

Workforce and AI in Facility Management

Jake Smithwick, PhD, FMP

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Simplar

- Consultancy, Research, OCM, and Trainers
- Expertise with **all parties** (owners & vendors)
- Provide **consulting, tools, training** for:
 - Procurement & Sourcing
 - Project Delivery
 - Organizational Readiness & Transformation
 - Risk-based Partnering & Planning
 - Project & Risk Management, Project Controls
 - Performance Measurements



Simplr

- Becoming a **Client of Choice**
- Becoming a **Performance-Based Vendor**
- Other things:
 - Industry Benchmarking
 - Human Dimensions/Team Optimization
 - Talent Development
 - Workforce Studies
 - Exploratory research
 - Policy & Regulations
 - Standards & Templates



20+ Years | 170+ Owners

3,500+ Projects | \$20+ Billion Procured

Information Technology

Networking
Data centers
Hardware
COTS software
ERP systems

Help desk services
eProcurement

Facility Management

maintenance
landscaping
security service
building systems
industrial moving
waste management
energy management

custodial
conveyance
pest control

Health Insurance/ Medical Services

Manufacturing

Business / Municipal / University Services

dining
multi-media rights
fitness equipment
online education
document management
property management
audiovisual
communications systems
emergency response systems
laundry

retirement fund
material recycling
bookstores
furniture

Construction / Design / Engineering

Infrastructure
Municipal
Laboratory
Education
Hospital
Corrections
Financial

Renovation
Repair
Maintenance
Roofing
Specialty
Demolition
Development


























DBB
CMAR
DB
IDIQ
JOC
Low Bid
IPD



























Google



-  U.S. General Services Administration (GSA)
-  US Army Medical Command
-  Arizona State University
-  Canon
-  State of Oklahoma
-  City of Phoenix, AZ
-  University of Minnesota
-  State of Alaska
-  Rijkswaterstaat (Dutch public works & water management)
-  Aramark
-  State of Oregon
-  State of Idaho
-  University of Alberta
-  Boise State University
-  United Airlines
-  Neogard / Jones-Blair
-  Tremco
-  Bank of Botswana
-  General Dynamics C4 Systems
-  Salt River Project (SRP)

-  US Air Force Logistics Command
-  US Coast Guard
-  US Embassy (Botswana)
-  US Army Corps of Engineers
-  Federal Aviation Administration
-  IBM
-  Brunsfeld
-  Qwest
-  Honeywell
-  City of Peoria, AZ
-  University of Idaho
-  University of Hawaii
-  University of New Mexico
-  Entergy
-  Sodexo
-  Chartwells
-  Dallas Independent School Dist.
-  Olmstead County, MN
-  City of Roseville, MN
-  Hennepin County, MN
-  Scenter
-  Abengoa Solar
-  City of Sitka, Alaska
-  US Solar
-  Rochester Public Utilities

-  Harvard University
-  Denver Health & Hospital Authority
-  State of Missouri
-  State of Washington
-  Idaho Transportation Department
-  State of Georgia
-  Arizona State Parks
-  United Excel
-  East Valley Institute of Technology
-  Arizona Public Service (APS)
-  Rochester School District
-  Fann Environmental
-  Idaho State University
-  On Semiconductor
-  Pearson
-  State of Wyoming
-  Idaho Department of Corrections
-  City of Miami Beach, FL
-  Lewis & Clark State College
-  Hawaii Department of Transportation
-  Baptist Health
-  City of Columbia, SC
-  PECO Energy
-  Intermediate District 287

PROJECT PARTNERS AND PARTICIPANTS:

PARTNERS



Google



Georgia-Pacific

TREMCO



IFMATM
International Facility Management Association
Empowering Facility Professionals Worldwide



NUCOR



EPA VICTORIA



NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
Environment Protection Authority Victoria

NASPO



Center for Procurement Excellence



THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING



LAWA
LOS ANGELES WORLD AIRPORTS

evergy



METROPOLITAN WASHINGTON AIRPORTS AUTHORITY



CONSTRUCTION LEADERSHIP NETWORK



NCHRP

uOttawa

VCU Health



Kiewit



Children's Mercy HOSPITALS & CLINICS
Kansas City



BAYLOR UNIVERSITY



Brooklyn Park

NATIONAL ACADEMY OF SCIENCES



Western UNIVERSITY - CANADA

Seattle City Light



Banner Health



BRITISH COLUMBIA



LEDUC COUNTY



Municipal Park & Recreation Board

The City of SPRUCE GROVE
www.sprucegrove.org



DALHOUSIE UNIVERSITY
Inspiring Minds



UNIVERSITY OF SASKATCHEWAN



Kansas City Kansas Community College



BEST VALUE EUROPE



City of Lawrence KANSAS



COMPASS GROUP



NOTICE:

**ALL DATA IS AS OF SEPT/OCT 2024
AND THE MARKET IS CHANGING FAST
THE DATA SHOULD BE UPDATED
REGULARLY**

Many Headwinds in Today's Supply Chain

- **Cost Escalation & Volatility**
- **Materials Shortages & Supply Chain Challenges**
- **Quick Macro**
- **Workforce**

Many Headwinds in Today's Supply Chain

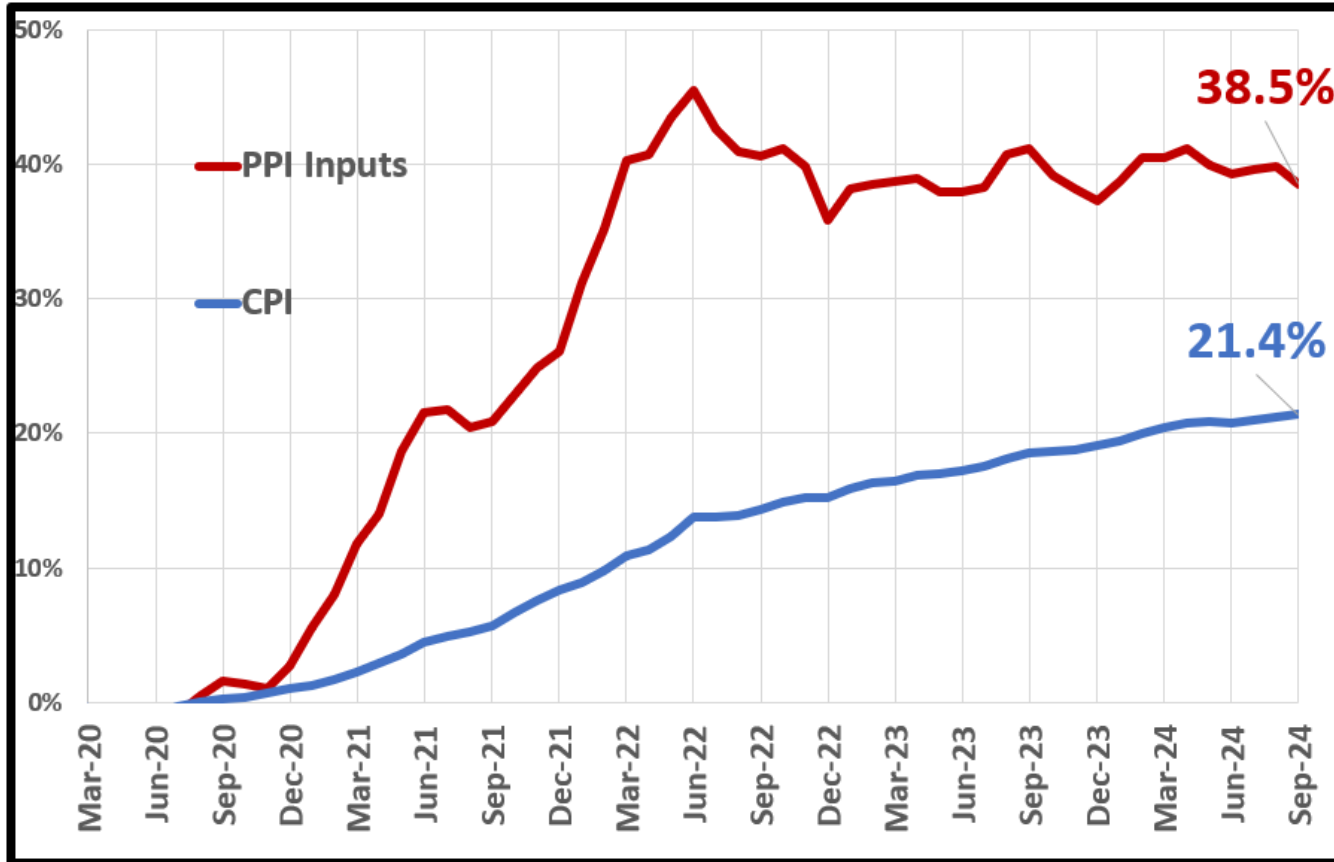
- **Cost Escalation & Volatility**

- Materials Shortages & Supply Chain Challenges

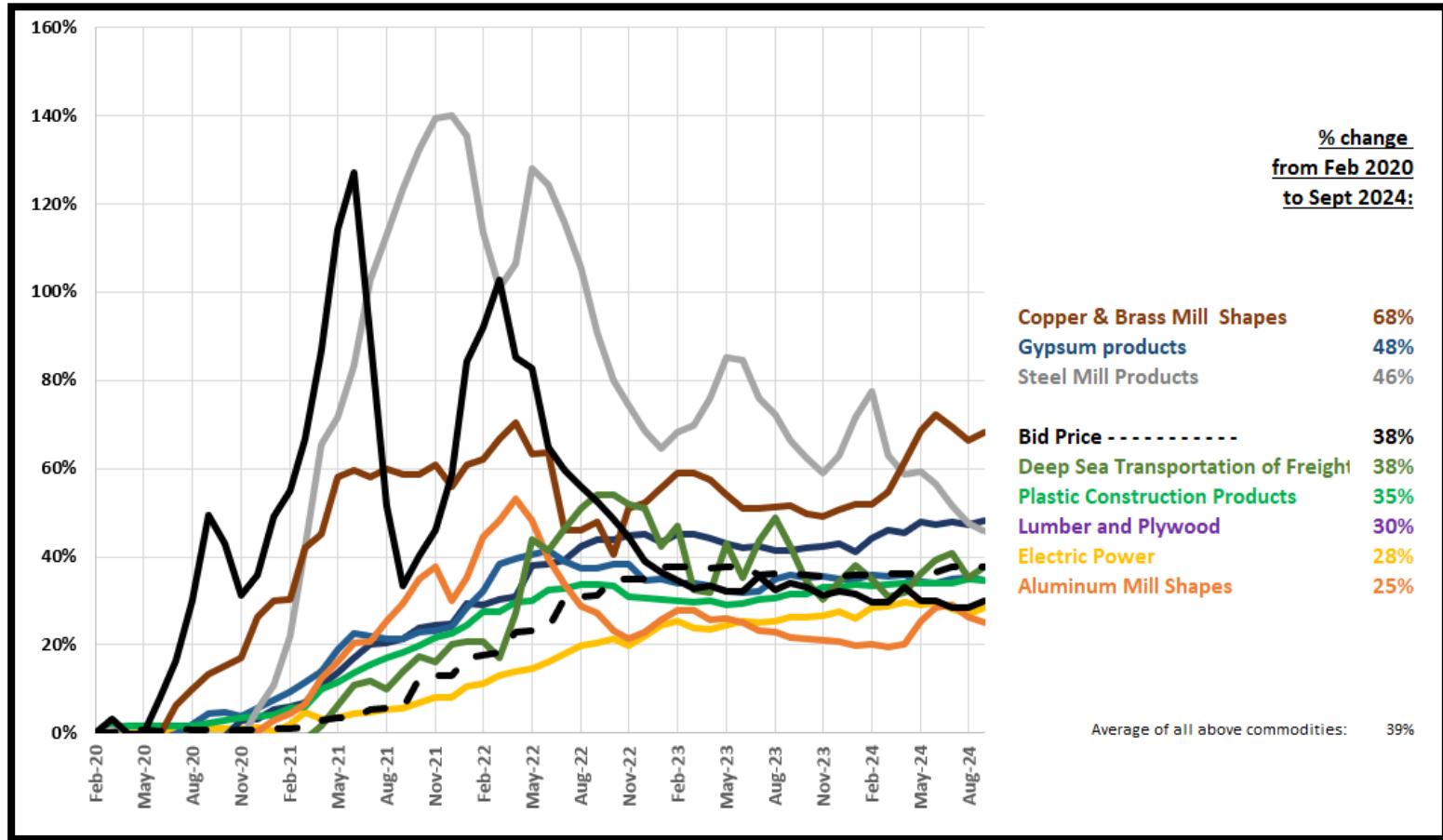
- Quick Macro

- Workforce

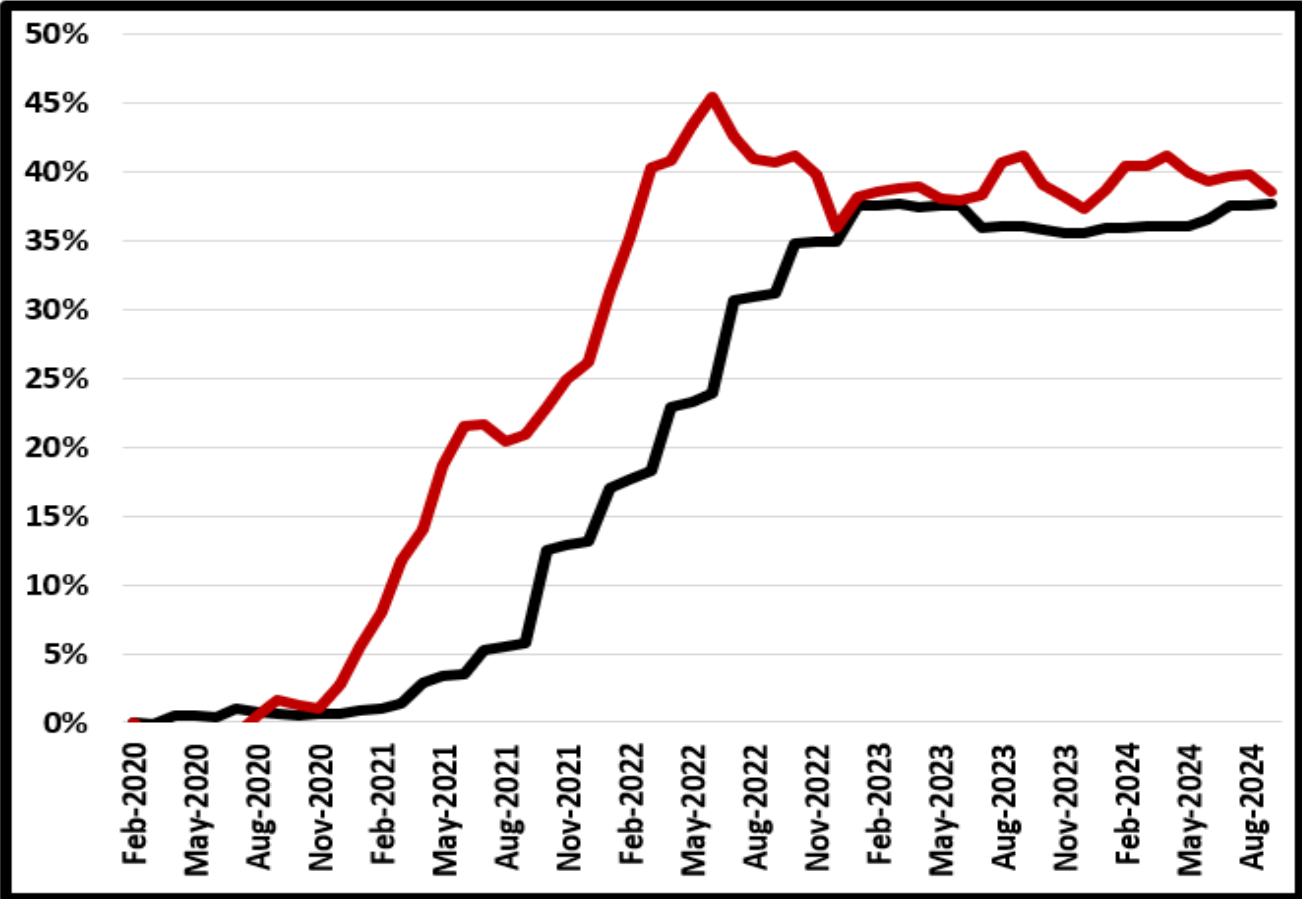
Stuff has Gotten A Lot More Expensive



Material Prices & Uncertainty – Sept 2024 BLS



Economic Uncertainty?



% Change
from Feb 2020
to Sept 2024

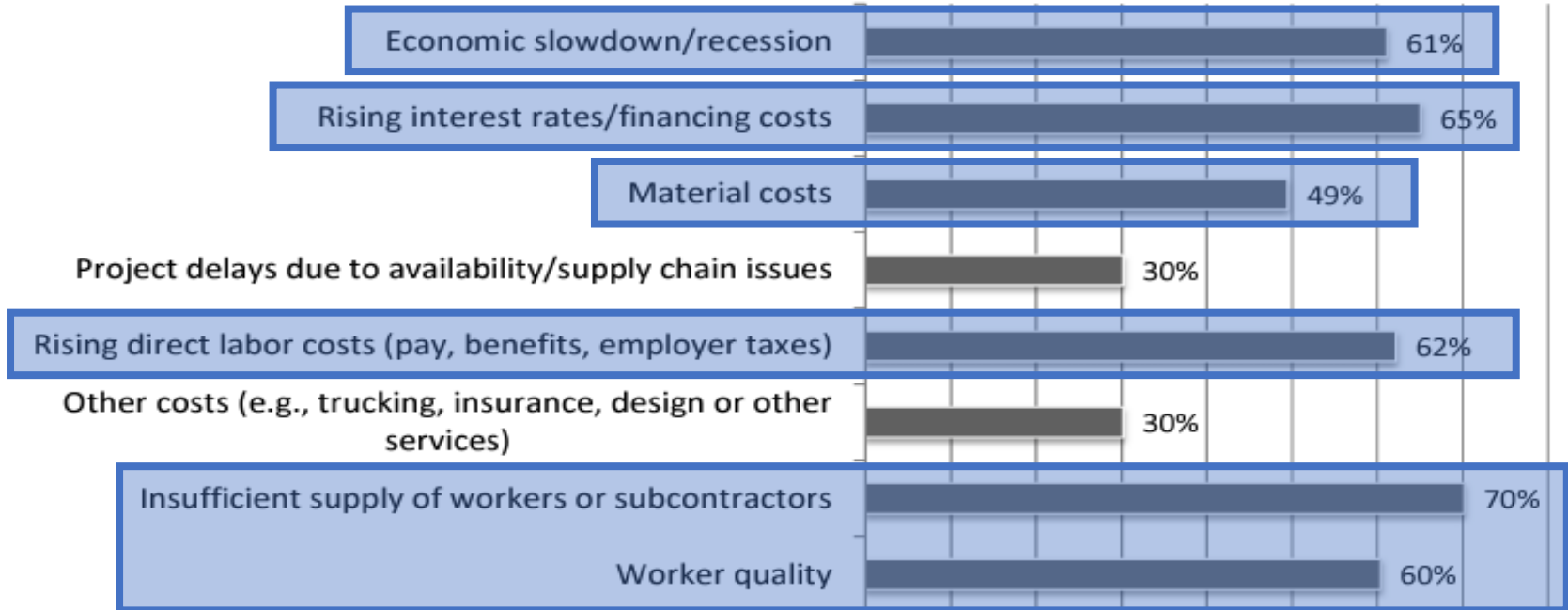
39.8% Inputs PPI (goods)
37.6% Bids

What are your biggest concerns – Aug/Sept 2024?



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Sage

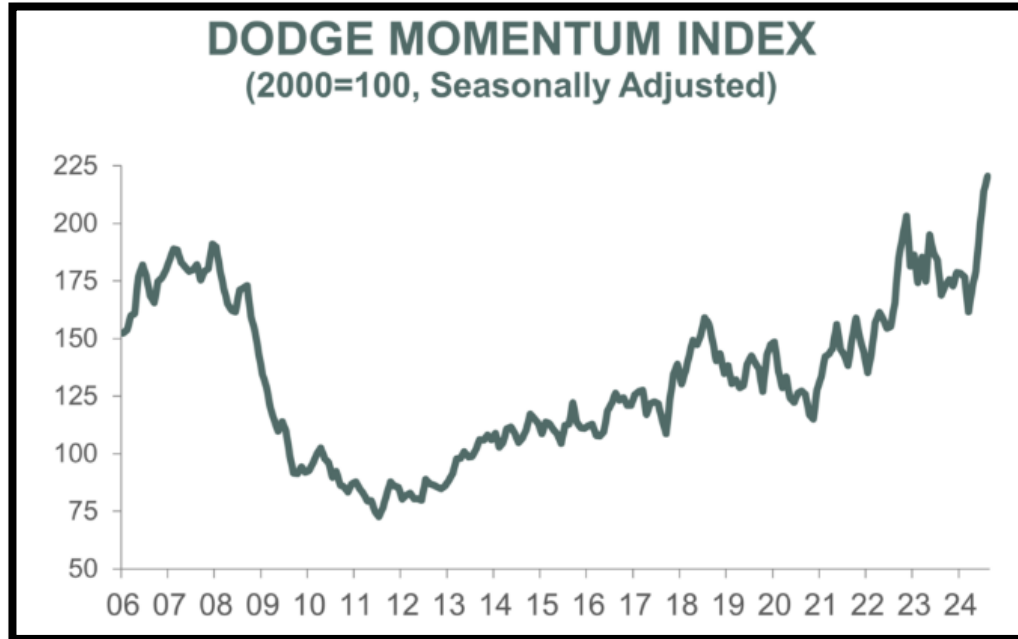


Economic - Dodge Momentum Index

More Work Coming? (Up 31% y/y Aug 2023-2024)

Dodge Momentum Index (Aug 2024 update) 

- Monthly measure of nonresidential projects in planning, [leading](#) indicator of construction [by 1-year](#)
 - Commercial **UP** year-over-year by 42% ; Institutional **UP** year-over-year by 8%



More Work Coming? — ENR 2024 Q2 Report

ENR CONFIDENCE INDEX SECOND QUARTERLY COST REPORT

Private Financing Woes Cut Confidence

Stubbornly high interest rates lessen demand for construction services **By Jonathan Keller**

The results of this quarter's Construction Industry Confidence Index survey show a dip in confidence among construction industry executives. The overall confidence index fell 11.5% to a 46 rating this quarter, from a 52 rating in Q1. The economic index is also down, falling four points to a 44 rating.

