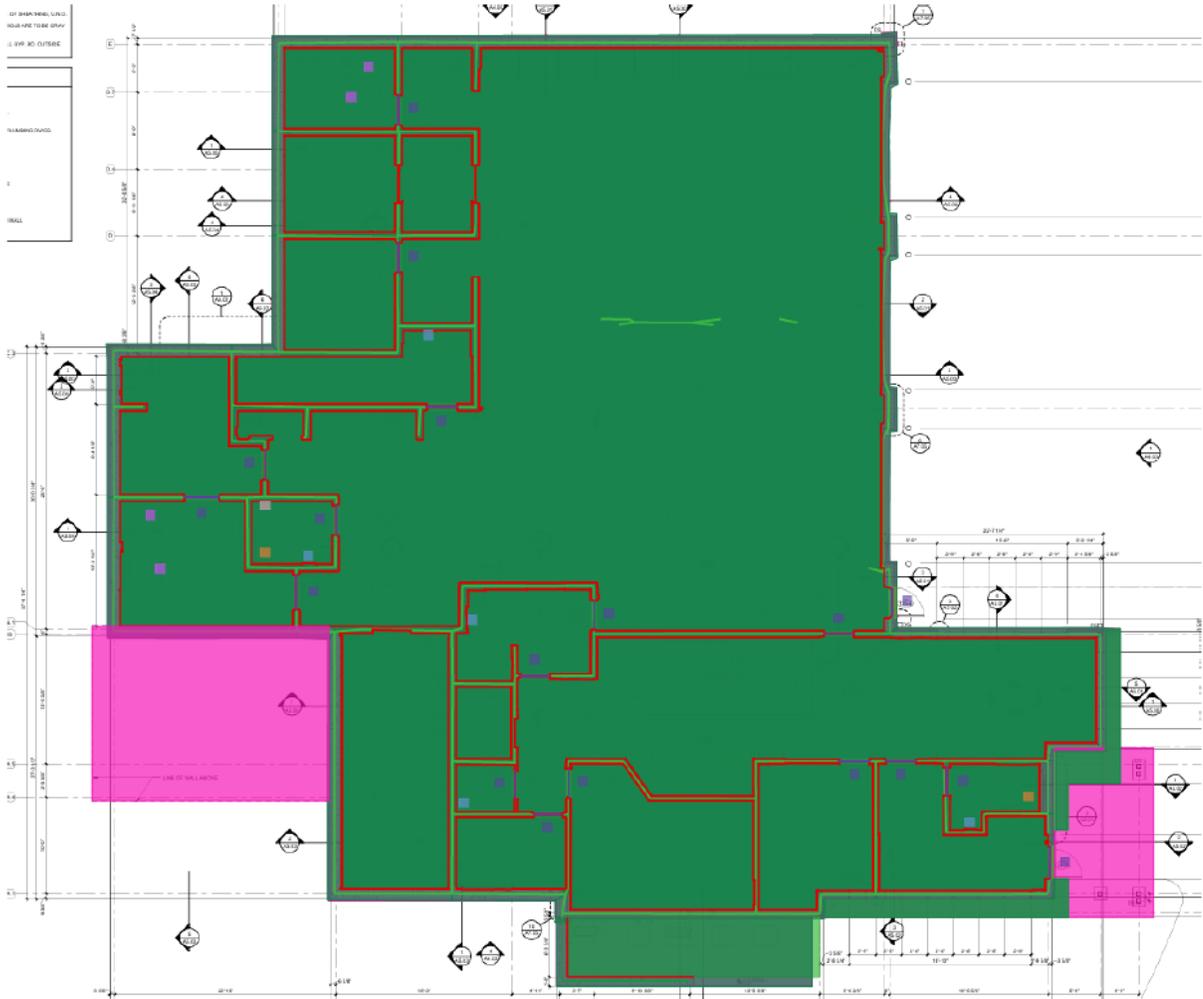
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# Example: Togonal AI

TOGAL AI

## Fire Station - Floor Plan A101 (Adjustments)





AI

February '25

## Workday unveils AI agent workforce management system

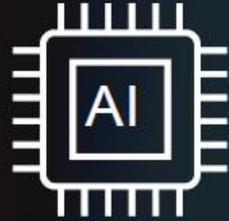


BY KYT DOTSON

Enterprise management software company [Workday Inc.](#) today unveiled a workforce management system designed to help companies track, govern and optimize their growing artificial intelligence agent lineups.

Workday is calling the new platform the Agent System of Record. It's aimed at helping businesses that are onboarding agents keep track of their new digital workforce and treat them the same way they do any other piece of software, while addressing new challenges that come with AI agents.