The CICI measures executive sentiment about where the current market will be in the next three to six months and over a 12-18-month period, on a 0-100 scale. A rating above 50 shows a growing market. The measure is based on responses by U.S. executives of leading general contractors, subcontractors and design firms on ENR's top lists to surveys sent between May 13 and June 17.

As with last quarter, GCs and CMs are more pessimistic than either designers or subcontractors; however, that gap widened significantly in Q2. GC/CM confidence comes in at a 37 confidence rating, down



from 47 in Q1 for that group. Although less extreme, confidence among both designers (from a 56 rating in Q1 to 54 in Q2) and subcontractors (57 to 51) has also dropped. Over 40% of GCs and CMs see a declining market both currently and 3-6 months from now.

Confidence is highest among firms who do business in the Midwest, with a confidence rating of 49, down from 55 last quarter. Firms who work in the Far West/Pacific region are the most pessimistic this quarter, with a 40 rating, significantly down from 52 last quarter.

CFI Confidence Dips

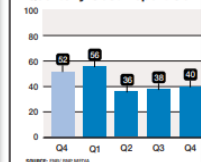
The CICI's results are largely mirrored by those of the Confindex survey from Princeton, N.J.-based Construction Financial Management Association (CFMA). Each quarter, CFMA polls CFOs from general and civil contractors and subcontractors on market and business conditions.

The resulting Confindex is based on four separate financial and market components, each rated on a scale of 1 to 100. A rating of 100 indicates a stable market; higher ratings indicate market growth.

All indices that the Confindex tracks fell between Q1 and Q2 of 2024, with the exception of the

ENR CONFIDENCE INDEX THIRD QUARTERLY COST REPORT

Quarterly Cost Report Confidence Index



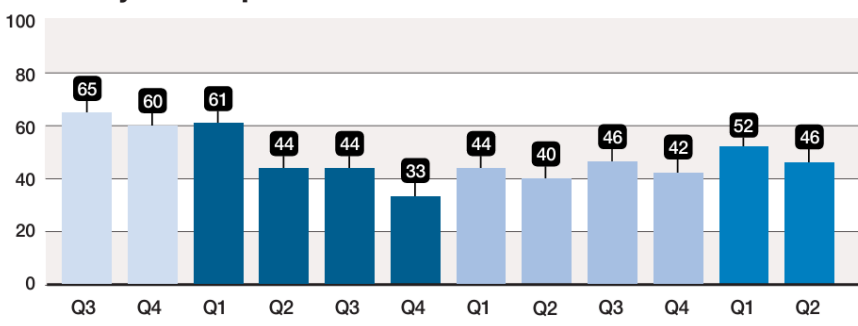
higher ratings indicate market growth. The Confindex fell 2.8% between Q3 of 2022, down from a rating of 100. The "current confidence" index also fell, down 5.4% to a 106 rating, and the "business conditions" index tumbled 6.8% to 101. The "business conditions" index rebounded slightly after a major drop last quarter, up two points to a 106 rating. "All indices are down significantly in comparison to last year's third quarter reading," says Stuart Binstock, CFMA's CEO.

Despite the dip in confidence, construction CFOs may not be pessimistic enough, thinks CFMA economic adviser and CEO of economic consultant Sage Policy Group Anirban Basu. "I think we're headed into a recession in 2023, and I think it's going to be a deep recession."

Whereas CFMA respondents have previously reported strong profit margins, this quarter the number of firms reporting improved profit margins has been "virtually offset" by those who report they have not improved, he says. With construction costs still rising "it'll be more and more difficult for those contractors to pass along those cost increases to their project owners," he adds. The "year ahead outlook" index of CFMA's survey fell below 100 this quarter and is down 18.2% when compared with last year.

The full impact of the conflict in Ukraine is also yet to be felt, he thinks. "When we came into the year in North America, natural gas prices were \$3 per million BTU; recently we have been in the mid-40s," explains Basu. As cold weather hits

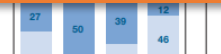
Quarterly Cost Report Confidence Index



SOURCE: ENR/BNP MEDIA

Even if confidence in the construction market overall is low, confidence in many individual markets remains high. The water/sewer and waste (a 72 rating)/manufacturing (68) health care (68) markets posted numbers. Basu sees a rising market at least in the short term. "Interest rates are good for the market, because people, at a certain point, can't buy homes. According to Freddie Mac, fixed mortgage rates are at 7.5% as of September 22. That number is down from 8.5% on January 6."

At the other end of the confidence remains low in the construction (a 46 rating) and commercial (a 46 rating) and commercial (a 46 rating) markets. Basu does not see citing data from Castle 50 provides security to 2,000 America. "On average, 41% of workers swiped in the reports. He foresees a lot of office space in the near future may be banks. "August was the fastest leasing of New York City office space during the pandemic, and that in large measure is because banks are demanding their people come back," the Source CEO says.



The index measures executive sentiment about where the current market will be in the next three to six months and over a 12- to 18-month period, on a 0-100 scale.

A rating above 50 shows a growing market.

The measure is based on responses by U.S. executives of leading general contractors, subcontractors and design firms on ENR's top lists.



SOURCE: ENR/BNP MEDIA

PROSPECTS IN INDIVIDUAL SECTORS BY FIRMS WORKING IN THOSE MARKETS

MARKET	GROWING				DECLINING			
	NUMBER OF FIRMS	SECURING ACTIVITY	STABLE ACTIVITY	IMPENDING ACTIVITY	NUMBER OF FIRMS	SECURING ACTIVITY	STABLE ACTIVITY	IMPENDING ACTIVITY
COMMERCIAL OFFICES	18	21	28	1	65	31	4	35
DISTRIBUTION, WAREHOUSE	48	32	35	25	56	39	4	52
EDUCATION K-12	16	7	65	27	5	66	29	4
ENTERTAINMENT, THEME PARKS, CULTURAL	33	10	55	27	19	56	31	9
HOSPITALS, HEALTH CARE	67	4	34	42	1	51	48	3
INFORMAL EDUCATION	21	18	48	34	17	52	21	11
HOTELS, HOSPITALITY	11	37	55	19	34	54	12	14
MULTI-UNIT RESIDENTIAL	48	37	41	22	35	33	31	35
METALS	44	45	46	7	43	58	7	18
INDUSTRIAL, MANUFACTURING	35	19	53	35	47	46	7	47
TRANSPORTATION	17	8	41	31	6	39	56	3
WATER, SEWER AND WASTE	16	6	58	36	6	56	39	3
POWER	28	4	45	59	4	32	64	3
PETROLEUM, PETROCHEMICAL	11	17	33	0	27	73	0	14
ENVIRONMENTAL, HAZARDOUS WASTE	18	30	40	33	20	56	30	18

PROSPECTS IN INDIVIDUAL SECTORS BY FIRMS WORKING IN THOSE MARKETS

	NUMBER OF FIRMS	CURRENTLY (%)			3-6 MONTHS (%)			12-18 MONTHS (%)		
		DECLINING ACTIVITY	STABLE ACTIVITY	IMPROVING ACTIVITY	DECLINING ACTIVITY	STABLE ACTIVITY	IMPROVING ACTIVITY	DECLINING ACTIVITY	STABLE ACTIVITY	IMPROVING ACTIVITY
COMMERCIAL OFFICES	78	71	28	1	65	31	4	35	49	17
DISTRIBUTION, WAREHOUSE	48	32	53	15	21	60	19	6	62	31
EDUCATION K-12	56	7	66	27	5	66	29	4	62	34
ENTERTAINMENT, THEME PARKS, CULTURAL	33	18	55	27	19	50	31	9	50	41
HOSPITALS, HEALTH CARE	67	4	54	42	1	51	48	3	33	64
HIGHER EDUCATION	71	18	68	14	17	62	21	11	65	24
HOTELS, HOSPITALITY	51	37	53	10	34	54	12	14	60	26
MULTI-UNIT RESIDENTIAL	49	37	41	22	35	33	31	21	35	44
RETAIL	44	45	48	7	43	50	7	18	61	20
INDUSTRIAL, MANUFACTURING	55	13	53	35	13	47	40	2	47	51
TRANSPORTATION	37	8	41	51	6	39	56	3	35	62
WATER, SEWER AND WASTE	36	6	58	36	6	56	39	3	56	42
POWER	28	4	46	50	4	32	64	0	21	79
PETROLEUM, PETROCHEMICAL	11	27	73	0	27	73	0	18	36	45
ENVIRONMENTAL, HAZARDOUS WASTE	10	30	40	30	20	50	30	10	40	50

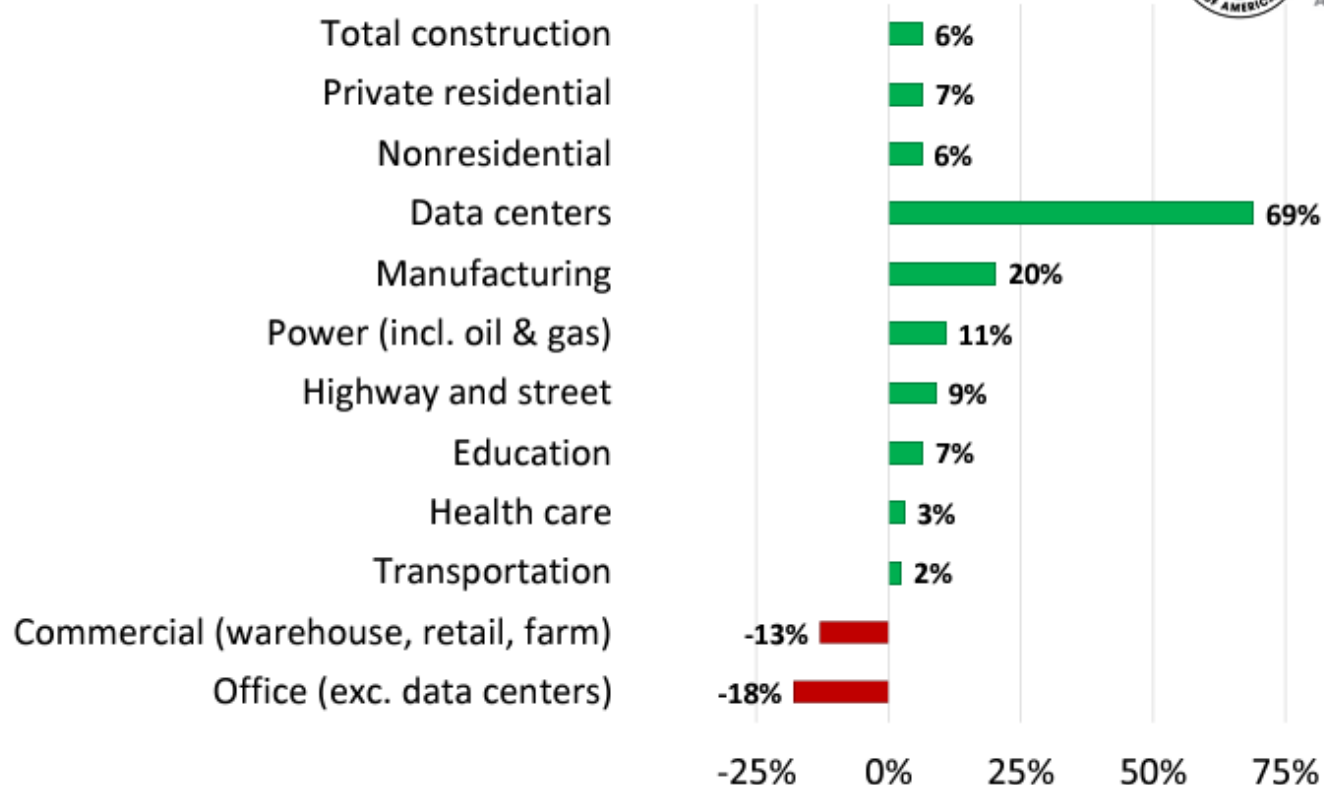
SOURCE: ENR/BNP MEDIA. FIGURES MAY NOT ADD UP TO 100% DUE TO ROUNDING

Change in construction spending: May 2023-May 2024

Year-over-year % change in current (not inflation-adjusted) dollars, seasonally adjusted

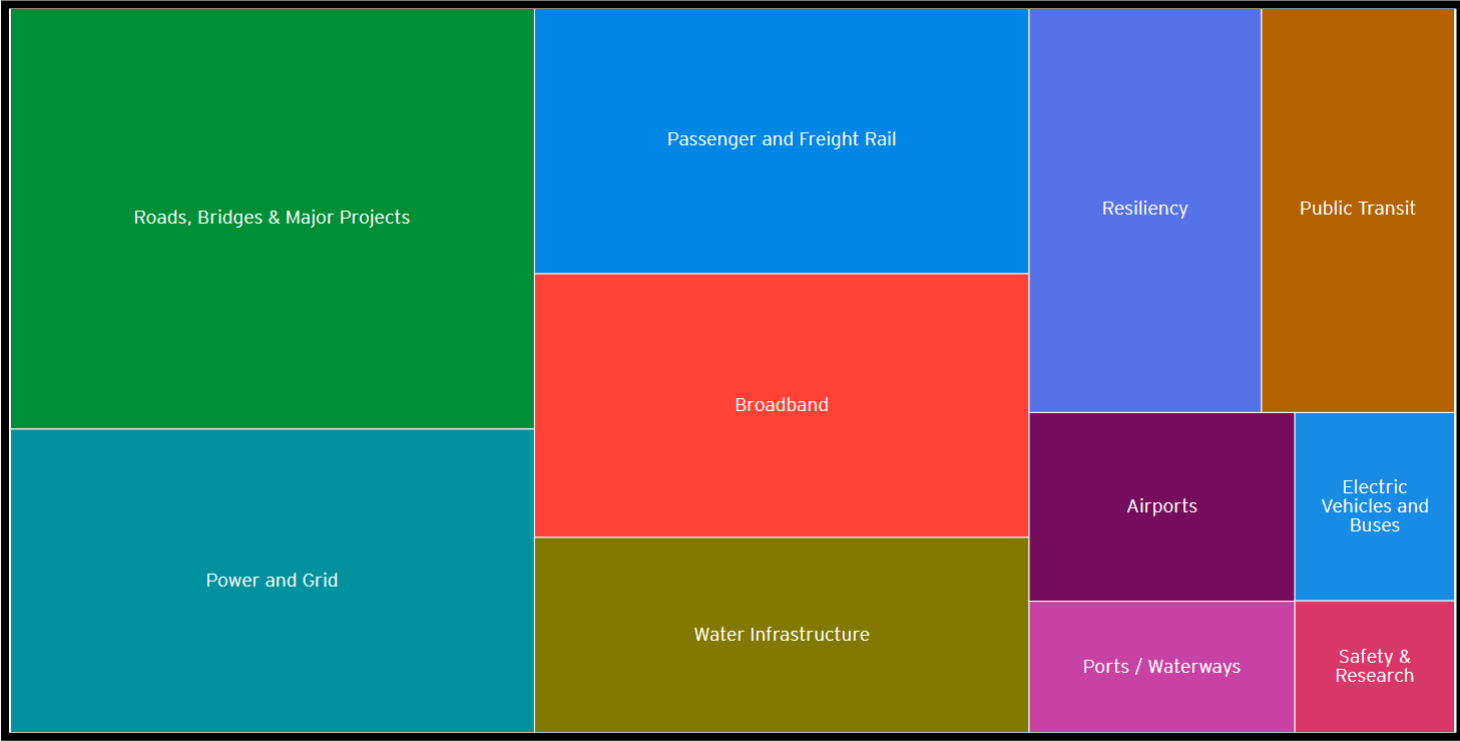


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IIJA (“Infrastructure Bill”) - \$1.2T/5yr (Nov ’21)

- Roads and bridges: \$110B
- Power and grid: \$73B
- Rail: \$66B
- Broadband: \$65B
- Water infrastructure: \$55B
- Resiliency: \$46B
- Transit: \$39B
- Airports: \$25B
- Environmental: \$21B
- Ports/waterways: \$17B
- Safety/Research: \$11B
- Low-carbon buses and ferries: \$7.5B
- EV infrastructure: \$7.5B



More Work Coming? - Others

- Dodge – new starts up 2% from same time last year
 - Non-residential starts down 7%
 - Residential starts up 5%
 - Non-building starts up 14%
 - May '24 up 49% from April (up 17% ytd since Jan)
- AGC - Total Value of Starts up 6% Year to Year
 - Non-residential – Up 6%
 - Commercial/Data Centers – Down 13%/Up 69%
 - Office – Down 18%
 - Education – Up 6%
 - Highway/Bridge – Up 9%
 - Industrial/Manufacturing – Up 20%
 - Power/Energy – Up 11%
 - Healthcare – Up 3%
- Decarbonization/Energy Policy for Existing Buildings?
- On-Shoring / Deglobalization – Reindustrialization of America (+Mexico)
- Semi/Chip and Data Centers (\$280B CHIPS and Science Act (\$52B subsidy to semi))

“Risks continue to mount for the construction sector,” said Richard Branch, chief economist for Dodge Construction Network. “Over the last 12 months, construction starts have essentially froze as rates increased and credit tightened. The industry needs further adjusting as rates are expected to stay higher for longer, along with the potential for higher energy costs and continued political uncertainty. A return to broad-based growth in construction starts is still some time away.”



Biden Administration Announces Federal Building Performance Standard

The standard will help federal facilities meet several concurrent sustainability and emissions reduction goals. December 29, 2022



By Greg Zimmerman, senior contributing editor

ENERGY EFFICIENCY

Energy crisis: Govern billion on fossil fuel s

NEWS ISRAEL-HAMAS WAR POLITICS U.S. NEWS WORLD BUSINESS HEALTH NBC NEWS TIPLINE VIDEO WATCH LIVE

ISRAEL-HAMAS WAR

Iran and its proxy forces loom over Israel-Hamas war, sparking fears of wider regional conflict

“There’s a real risk of escalation,” one expert told NBC News.

TAP TO LINK ITEM

Impact of gas supply cuts
Directorate-General for Energy
rd quarter impact of gas supply cuts

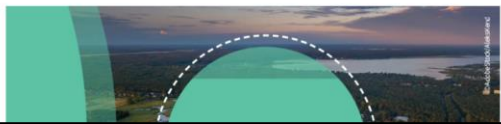


Energy

Home News EU reaches 90% gas storage target ahead of winter

NEWS ANNOUNCEMENT | 18 August 2023 | Directorate-General for Energy

EU reaches 90% gas storage target ahead of winter



Russia's war in Uki continues

By Kathleen Magramo, Eliza Mackintosh, Aditi Sangal, Mike Hayes, CNN

Updated 12:03 a.m. ET, March 21, 2023

incident, Kremlin says

◆ WSJ NEWS EXCLUSIVE | MIDDLE EAST

Iran Helped Plot Attack on Israel Over Several Weeks

The Islamic Revolutionary Guard Corps gave the final go-ahead last Monday in Beirut

How Scary Is China's Crisis?

Aug. 21, 2023

China / Military

PLA will 'show no mercy' against Taiwan independence moves, top Chinese general says

- CMC vice-chairman Zhang Youxia tells Beijing Xiangshan Forum the military 'will never agree' to separate the island from China
- He also takes a thinly veiled swipe at the US, saying a 'certain country' is interfering in the region and internal affairs of other nations

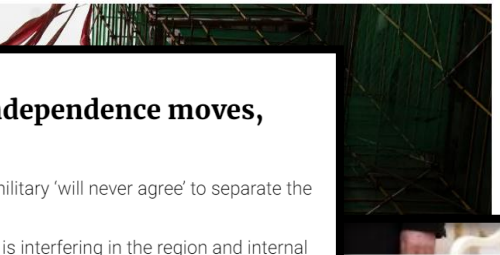


PHOTO: AP/WIDEWORLD/GETTY IMAGES

ALJAZEERA News Israel War on Gaza Features Opinion Video More

News | Russia-Ukraine war

Drones attack deep in Russia as Medvedev threatens Ukraine's 'existence'

Ukraine attacks military and energy infrastructure in at least three cities deep inside Russia, showing new drone capabilities.



Asia Pacific

North Korea fires cruise missiles off west coast, Seoul says

Reuters

January 24, 2024 12:51 AM MST · Updated 10 hours ago



8 hours ago · World

China steps up Taiwan pressure campaign with more balloons

Bethany Allen-Ebrahimian, author of [Axios China](#)

f t in




World Africa Americas Asia Australia China Europe India Middle East United Kingdom

World / Europe

Turkish parliament approves Sweden's NATO membership bid

By Isil Sariyuce · 3 minute read

THREATS POLICY BUSINESS SCIENCE & TECH SERVICES



Defense One

Belarus adds nukes to its military doctrine

Alexander Lukashenko has been pressing Russia's Vladimir Putin to return Soviet-era nuclear weapons to Belarus.



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SPECIAL SERIES

Middle East crisis — explained

U.S. hits Iraq militia sites and anti-ship missiles in Yemen

JANUARY 24, 2024 · 3:24 AM ET

By The Associated Press



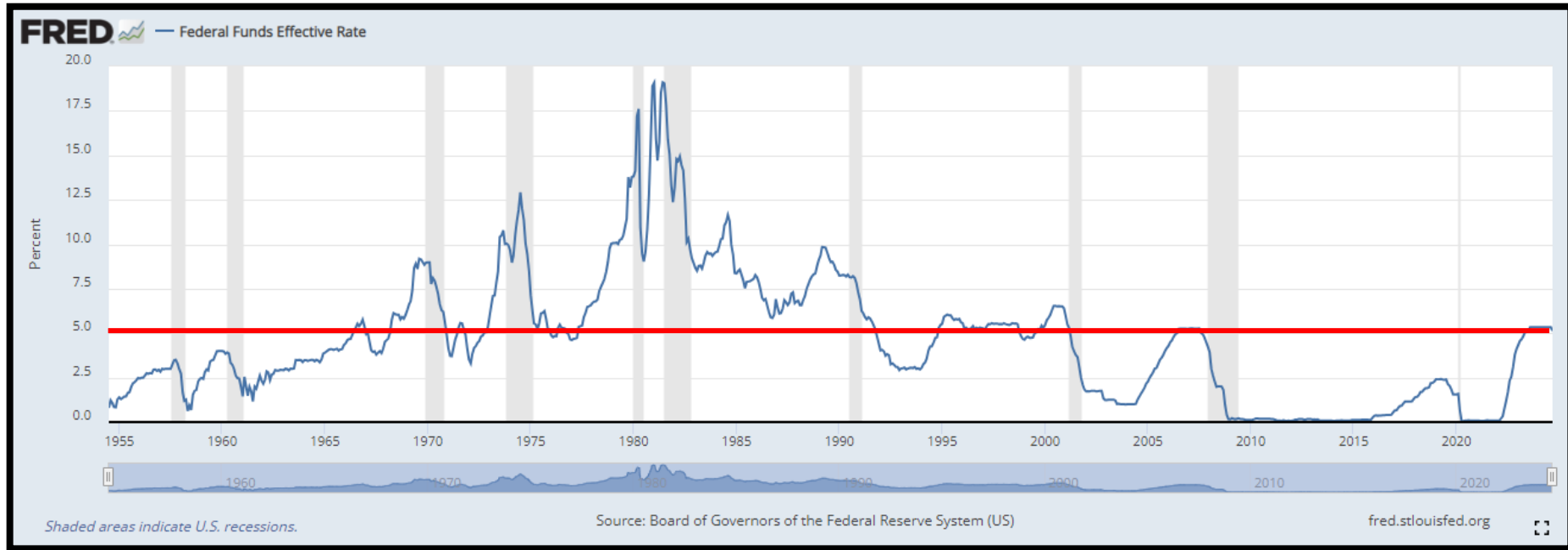
Many Headwinds in Today's Supply Chain

- Cost Escalation & Volatility
- Materials Shortages & Supply Chain Challenges
- **Quick Macro**
- Workforce

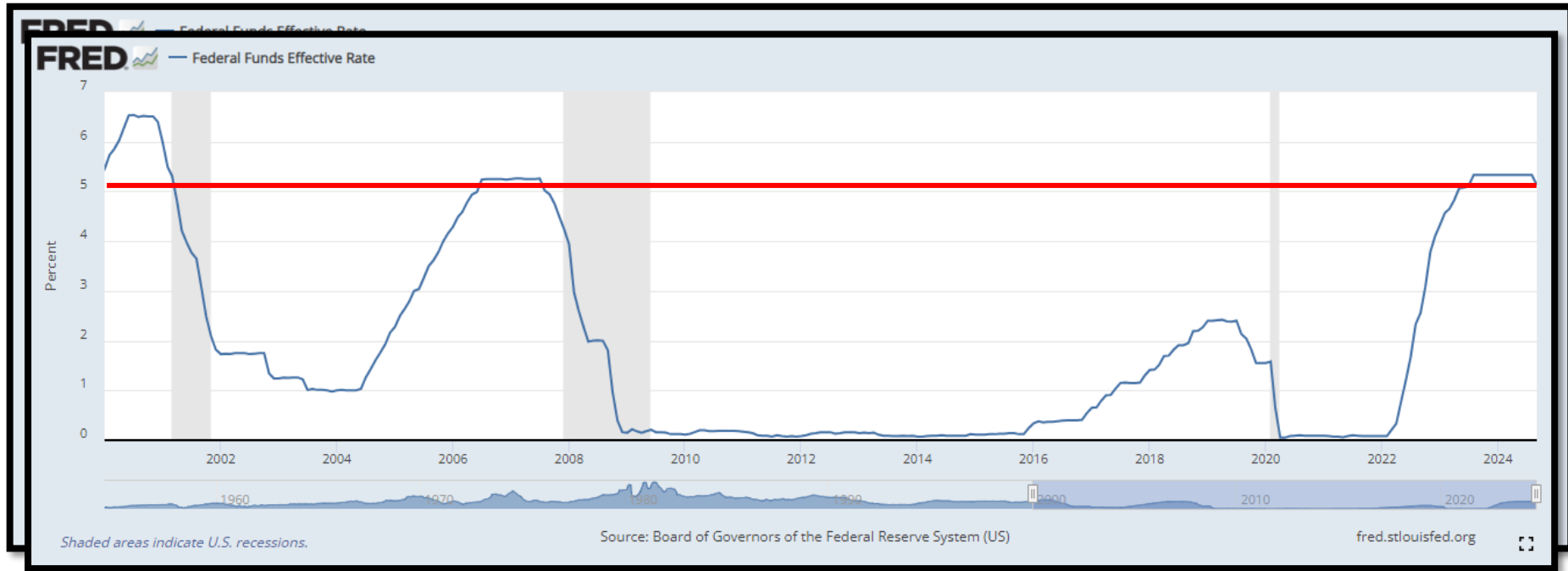
We Have Been Here Before vs. Not Been Here Before

- **Lots of things happening all at once....so let's take a look**
- **A Few Guiding Principles:**
 - **We are navigating by the stars under cloudy skies**
 - **History never repeats itself, but it does often rhyme**
 - **Everyone has a plan until they get punched in the face**
 - **If you put clowns in charge, you get a circus**

Fed Funds Rate – Been Here Before

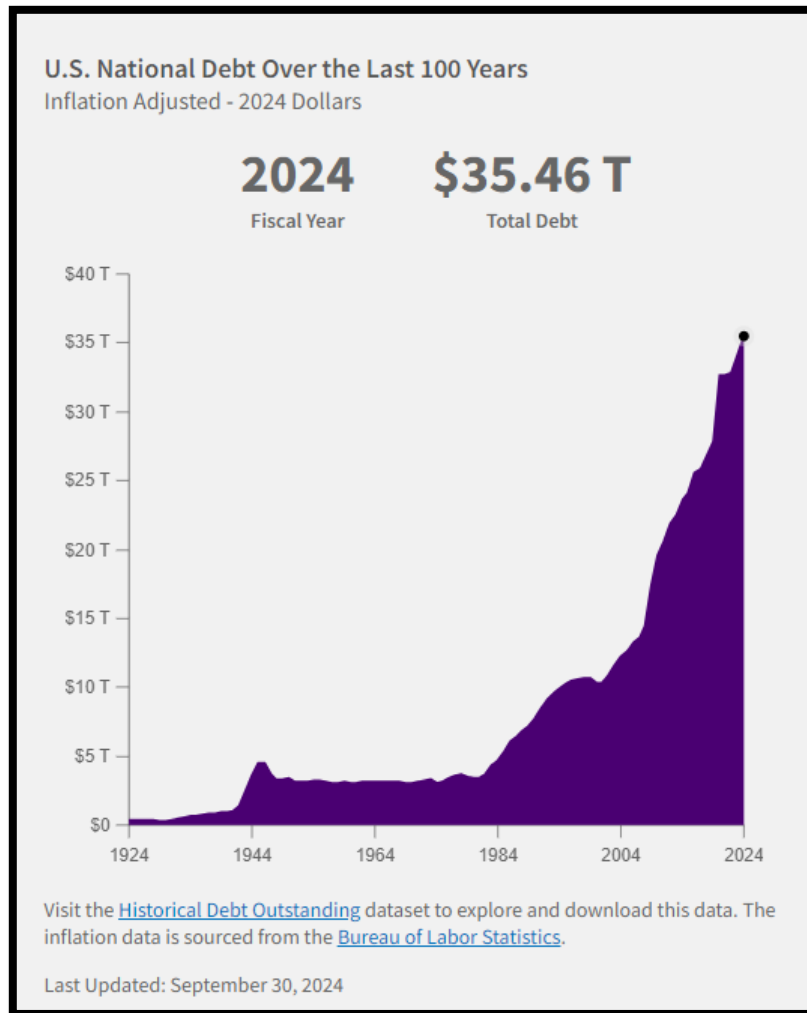
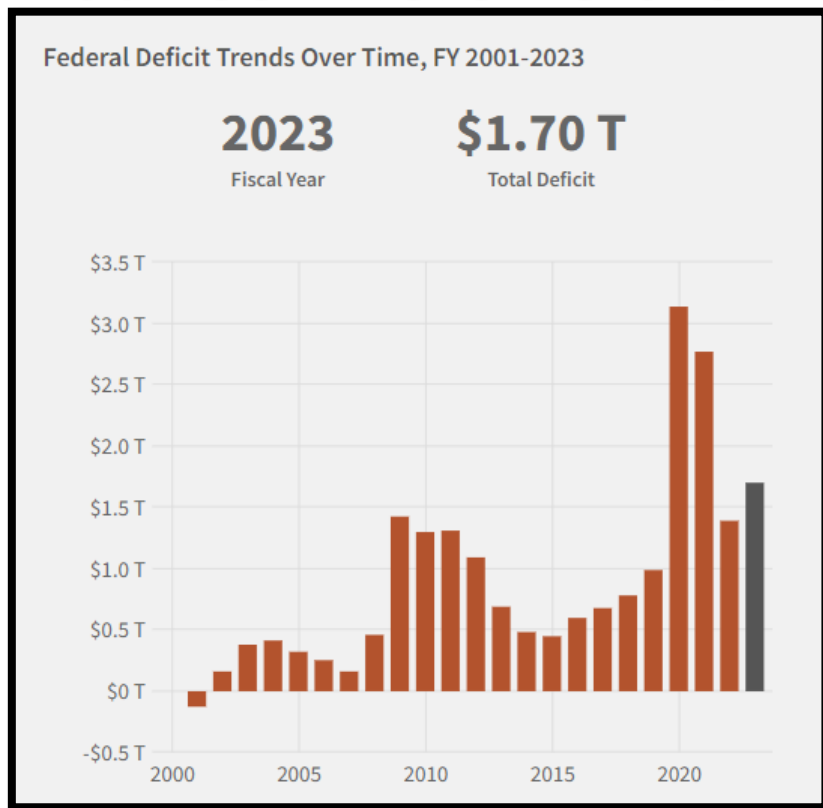


Fed Funds Rate – Been Here Before



US National Debt & Deficit

- Not Been Here Before



Biden's \$1.8T Budget Deficit Sets Non-COVID Year Record



(Michael Brown/Dreamstime)

President Joe Biden's fiscal year 2024 has set the all-time U.S. budget deficit record in a non-COVID-19 pandemic year, topping \$1.8 trillion in the year ending in September. It is the third-highest annual deficit in history, only trailing the mark set in 2020 at the start of the COVID-19 pandemic stimulus spending and the ensuing 2021, the first year of Biden's administration.

[\[Full Story\]](#)

US National Debt & Deficit

- Not Beer

U.S. National Debt Over the Last 100 Years

Federal Deficit Trends

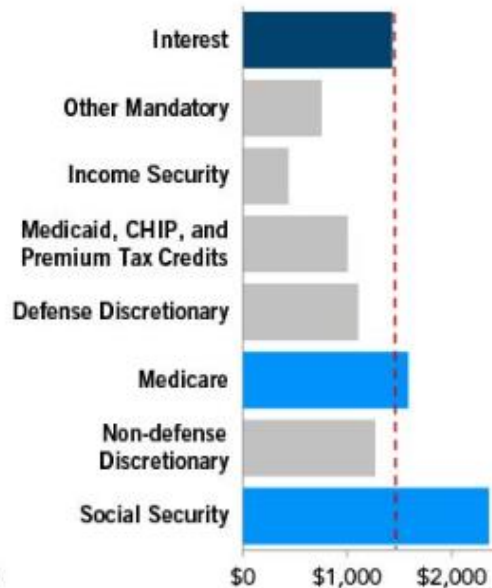
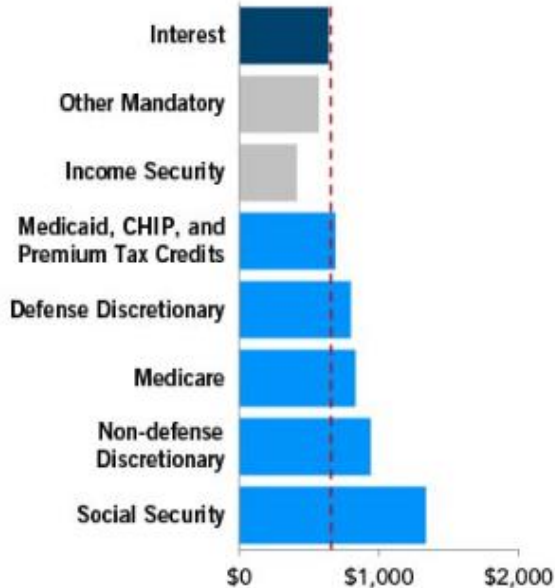
202
Fiscal Y



Spending on interest will exceed spending on a number of categories over the next decade

FISCAL YEAR 2023 (BILLIONS OF DOLLARS)

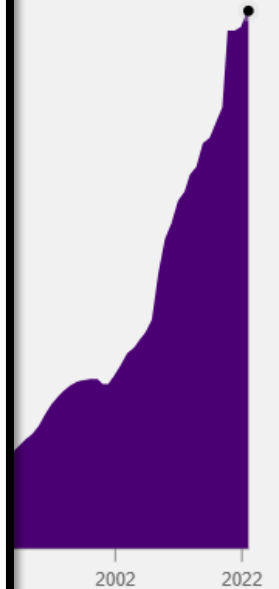
FISCAL YEAR 2033 (BILLIONS OF DOLLARS)



SOURCE: Congressional Budget Office, *The Budget and Economic Outlook: 2023 to 2033*, February 2023.
 NOTES: Medicare outlays are net of offsetting receipts. Income Security outlays include only mandatory programs.
 © 2023 Peter G. Peterson Foundation

PGPF.ORG

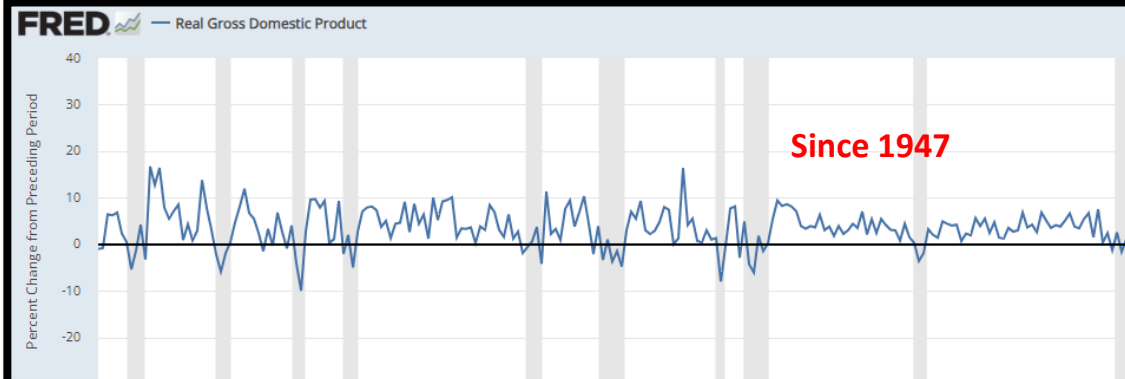
.17 T
al Debt



and download this data. The
 information data is sourced from the [Bureau of Labor Statistics](#).

Last Updated: September 30, 2023

GDP Growth – Been Here Before



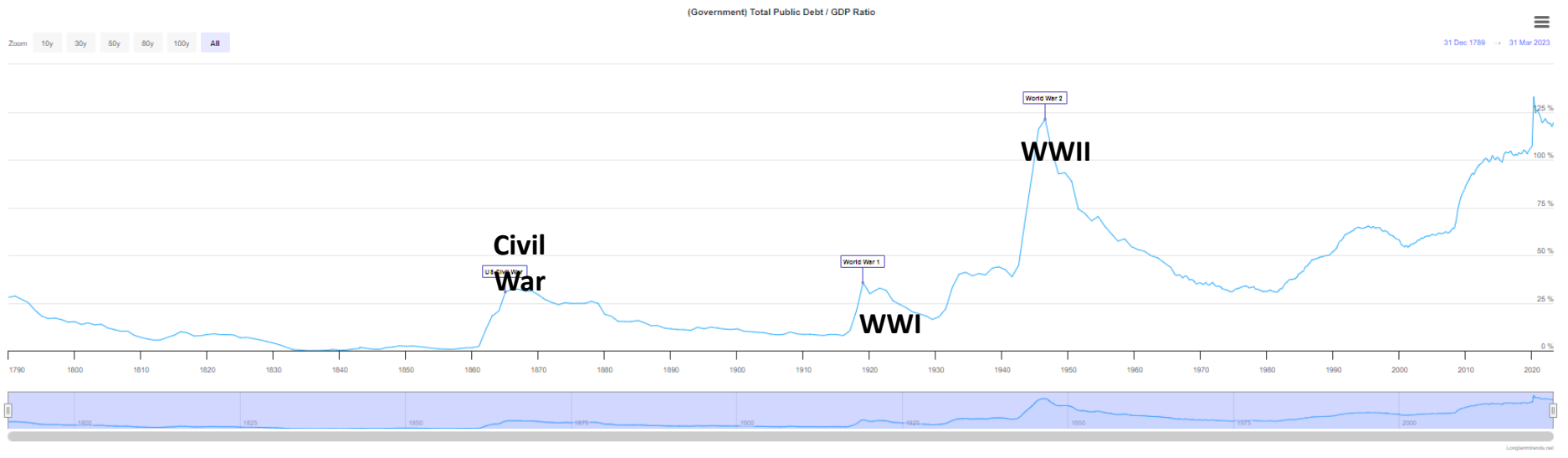
GDP Report: Latest Estimate Shows Economy Grew by 3% in Second Quarter of 2024

Second-quarter growth is up from the first quarter's 1.4% growth.