"The workforce is expanding," said Workday Chief Executive Carl Eschenbach. "It's no longer just human workers; it's also digital workers."



Machine Learning helps you **understand**,  
Generative AI helps you **create**,  
Agentic AI helps you **act**.

# Uncomfortable Thoughts

Don't think of AI as software.

Think of it as a **person**.

Think of agentic AI like an **intern**.

Eager, has potential, but wrong.

When trained and guided, then they get better and better.

Agents should be on your **org chart**.



# Strategies for the Future

# Performance Problems





# Keys to Success

- **Focus on the People & Team**
- **Manage thru the Market Challenges (*together*)**
- **Trust & Collaboration**

# Keys to Success

- **Focus on the People & Team**
- Manage thru the Market Challenges (*together*)
- Trust & Collaboration

# Keys to Success

- **Focus on the People & Team**

- Alignment of Design/Engr + Construction
- Procurement centered on Key Personnel
- Avoid Top-Down Planning and Risk Management
- Earlier-the-better: Engaging key personnel and vendors
- Succession Planning from the start; Work Guarantees
- Tighter Client-D-B team for expectation management

# Reality of the Situation

- Performance **has been proven to NOT correlate** to contract types, delivery methods, software, design quality, etc.
- Performance **HAS BEEN PROVEN to highly correlate** to the capability, skill, and experience of the people doing the work – the critical personnel on a project or service

# Importance of the People

The ability to realize

**innovation,**

**risk minimization,**

**value creation, &**

**cost reduction**

**will not**

**exceed the**

**capability of the**

**people doing the work**

# Limited Pool of Expertise

- **There is a limited pool of high performing experts and experienced personnel**
- ***Also varies by***
  - Moment in time (when the solicitation/work is needed)
  - Location (geography)
  - Market/Sector
- **Organizations also commonly underestimate the cost of working with average and low performing vendors**

# KEY TAKEAWAY

Clients, Buyers, Contractors, Suppliers...  
**are in competition with each other**  
for the same  
***limited pool***  
of skilled personnel

# Keys to Success

- Focus on the People & Team
- **Manage thru the Market Challenges (*together*)**
- Trust & Collaboration

# A “*Client-of-Choice*” (“*Customer-of-Choice*”)

- AEC Firms want to work for you over other owners
- Clients-of-Choice get vendors’ **best teams (experts)** on their projects/services
- AEC Firms spend the time to put together an **accurate proposal**
- Client-of-Choice personnel know how to **behave with experts**
- Client-of-Choice has an owner “team” that is **trained and prepared to work in a high performing environment**

# Keys to Success

- Focus on the People & Team
- Manage thru the Market Challenges (*together*)
- **Trust & Collaboration**

# Keys to Success

## • Trust & Collaboration

- Carefully use Traditional Risk Transfer (Contract, Commercial, Operational).