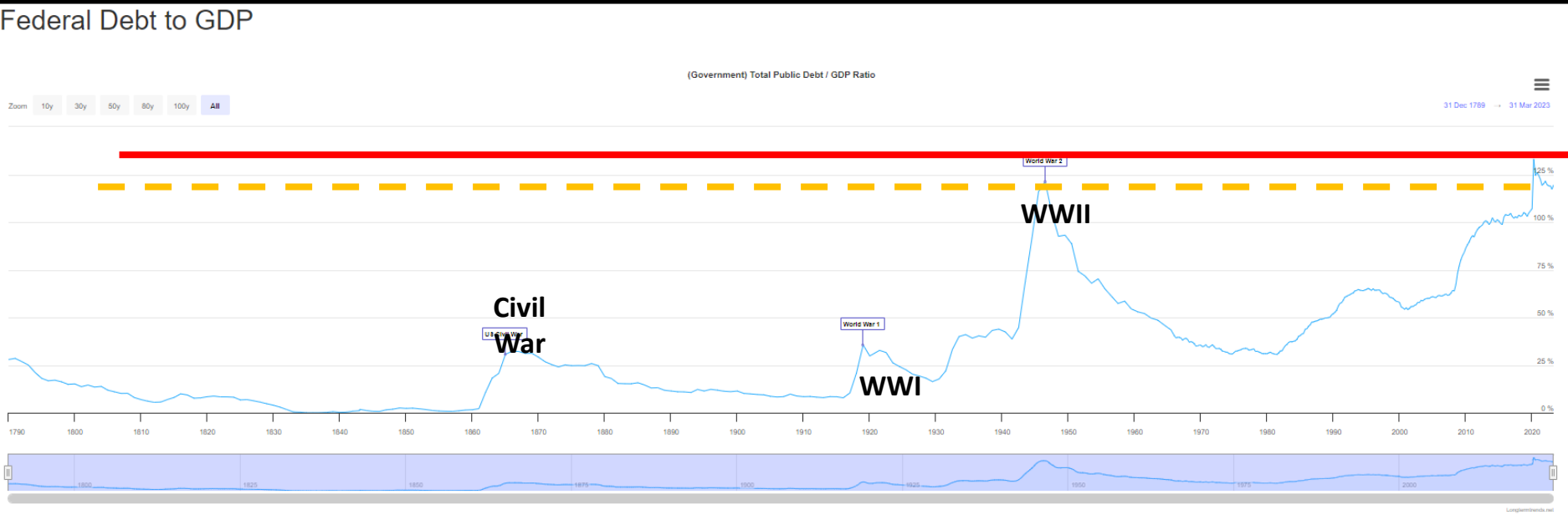


Debt to GDP – Not Really Been Here Before

Federal Debt to GDP

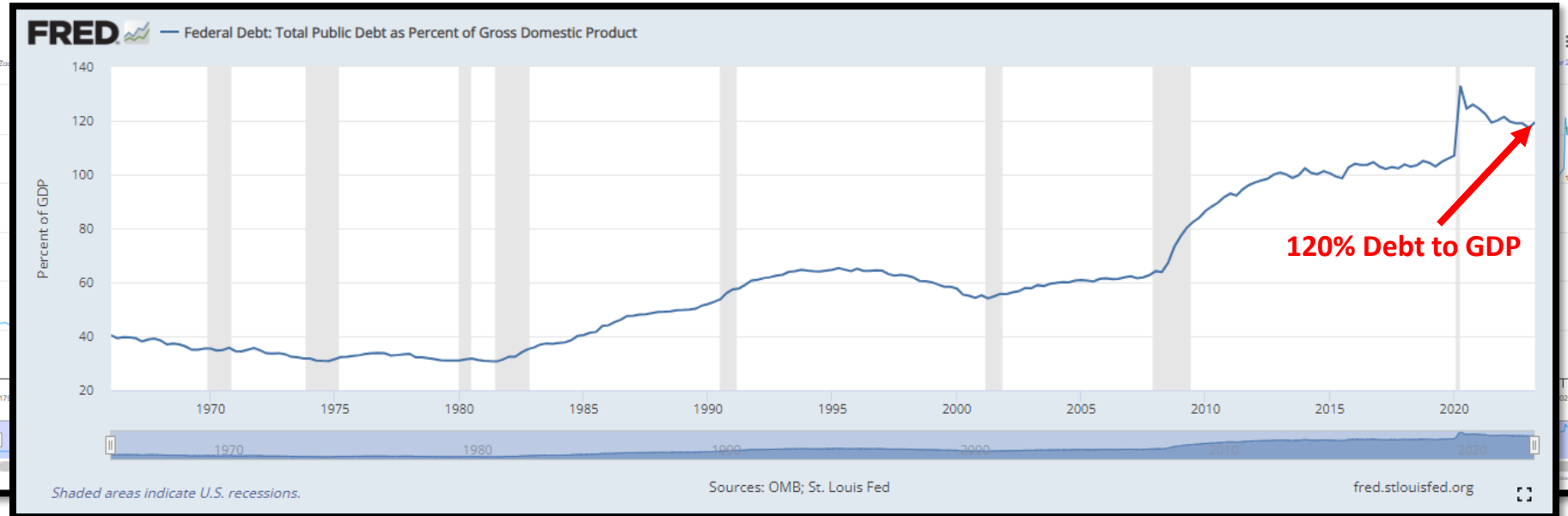


Debt to GDP – Not Really Been Here Before



Debt to GDP – Not Really Been Here Before

Federal Debt to GDP



So Far....

- Debt is very high, Debt to GDP is very high
- Interest rate is not historically high but...
 - In 70s and 80s when it was 13%-18%, Debt to GDP was 30-40%
 - That is not the case now
- No “war” like WWII, so not an easy way to cut spending

How much revenue has the U.S. government collected this year?

Government revenue is income received from taxes and other sources to pay for government expenditures. The U.S. government has collected \$4.39 trillion in fiscal year 2024.

\$ 4 , 3 9 1 , 1 1 5 , 9 3 3 , 7 6 1

How much has the U.S. government spent this year?

The U.S. government has spent \$6.29 trillion in fiscal year 2024 to ensure the well-being of the people of the United States.

\$ 6 , 2 8 8 , 1 9 4 , 9 3 1 , 7 0 3

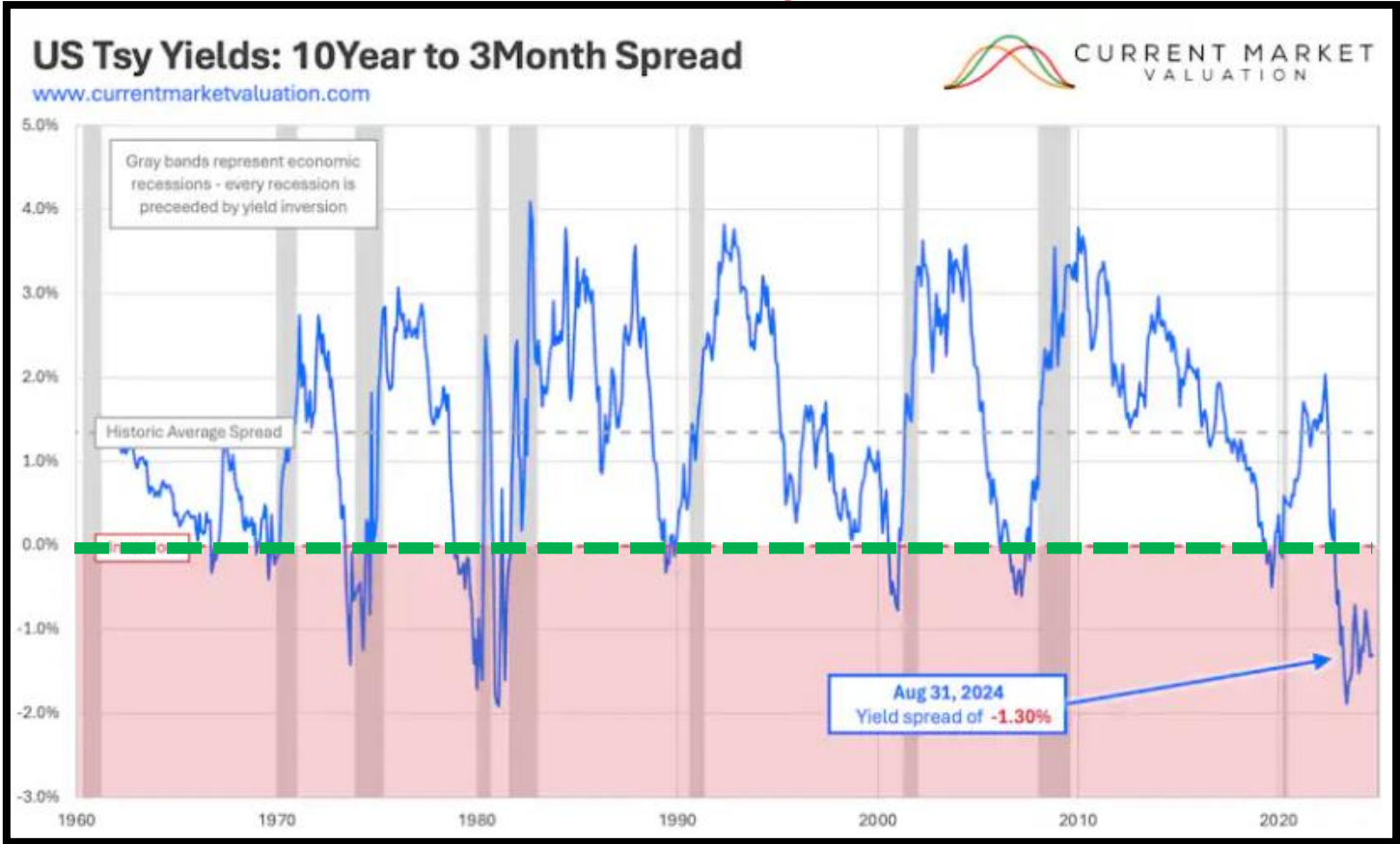
What is the national deficit?

A deficit occurs when the federal government's spending exceeds its revenues. The federal government has spent \$1.90 trillion more than it has collected in fiscal year (FY) 2024, resulting in a national deficit.

\$ 1 , 8 9 7 , 0 7 8 , 9 9 7 , 9 4 2

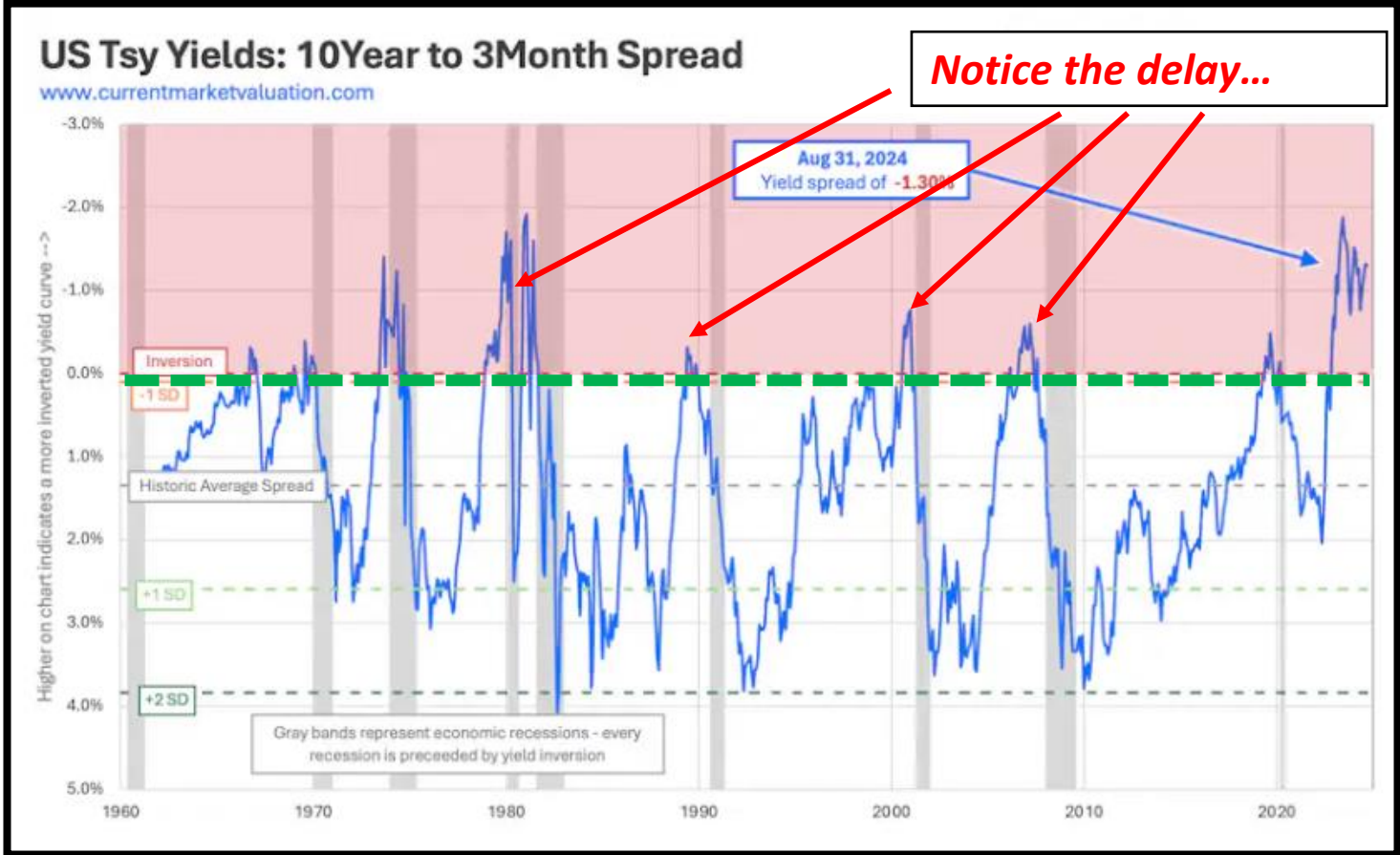
What Else....

- Inverted Yield Curve... **Not Really Been Here Before**



What Else....

- Yield Curve...

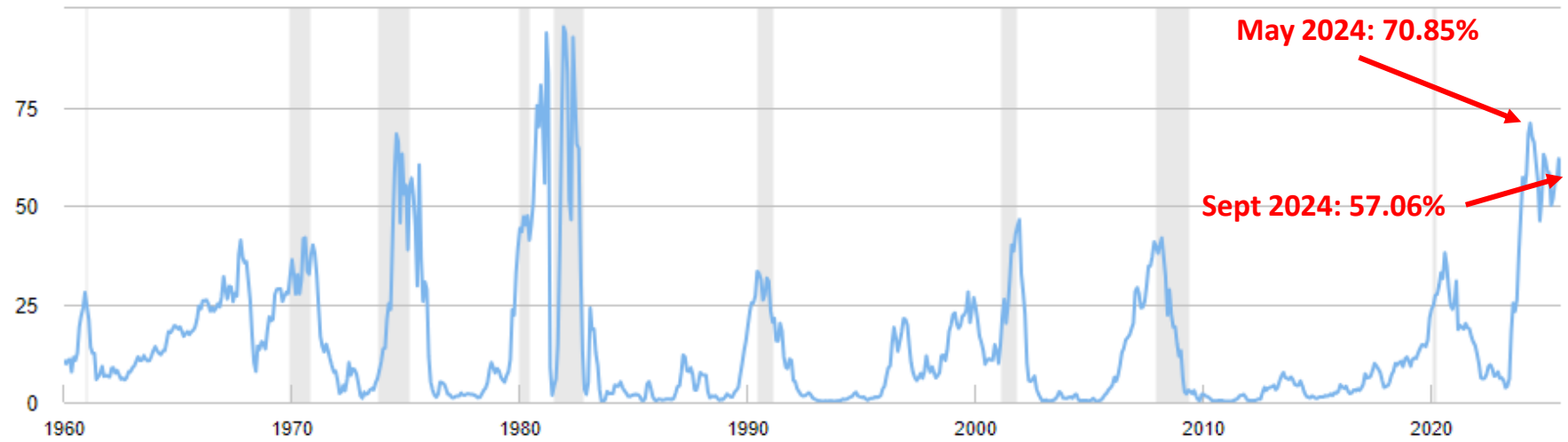


Fed uses Yield Curve to put Odds on a Recession

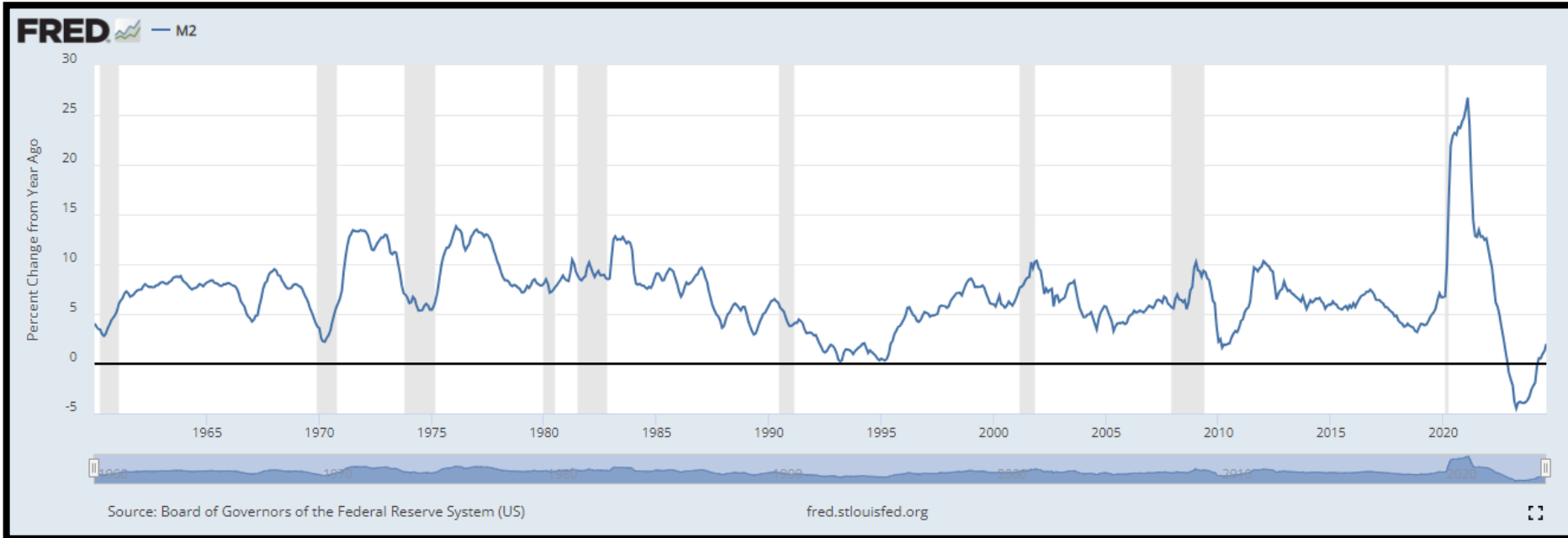
- Been Here Before

Probability of U.S. Recession, Twelve Months Ahead of Term Spread Readings

Percent (monthly average)

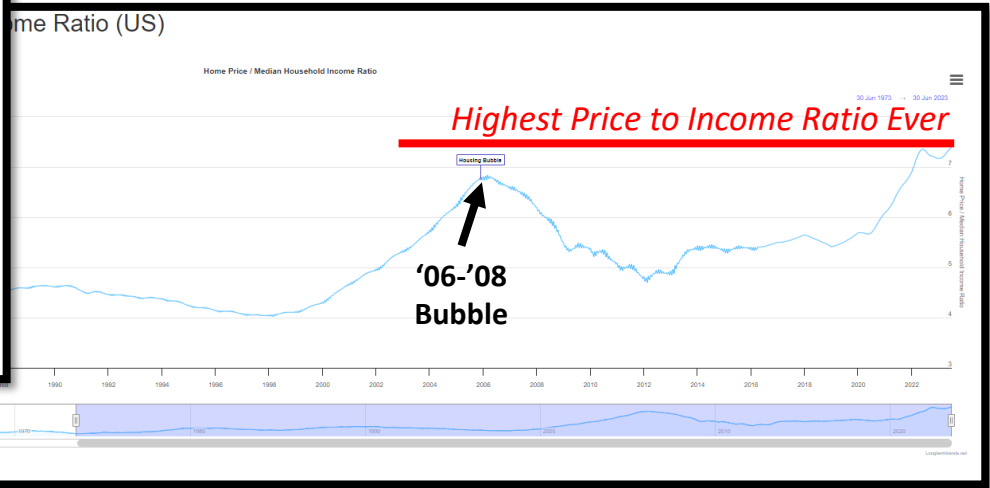
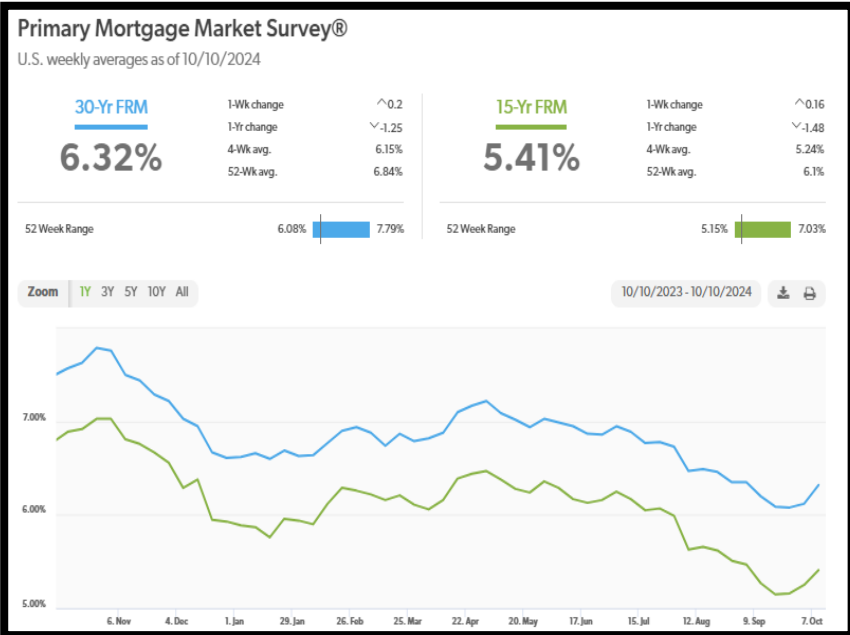


M2 Money Supply (Liquid, easy to cash) – **Not been here before**



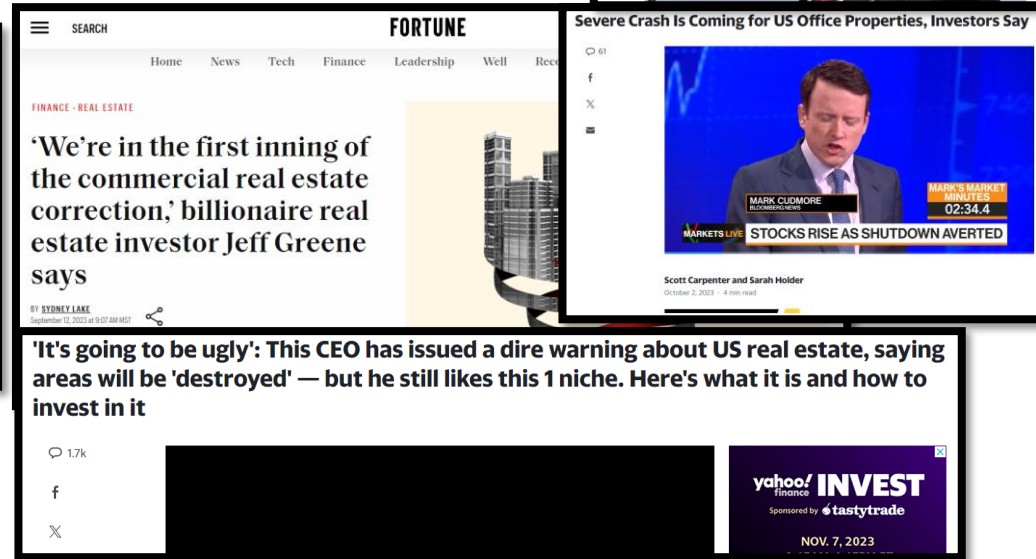
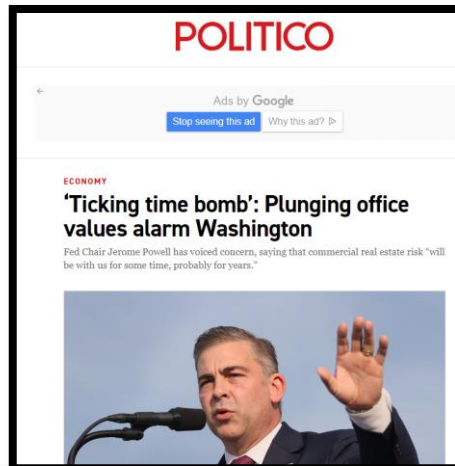
Residential Real Estate Been Here Before? - **Yes & No**

- Mortgage Rates – 50%+ than 10 yrs ago – *but about the same as 20yrs ago*
- Historic Home Price to Income Ratio (highest ever)
 - **7.18 Home Price to Income ('06 = 6.83)**

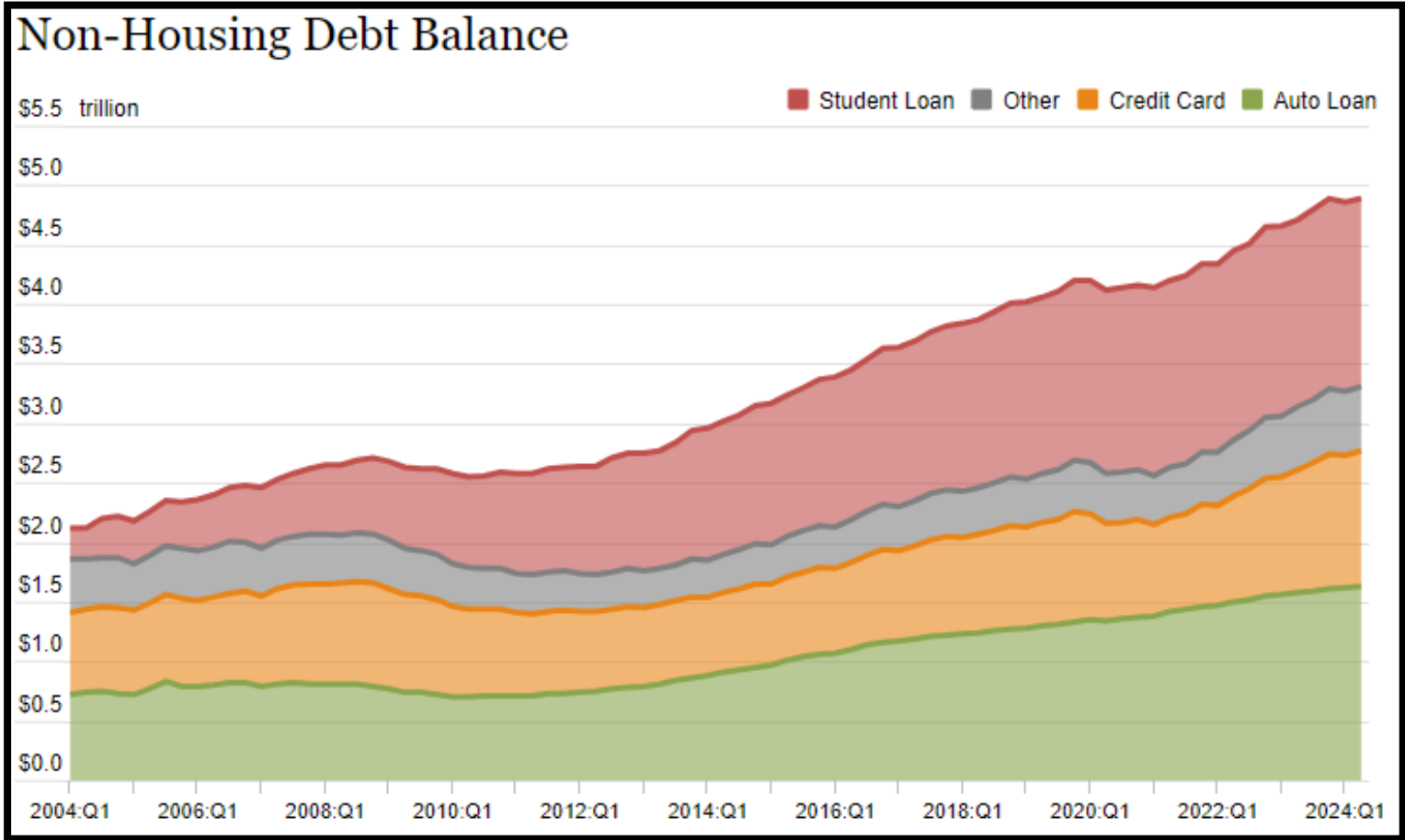


Commercial Real Estate – Not Been Here Before (Post Covid)

- Jerome Powell to the Senate: Commercial real estate risk “will be with us for some time, probably for years”
- 21.9% “Vacant” (not leased) but 52% of leased space sits empty
- Bloomberg Survey – over 2/3 believe severe crash – end of 2024
- Debt \$930B comes due by end of 2024, over \$1T/yr 2025-2028

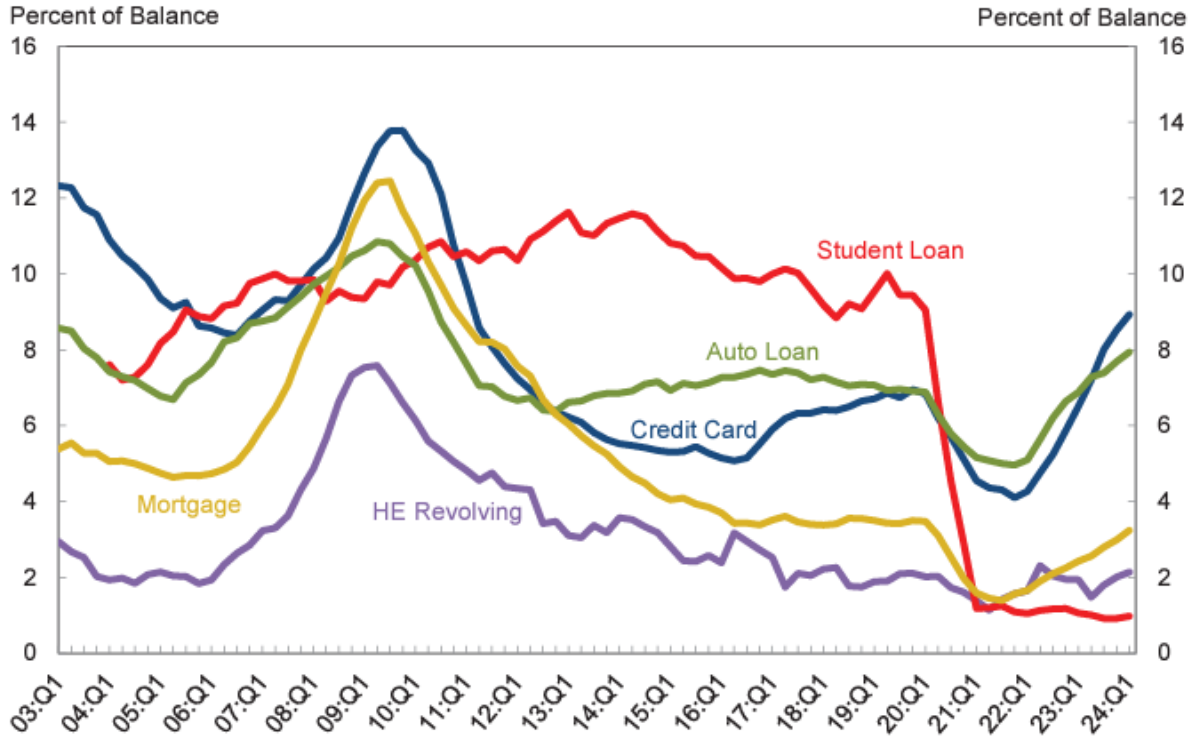


Non-Housing Debt Balance (FRBNY) – Not Before



Loan Delinquency (FRBNY) – Been Here Before

Transition into Delinquency (30+) by Loan Type



Source: New York Fed Consumer Credit Panel/Equifax

Note: 4 Quarter Moving Sum
Student loan data are not reported prior to 2004 due to uneven reporting

Many Headwinds in Today's Supply Chain

- Cost Escalation & Volatility
- Materials Shortages & Supply Chain Challenges
- Quick Macro
- **Workforce**

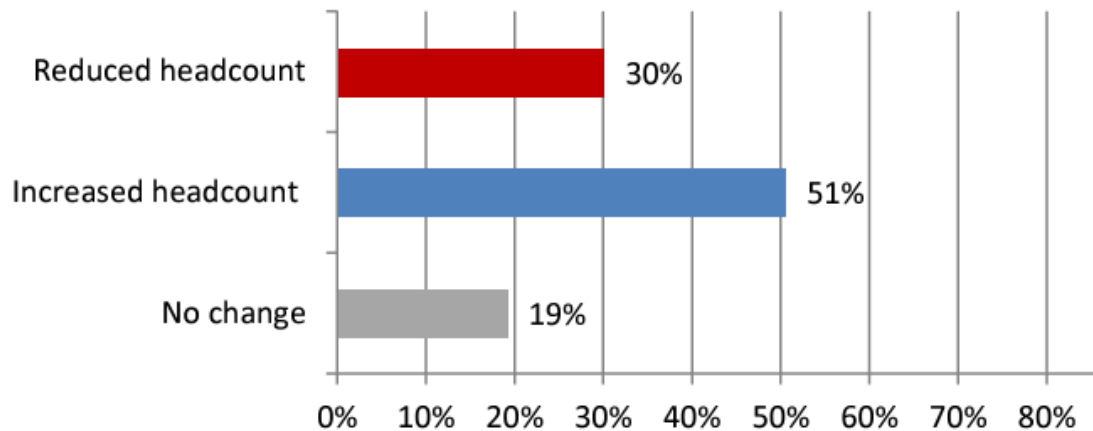
Workforce Shortages

- 60-80% of orgs struggling to fill positions**
- 55% feel will be as hard or harder to find skilled people**
- Mental health and productivity are challenges with high levels of hiring, shortages, and change (retirement, etc.)**

AGC 2024 Workforce Survey

- **National survey conducted in Aug 2024**
- **1,492 Contractors Responded Nationally**

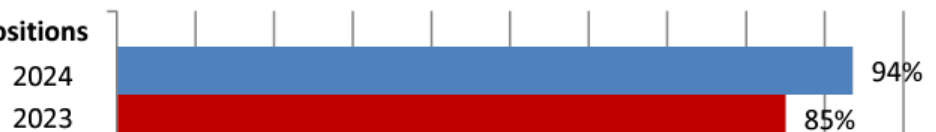
By what percentage has your firm's headcount changed in the past 12 months? Responses: 1,492



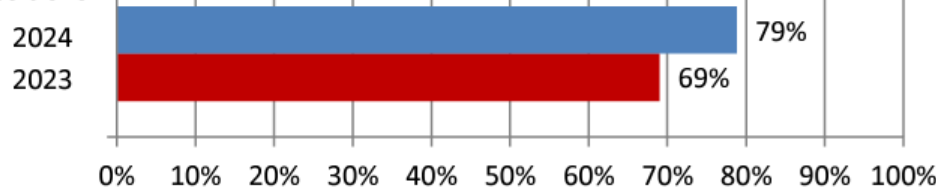
Do you currently have an open hourly craft or salaried position? Responses:

2024: 1,185 Salaried, 995 Craft; 2023: 1,149 Salaried, 1,101 Craft

% of firms with openings for hourly craft positions



% of firms with openings for salaried positions

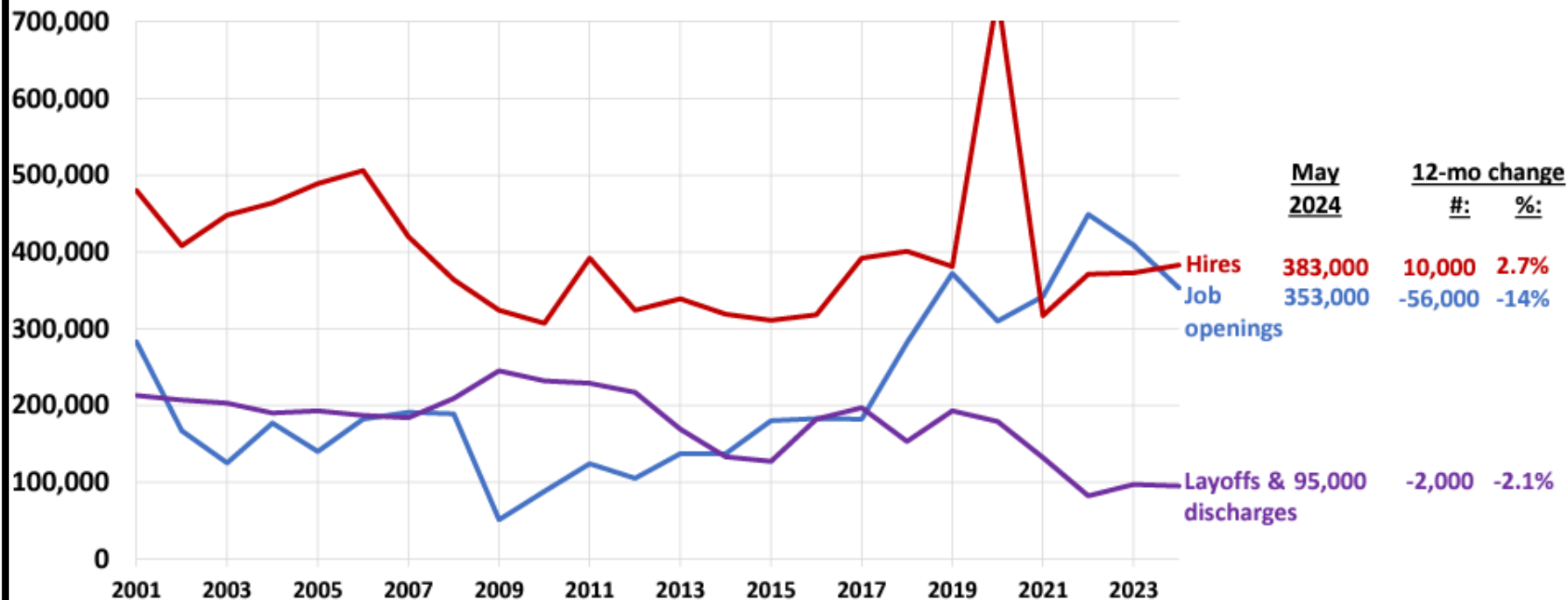


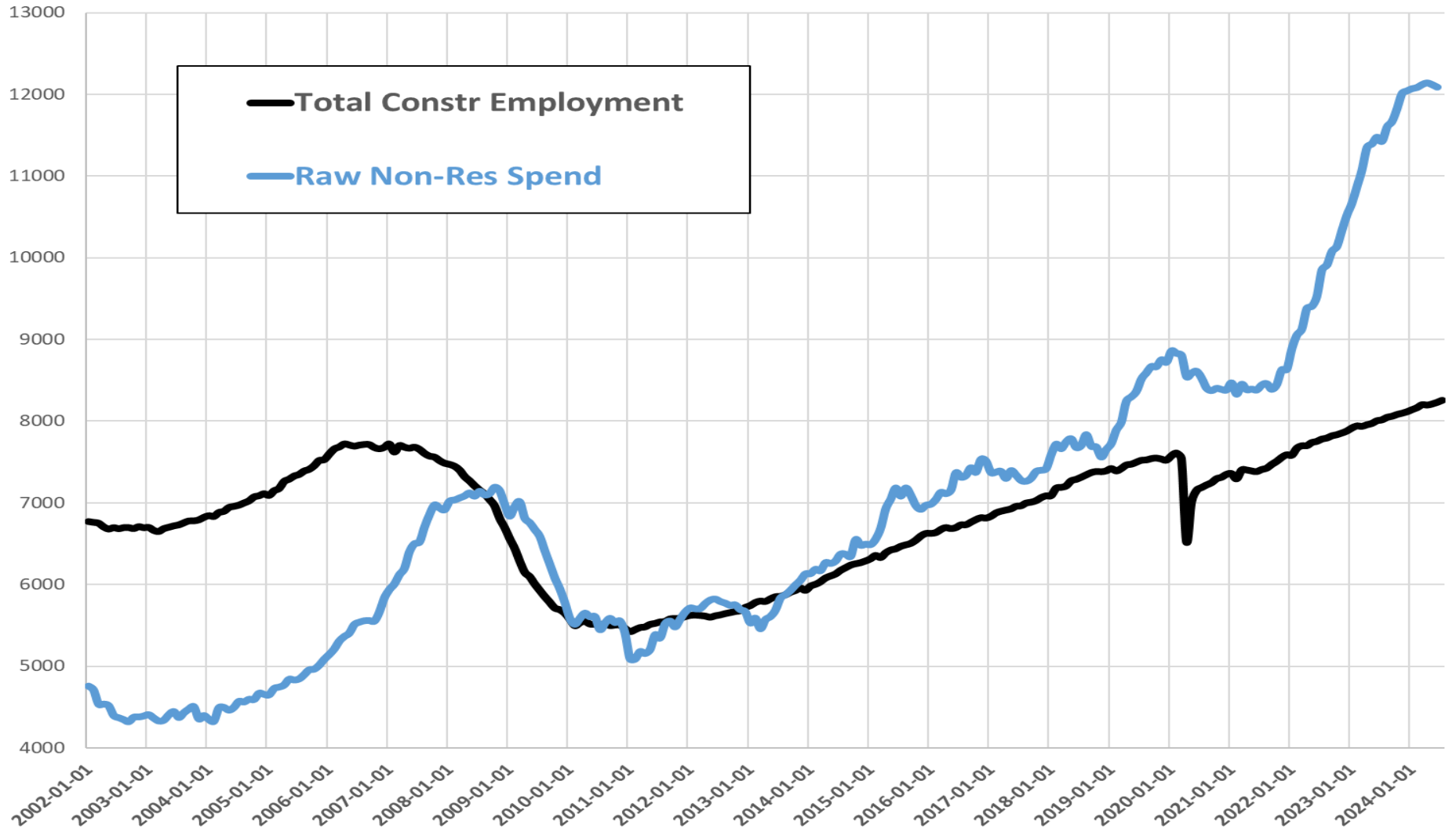
Construction job openings, hires & layoffs

Job openings, hires, and layoffs May 2001-May 2024, seasonally adjusted



AGC
THE CONSTRUCTION
ASSOCIATION





Other Workforce Challenges

- Before pandemic – trades wage rates exceed average total private sector by 20-25% historically
- **Now Trade Wage Rate is 16-18% above national average....**
 - Pay is not keeping up
 - Cannot work from home
 - Benefits not as comprehensive
 - Non-flexible hours
 - Vaccination requirements were an issue
- **Procurement Professionals**
 - 25-45% underpaid
 - Significant resource shortages/understaffed
 - HR struggling to adapt

Workforce

- Since the year 2000, the US Population has gotten:
 - Older or Younger?

Workforce

- Since the year 2000, the US Population has gotten:
 - Older by 3.4 years

Workforce

- Since the year 2000, the US Population has gotten:
 - Older by 3.4 years
- This trend is:
 - Accelerating or Decelerating?