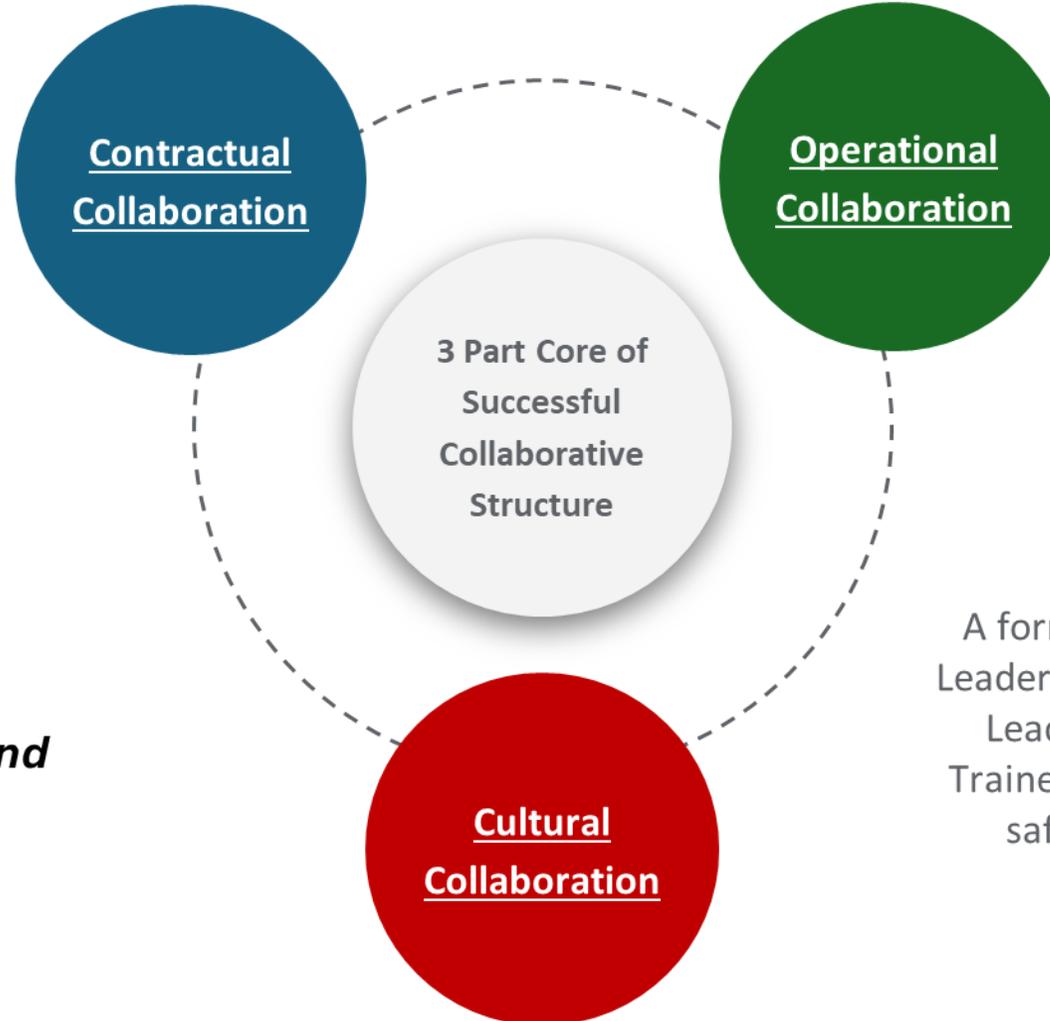
Improve trust thru:

- Program + Project
- Unity/"One-Hardhat" approach focused on Goals/Expectations (not just kumbaya)
- Collaboration (Authentic Collaborative Partnerships - RBPP)
- Not contractual only – encompass Contract, Ops, AND Culture
  - Collaboration Bottom-Up + Top-Down
  - Innovation from all
  - "I am by brother's/sister's keeper" complete health mentality (injuries+mental+fam+etc.)
- Avoid traditional "who can manage it best has the risk"

# Enhance Project Outcomes

## *Collaborative Partnership = TRUST*

Contract conditions reflect the “win-win” intent and incentivizes collaborative behavior. A mutual risk-sharing model to promote aligned interests and project success.



Proactive approach to project execution by leveraging early engagement, shared risk, better controls data, focus on productivity analysis, all to streamline project execution.

***“Trust is the most important currency on projects today and into the future”***

A formal structure across Company Leadership, Project Management, Site Leaders, and Craft Professionals. Trained and facilitated collaboration, safety, and innovation efforts.

# Keys to Success

## • Trust

- Carefully use Traditional Risk Transfer (Contract, Commercial, Operational). Improve trust thru:
  - Unity/"One-Hardhat" approach focused on Goals/Expectations (not just kumbaya)
  - Collaboration (Authentic Collaborative Partnerships - RBPP)
  - Not contractual only – encompass Contract, Ops, AND Culture
    - Collaboration Bottom-Up + Top-Down
    - Innovation from all
    - "I am by brother's/sister's keeper" complete health mentality (injuries+mental+fam+etc.)
  - Avoid traditional "who can manage it best has the risk"
- Individuals with High Performance have Higher Collaborative Capabilities
  - Effective Collaborator ≠ "People-person" : Effective Collaborator = High P-F-A
  - Good collaborative teams have strong team leaders, focused on clear expectations, performance, process, transparency, accountability, and proper communication
  - Performance that meets and exceeds expectations builds trust
- Building Trust in PDB: ICE process as an impediment vs strengthen agent
  - ICE – does "I" = Independent or does "I" = Integrated
- GMP Negotiations & Management (+Contingency, Allowances)

# Summary

# Unique Time

- Prices = Uncertainty, Volatility
- Materials = Less than Certain, quality decreasing
- Limited control of either; Traditional contractual models struggle with these risk
- Labor & Workforce = A New Model Needed; Key Differentiator
- Expertise has left and been diluted (never lower probability to procuring HiPerf)
- Acting Now will be Easier than Waiting until the challenges become more acute and everyone is forced to change

**Want the slides?  
Or just to discuss further?**

**[brianlines@ku.edu](mailto:brianlines@ku.edu)**