Workforce

- Since the year 2000, the US Population has gotten:
 - Older by 3.4 years
- This trend is:
 - Accelerating (2021 was most rapid increase across the 21yr range)

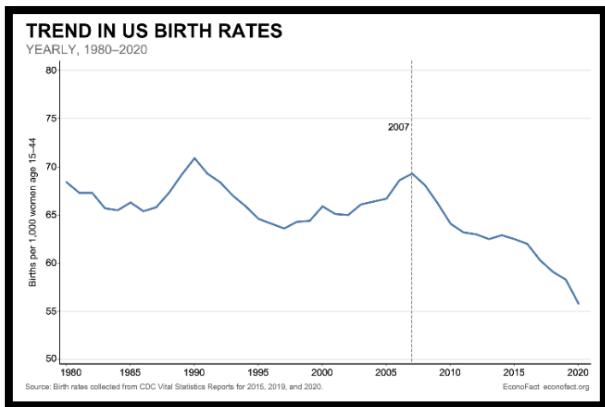
Workforce Challenges

*2020 Birth Rate 4% lower than 2019
Lowest Ever
(11.99 Births per 1000 people)
(up 1% in '21, up 0.09% in '22
11.00 in '23)*

As of '23, 1.62 Births/woman – Lowest Ever Recorded

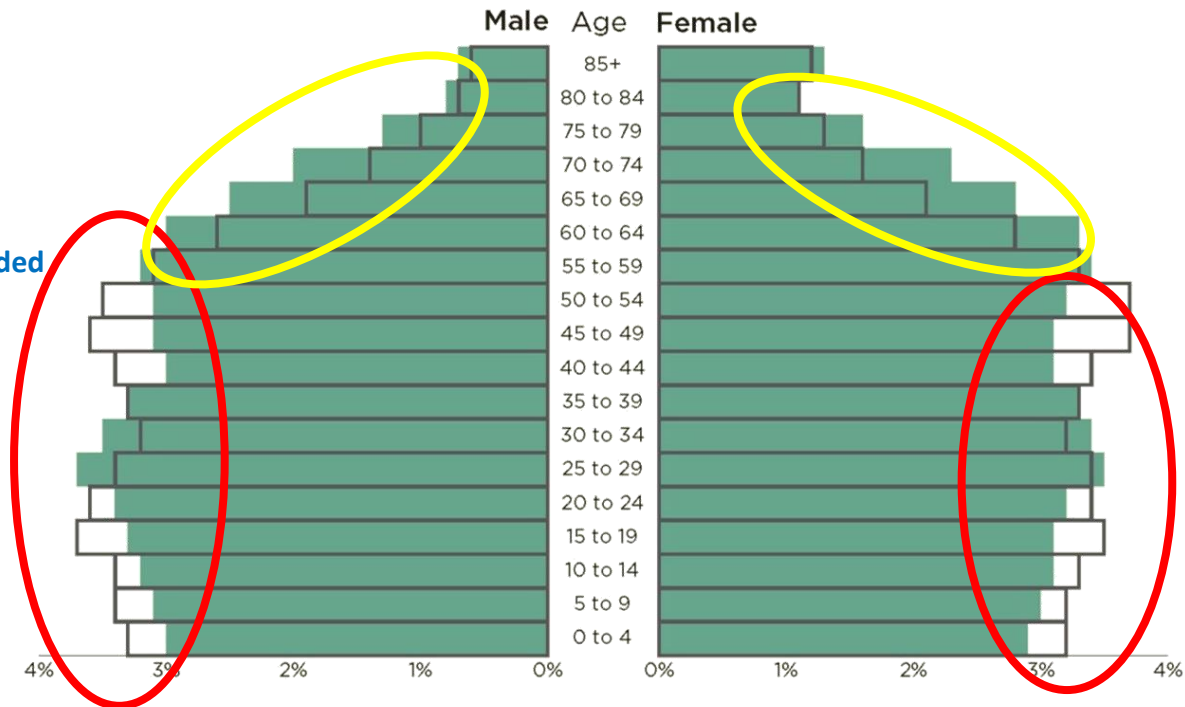
(was 31% higher in 1990)

(was 102% higher in 1950)

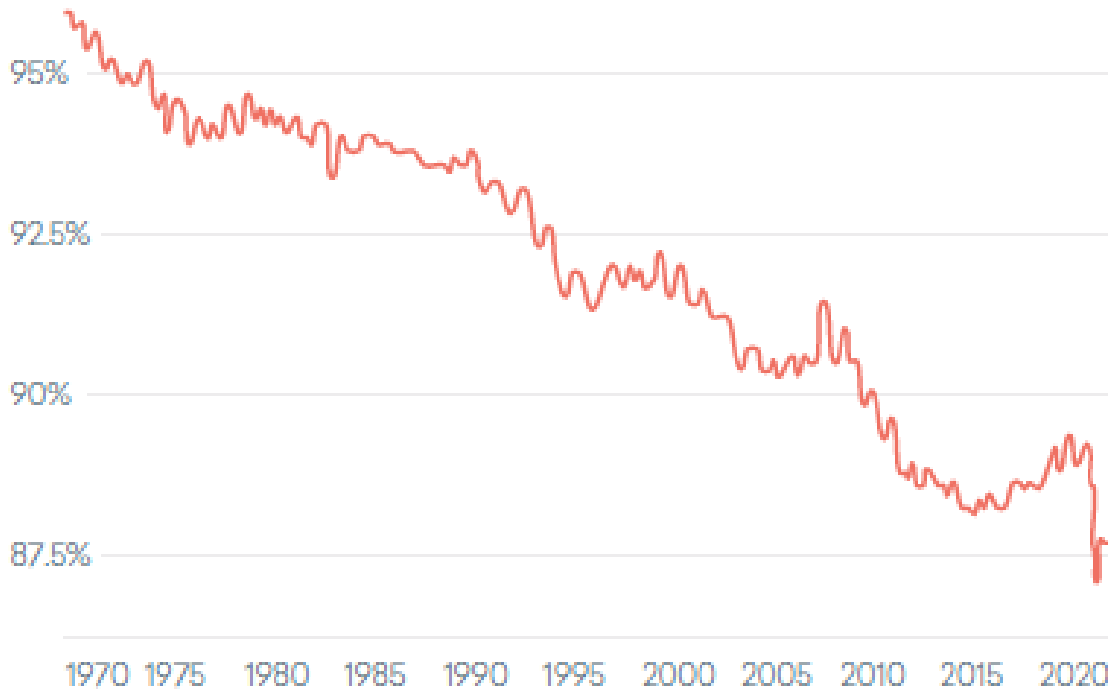


Percent of Total Population in 2010 and 2019

□ 2010 ■ 2019

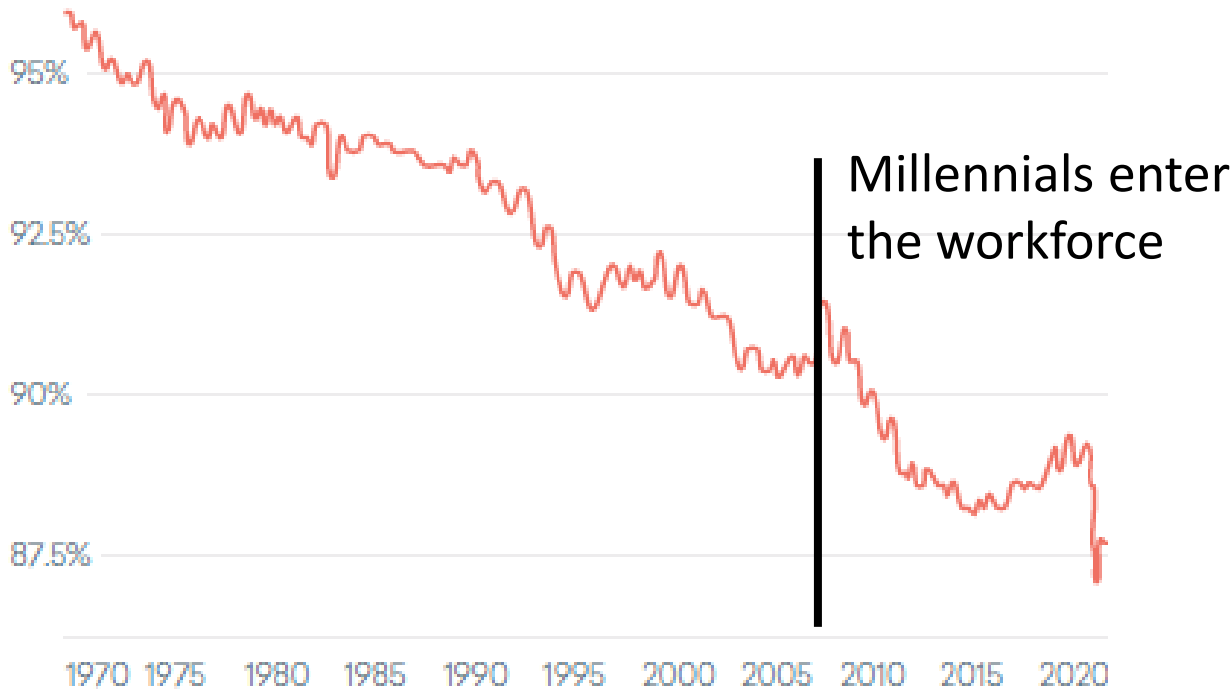


Workforce Challenges – Prime Age (25-54) Male Workforce Participation



Source: BLS Current Population Survey.

Workforce Challenges – Prime Age (25-54) Male Workforce Participation

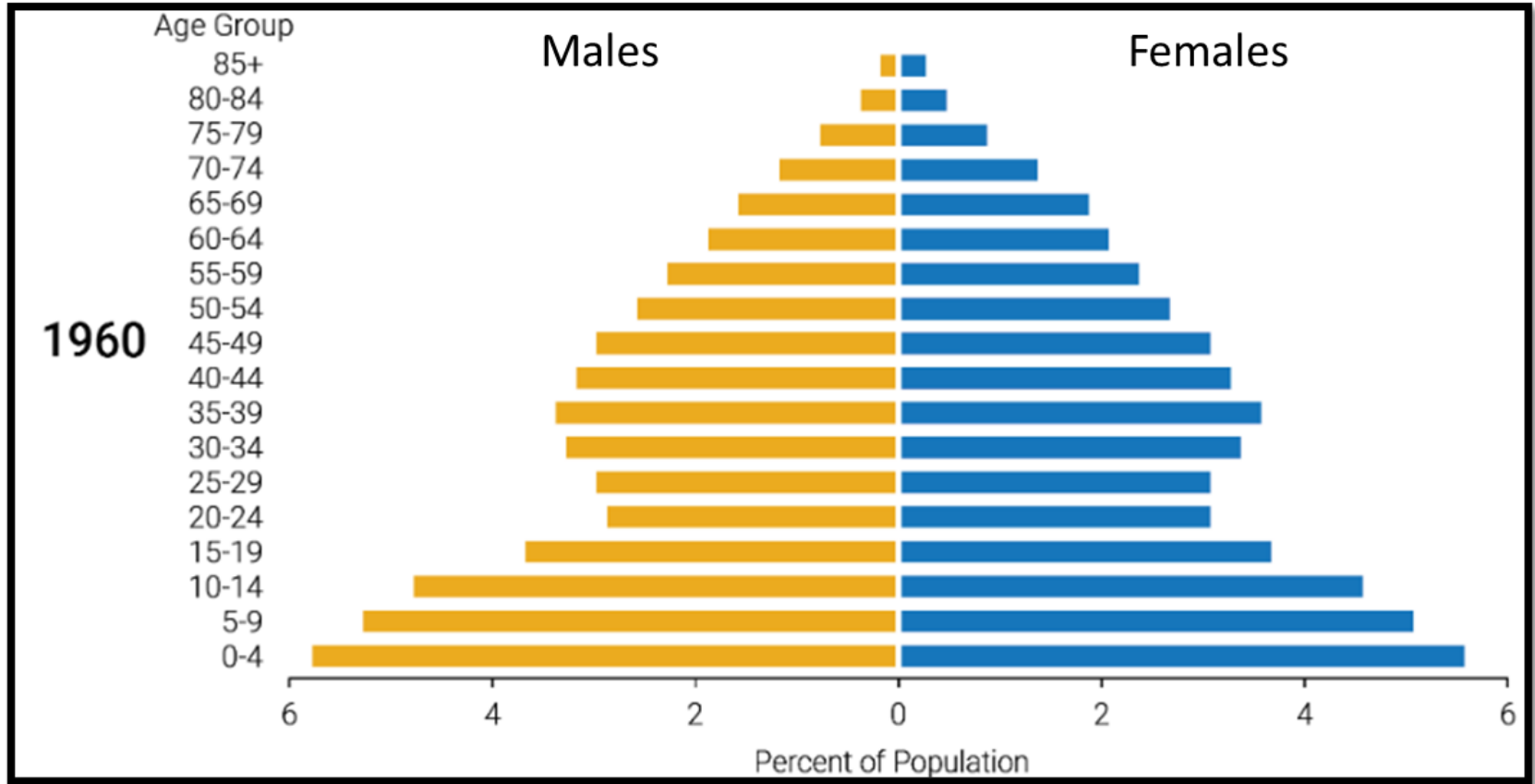


Source: BLS Current Population Survey.

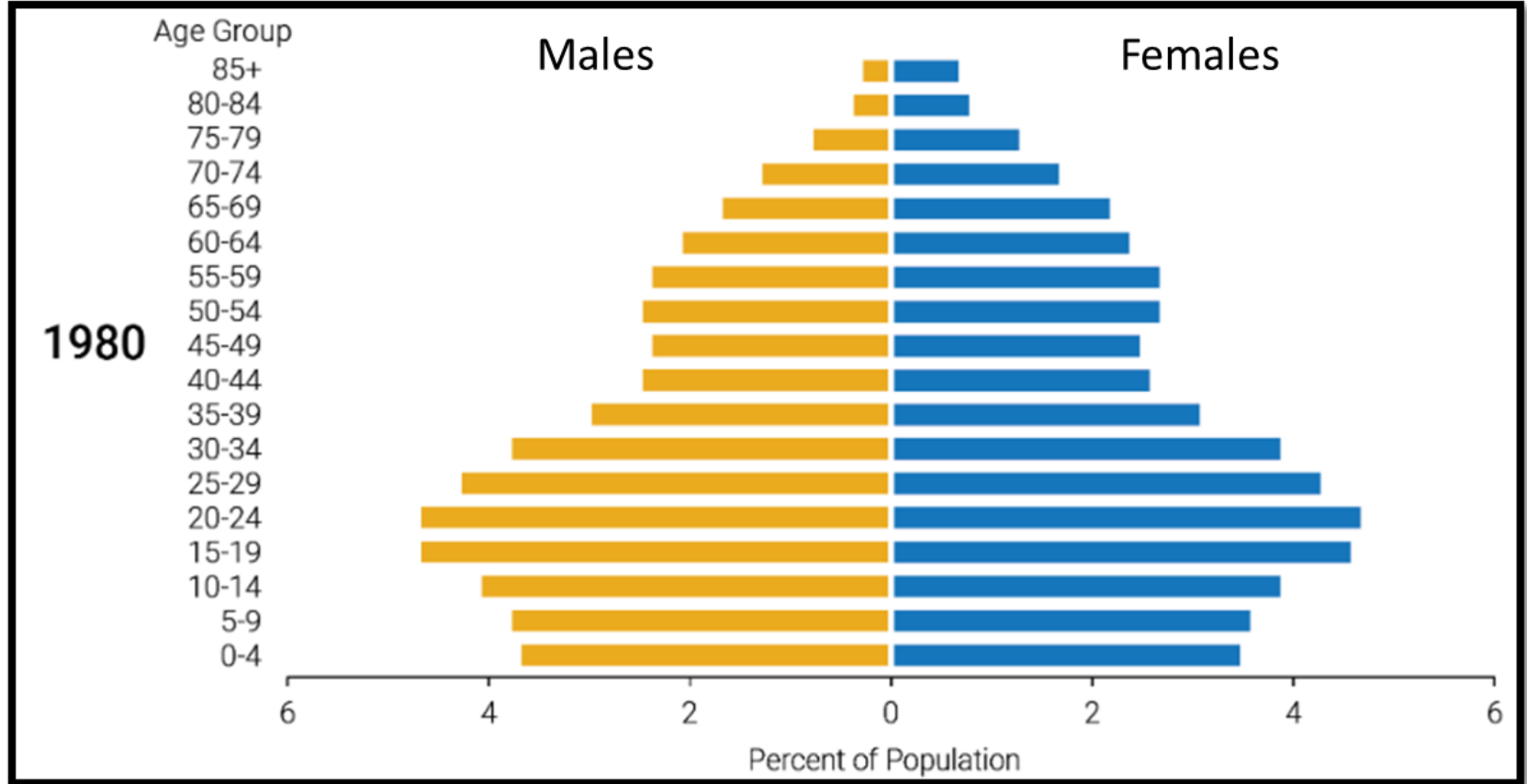
Workforce Challenges

- Baby Boomers created incredible wealth
 - Young X, Old Millennials are expected to inherit ~\$80 Trillion from their parents - begins 2030-2035
- More men 25-34 yo live with parents than with spouse (first time since 1880)
- Drugs are a big problem (robbing nearly a million prime-age men a year from the workforce)
- 2.4M Women left workforce since Feb 2020 – still growing
- Demographics will only be getting worse moving forward

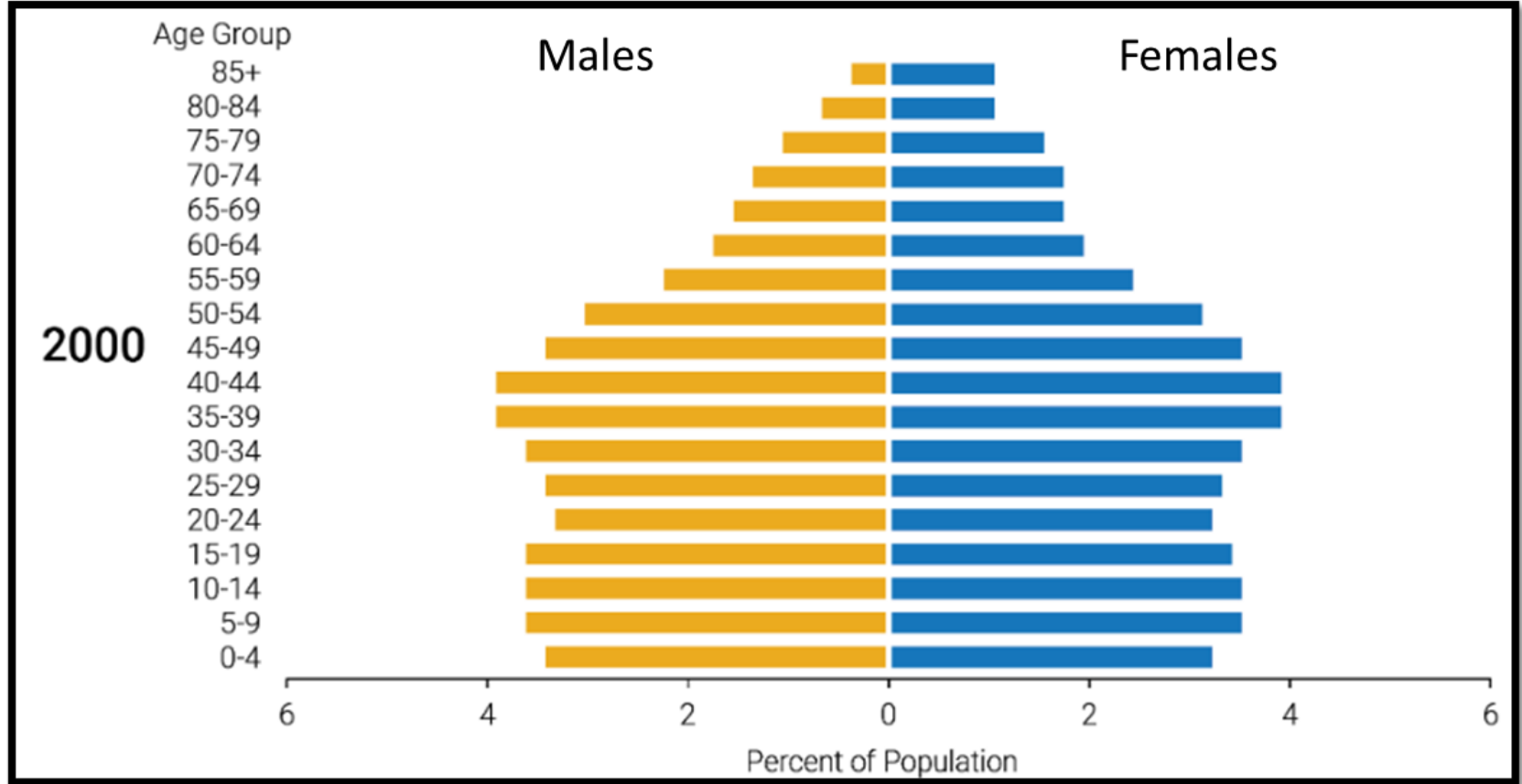
US Population Histogram



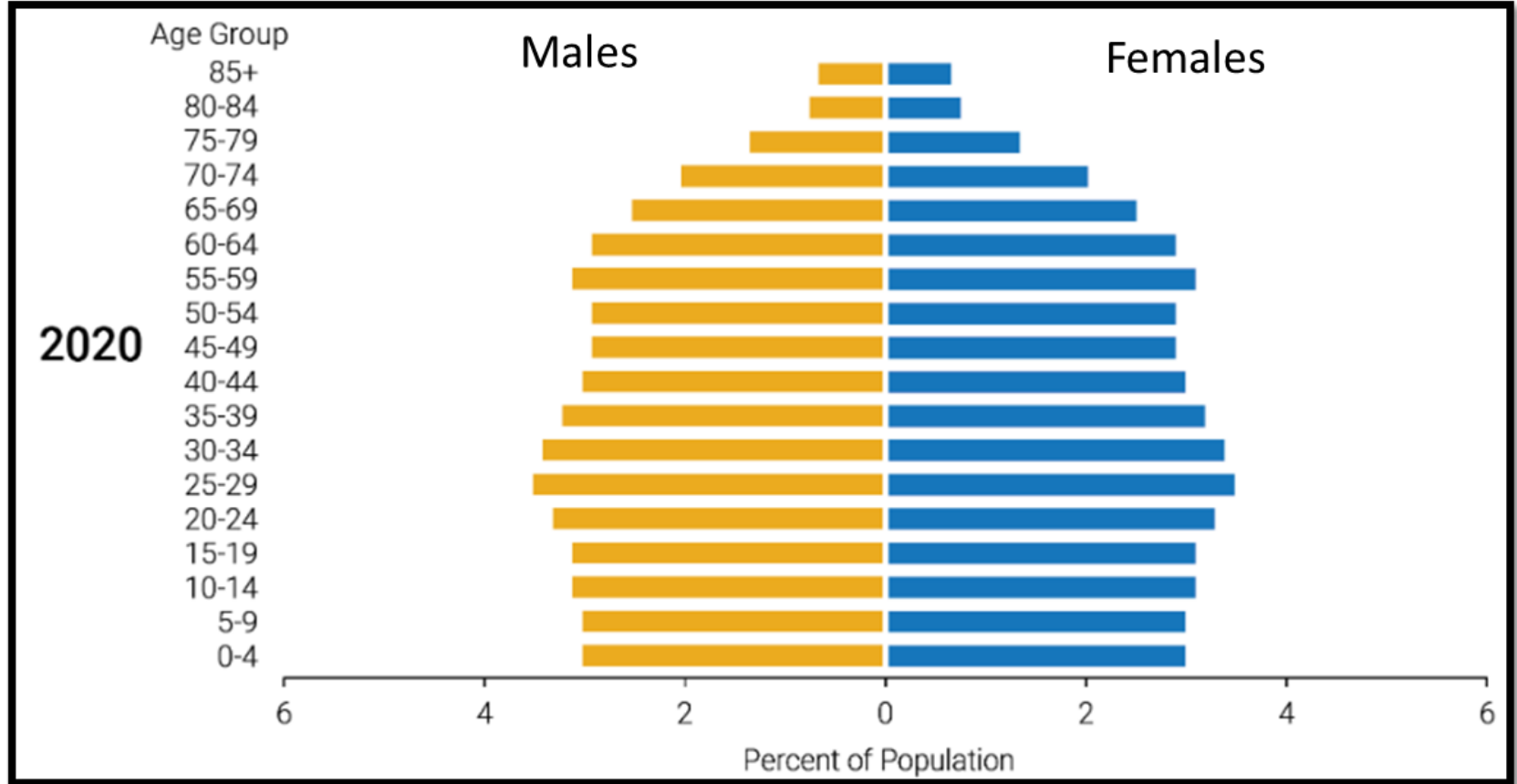
US Population Histogram



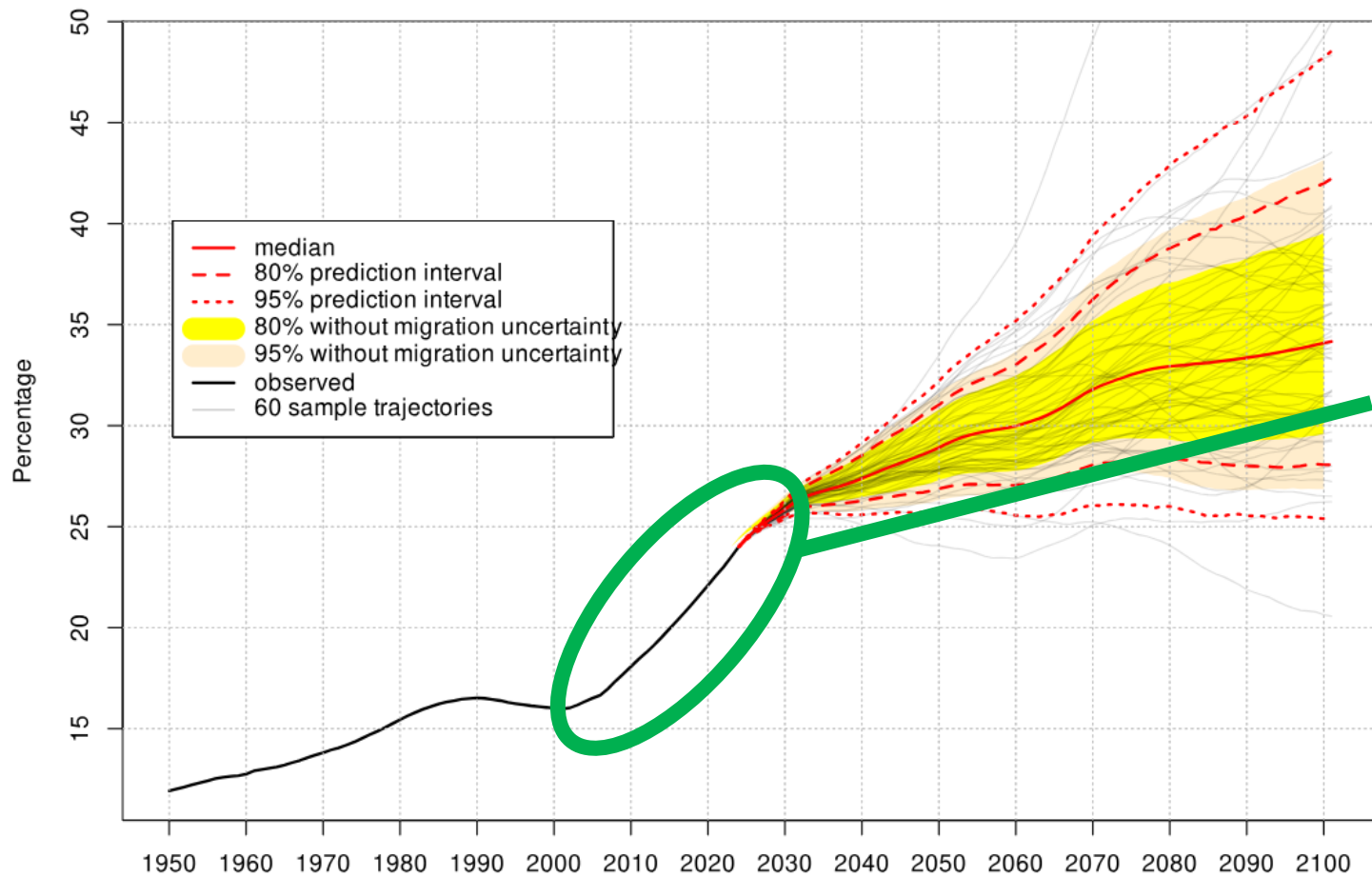
US Population Histogram



US Population Histogram



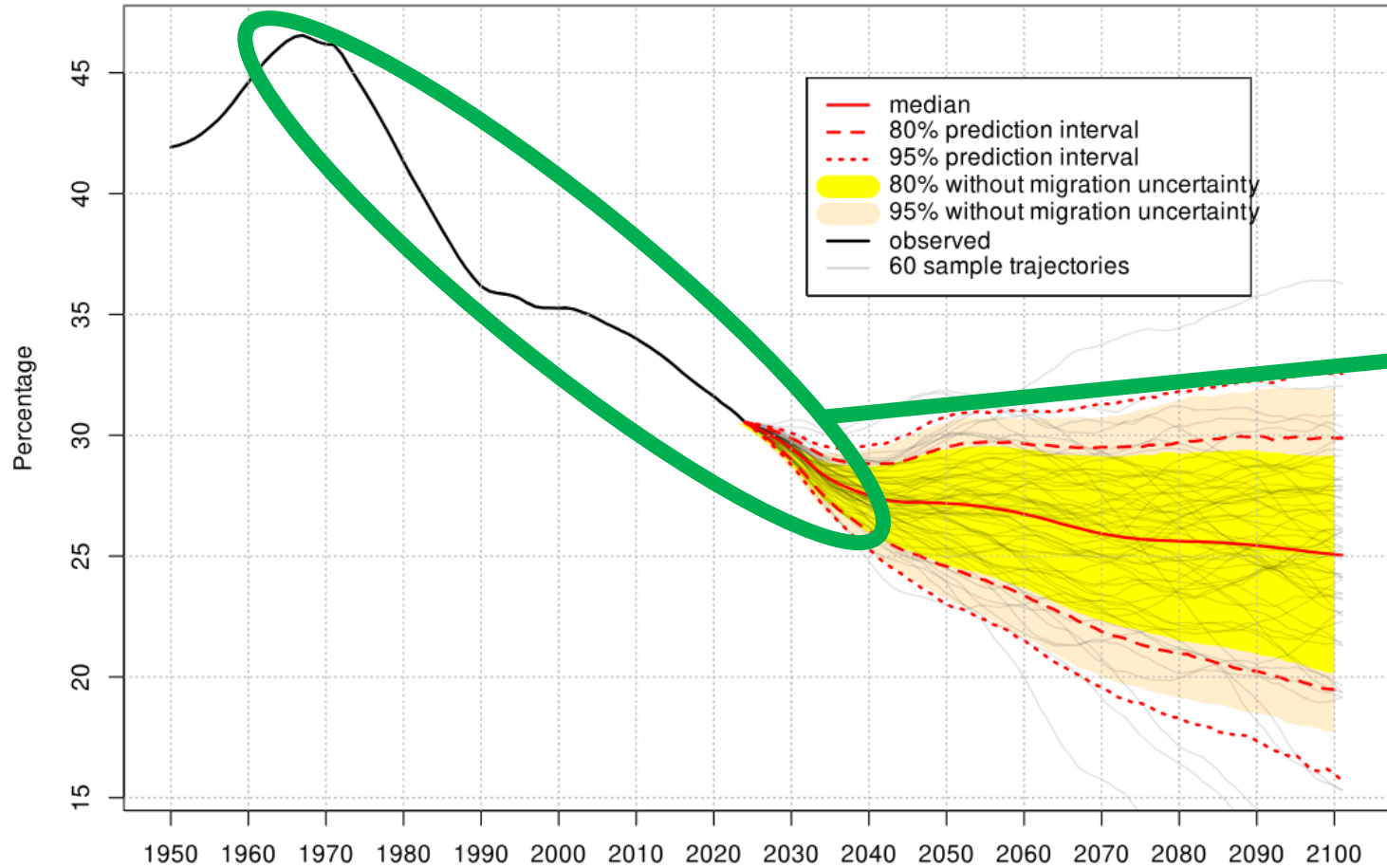
United States of America: Percentage of population aged 60 years or over



Near Exits

-60+ yr olds as a % of population has grown 50%
-Doesn't level off to mid-2030s

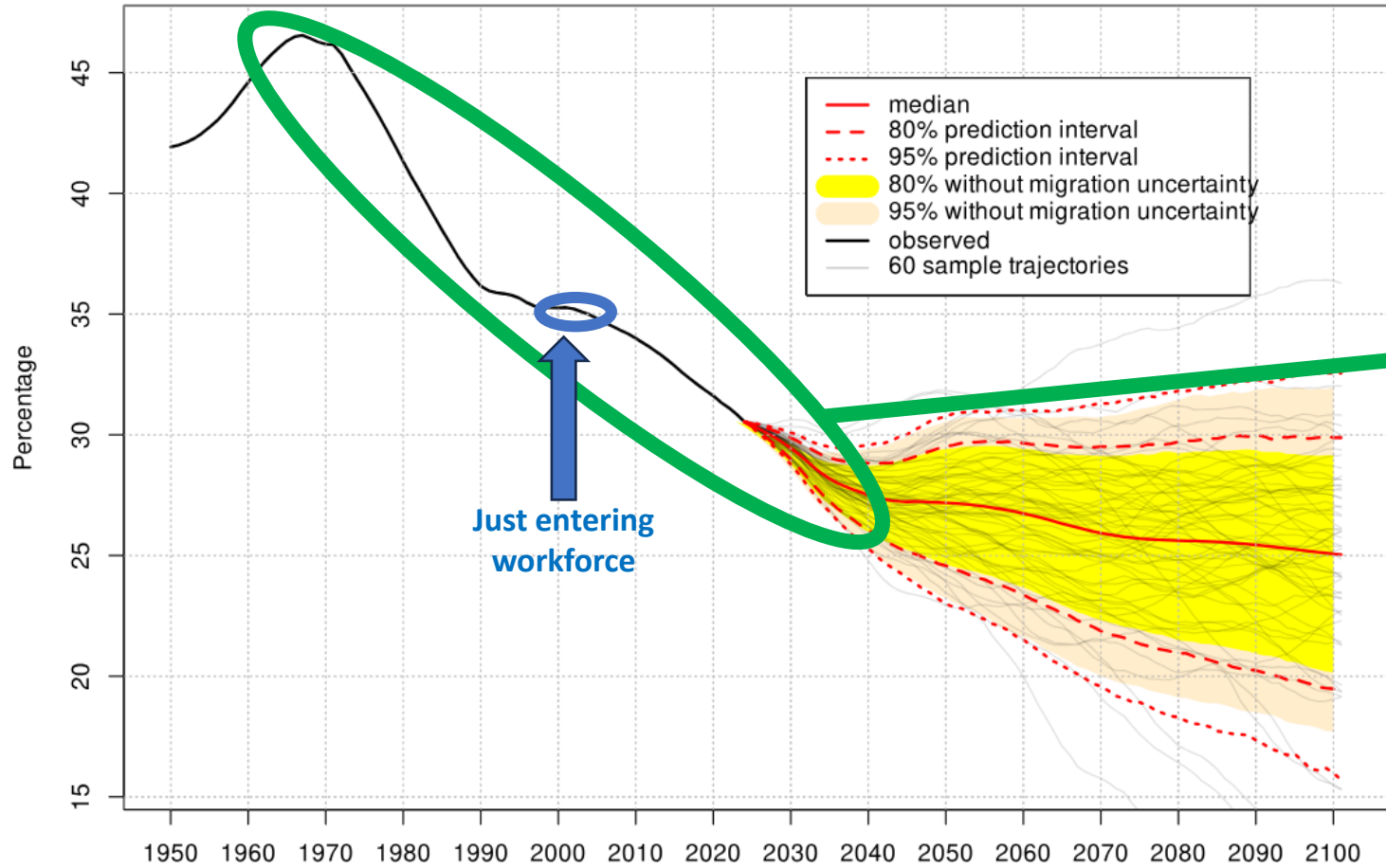
United States of America: Percentage of population under 25 years of age



No More Senior Discounts

Massive decrease in future workforce as a % of population

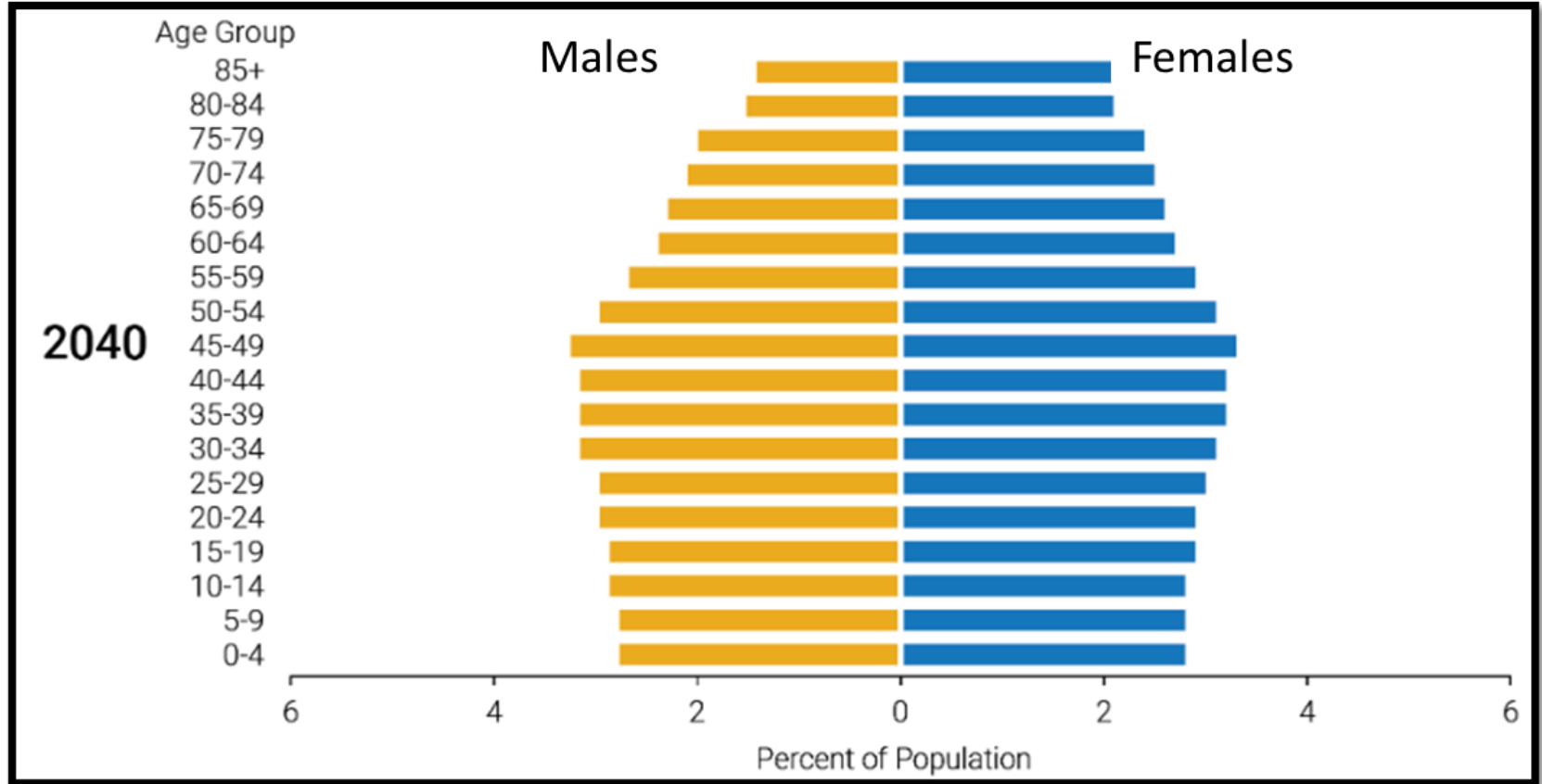
United States of America: Percentage of population under 25 years of age



No More Senior Discounts

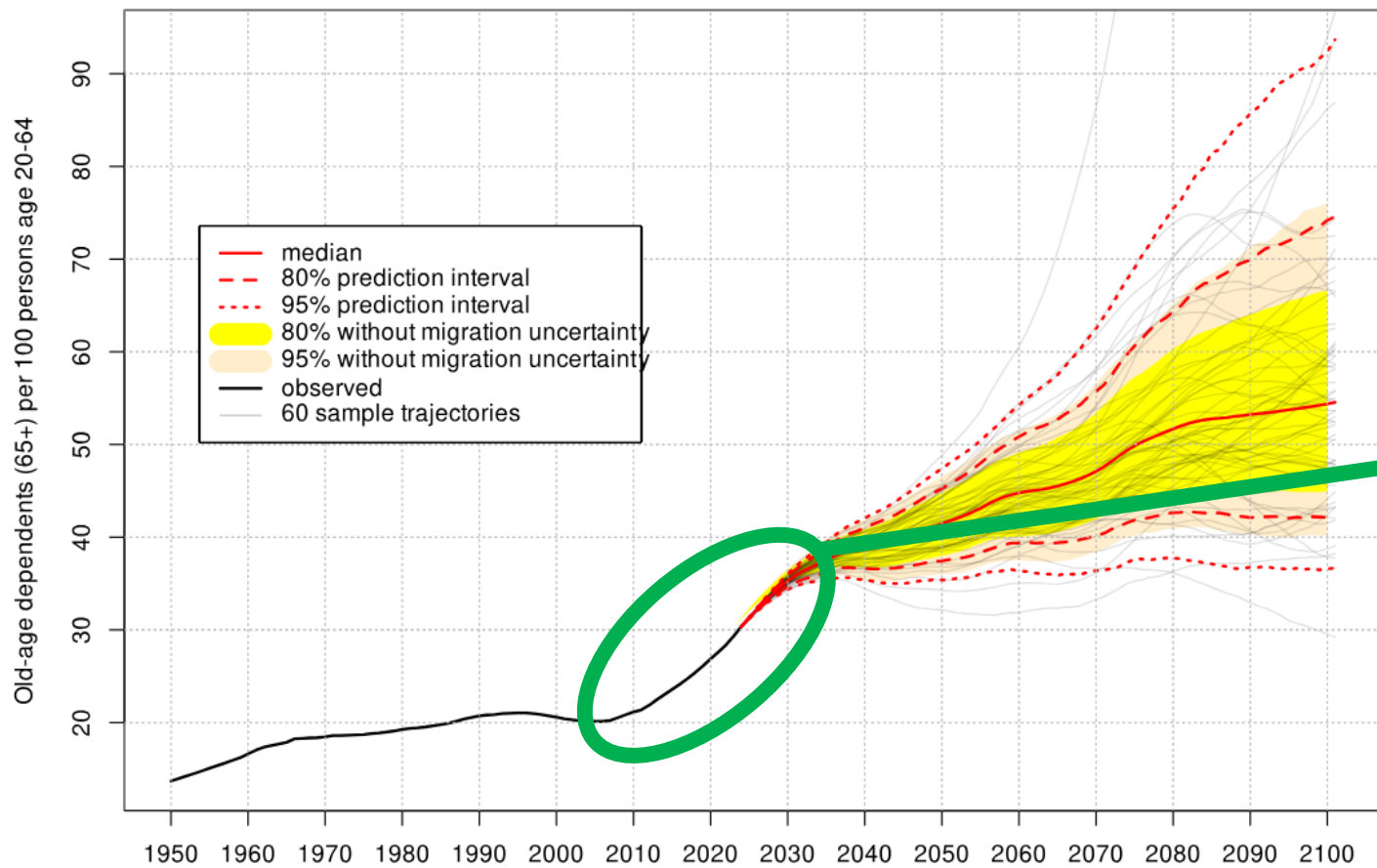
Massive decrease in future workforce as a % of population

US Population Histogram



*2040 Fertility Rates will be below replacement rate – all growth will be immigration
2024 Growth rate of 65+ Age will outpace growth of younger generations thru 2054*

United States of America: Old-age Dependency Ratio $\left(\frac{\text{Age 65+}}{\text{Age 20-64}}\right)$



**Employer
Opportunity:
Family
Caretakers to
Double**

**Currently about 1
out of 4 have an
older family
member they care
for....this will
double in next few
years**

Mid- and Long-Term Outlook

this is the

BEST

it will be

(for the remainder of our careers
barring a sustained recession/depression)

When You See a Another Employer



Talking To Your Top Performer

Table 3: Factor Agreement for Women in FM by Mentor Status

Key Factor	No Mentor	Mentor
Flexible work schedule	80%	84%
Feels frequent stress/ burnout	70%	*58%
Job security	70%	*91%
Employer supports family responsibilities	88%	98%
Experience age discrimination	18%	*9%
Experience sexual harassment	11%	6%
Satisfied with pay	60%	64%

Table 4: Factor Agreement for Men in FM by Mentor status

Key Factor	No Mentor	Mentor
Flexible work schedule	77%	82%
Feels frequent stress/ burnout	56%	*42%
Job security	82%	89%
Employer supports family responsibilities	88%	96%
Experience age discrimination	11%	*6%
Clear career path	46%	*81%
Career growth opportunities	56%	*83%

*Statistically significant per Pearson Chi-square Test with $p < 0.05$

So, what does an FM Mentor look like?

- ▶ Exhibit strong organizational skills (+7%)
- ▶ Great at managing relationships (+10%)
- ▶ More forgiving (+9%)
- ▶ Great at managing relationships (+10%)

Those who HAVE a mentor tend to...

- ▶ Show more creativity (+6%)
- ▶ More socially aware (+7%) [sense what's going on around them]

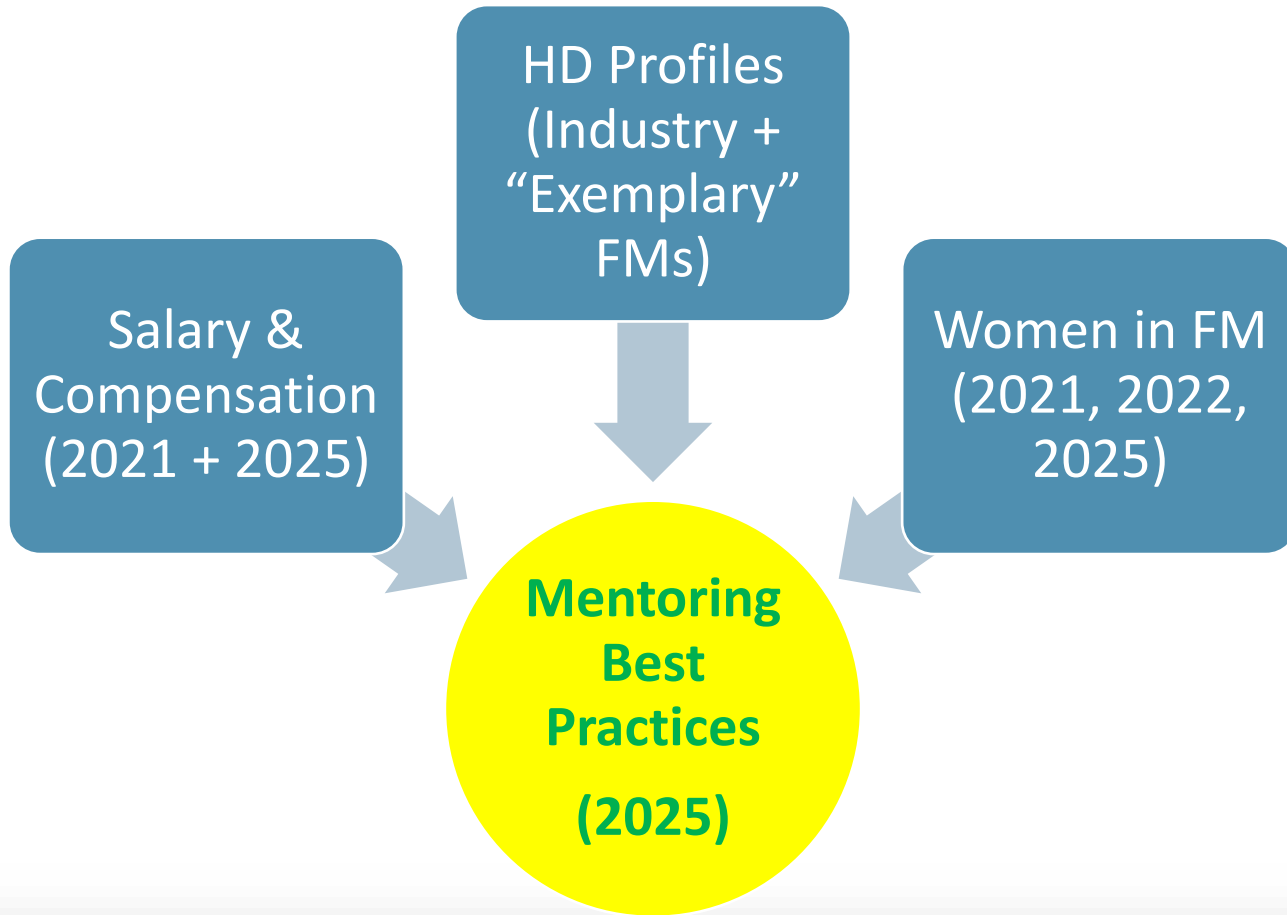
Practical Application

- ▶ RECRUITMENT: Find (and retain) future talent
- ▶ MENTORING: Knowledge transfer
- ▶ TRAINING: Laser-guided skills development
- ▶ JOB TRANSITIONS: Better plan the next move
- ▶ PERSONAL DEVELOPMENT: Find areas to improve

Interview questions

- ▶ Honesty/Humility: Can you describe a time when you had to put the needs of a team or client above your own interests? How did you handle it?
- ▶ Social Boldness: Have you ever mentored someone through a challenging situation? How did you encourage them to build confidence and push past their comfort zone?
- ▶ Justice: Tell us about a time when you had to make a difficult decision that impacted your team. How did you ensure fairness in your approach

++ many more!



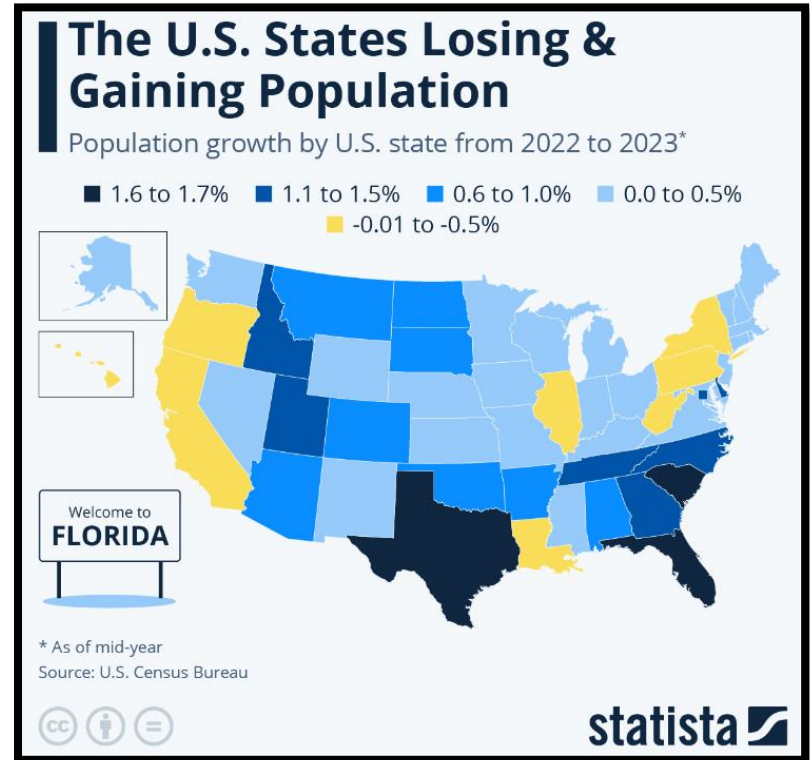
Client/Buyers Experiences:

These are the current market realities...

- Hot Markets for Vendors
- Workforce will not be improving
- Product/Equipment/Material availability will continue to vary
- Cost escalation/ uncertainty/ “**sticker shock**”
- Quality & Safety worsening
- Productivity worsening
- Margins diminished
- Everyone looking for solutions – trying old ways again....

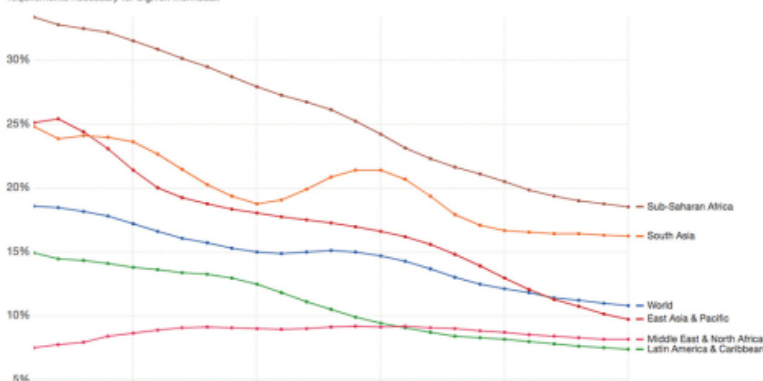
So.....

- Lots of “Never Been Here Before” & “Near Historic” all at the same time for the Economy
- Notable uncertainty globally
- Demographics
- But Lots of Good Things Too

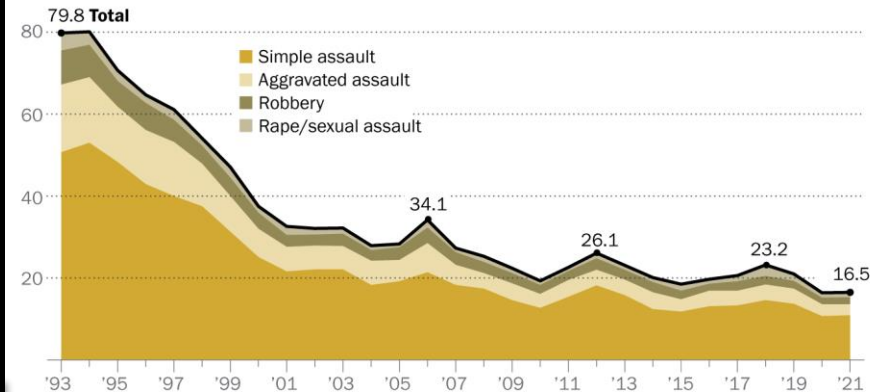


Share of the population that is undernourished

This is the main FAO hunger indicator. It measures the share of the population that has a caloric intake which is insufficient to meet the minimum energy requirements necessary for a given individual.

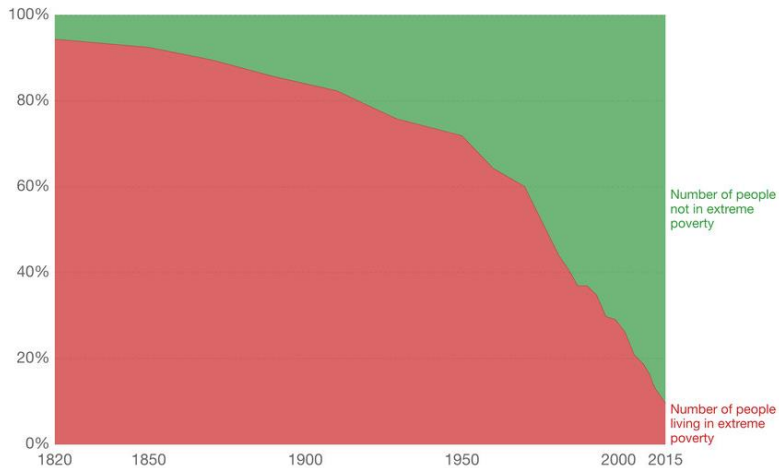


Violent victimizations per 1,000 Americans ages 12 and older



World population living in extreme poverty, 1820-2015

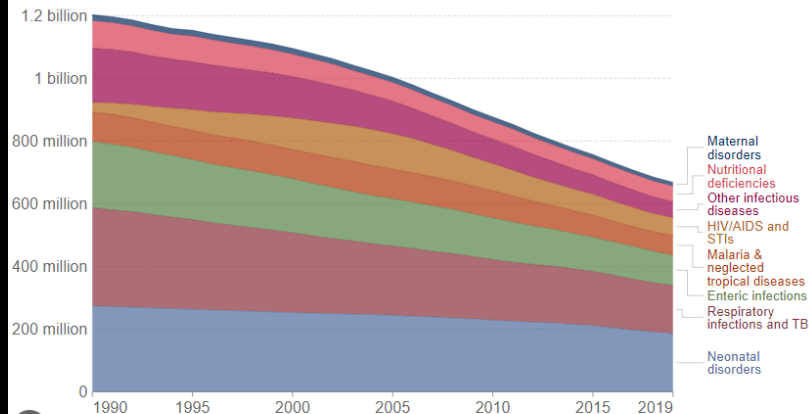
Extreme poverty is defined as living at a consumption (or income) level below 1.90 "international \$" per day. International \$ are adjusted for price differences between countries and for price changes over time (inflation).



Source: OWID based on World Bank (2016) and Bourguignon and Morrisson (2002) OurWorldInData.org/extreme-poverty/ · CC BY-SA

Disease burden from communicable, maternal, neonatal and nutritional diseases, World, 1990 to 2019

Total disease burden from communicable, maternal, neonatal and nutritional diseases, measured in DALYs (Disability-Adjusted Life Years) per year. DALYs are used to measure total burden of disease - both from years of life lost and years lived with a disability. One DALY equals one lost year of healthy life.



Source: IHME, Global Burden of Disease (2019)

OurWorldInData.org/burden-of-disease | CC BY

Reality

Performance Problems





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

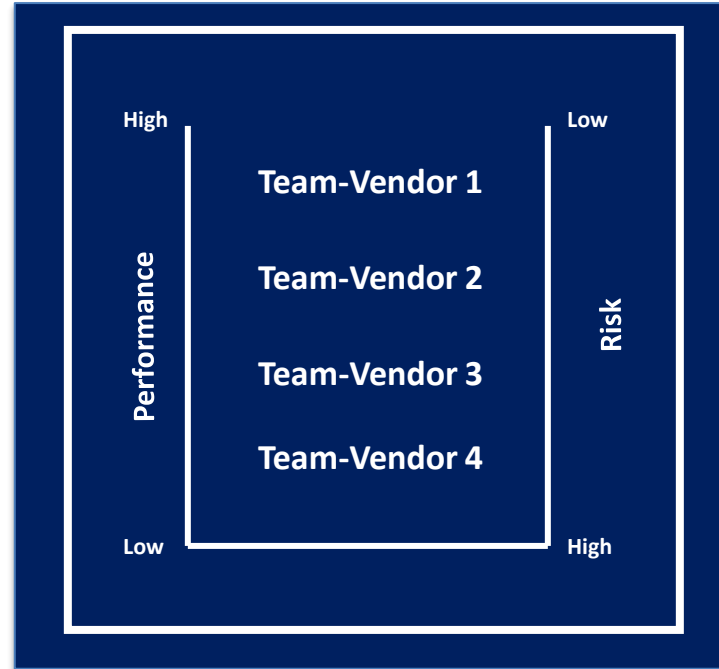
KEY TAKEAWAY

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

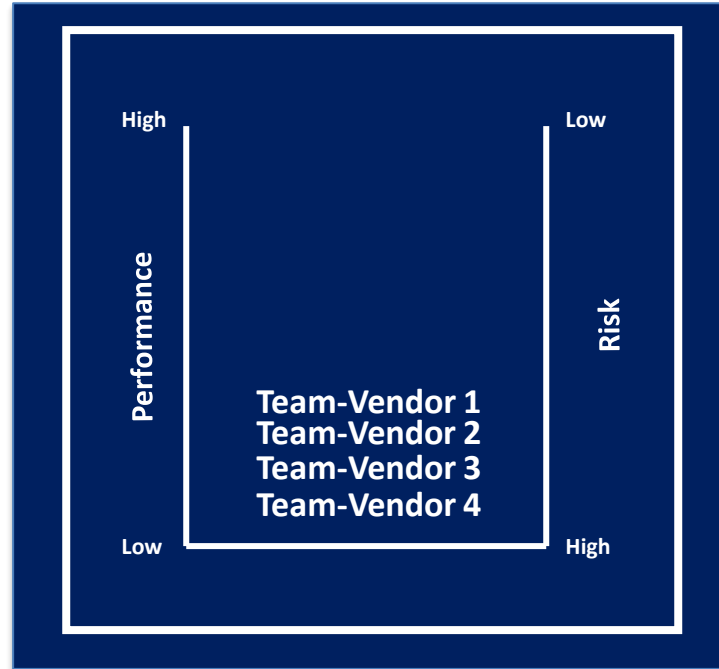
Not Enough

- There are not enough skilled workers for the current need and future need (worsening)
 - 29% of firms have lowered hiring standards
 - 42% of firms have increased spending on training
- Great companies will be those that learn the fastest to do more with less
- Needs: Better Approach + Technology All Centered on People

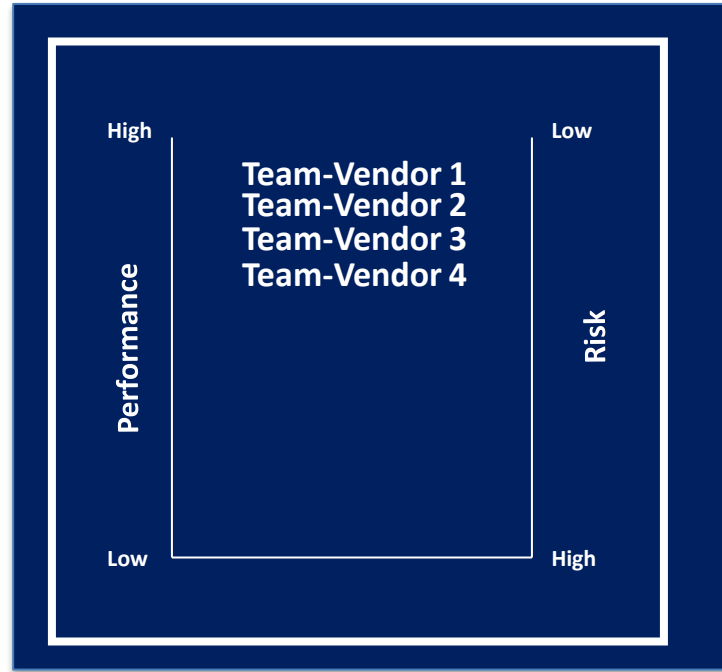
Which of these teams brings your project the most risk?



Is this your market?



Or is **this** your
market?



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

- Vendors/Suppliers/Contractors want to work for you over other owners
- Clients-of-Choice get vendors’ best teams (experts) on their projects/services
- Vendors 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

Obligatory AI Section



PERSONAL FINANCE

A.I. is on a collision course with white-collar, high-paid jobs — and with unknown impact

PUBLISHED MON, JUL 31 2023 7:30 AM EDT

BUSINESS

Two-Thirds of Jobs Are at Risk: Goldman Sachs A.I. Study

...ent bank's economists estimate that 46% of administrative positions, ... positions, and 37% of engineering jobs could be replaced by artificial

Forbes

ENTERPRISE TECH

Half Of All Skills Will Be Outdated Within Two Years, Study Suggests

Joe McKendrick Senior Contributor

I track how technology innovations move markets and careers

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Oct 14, 2023, 11:20am EDT



Guardian

...m with \$5 per month

The Guardian

...tion Sport Culture Lifestyle More

...as Asia Australia Middle East Africa Inequality Global development

AI having 'positive impact' on UK jobs but could increase regional inequalities, says report

Study finds new technologies have created and upskilled jobs but disparities in education and investment may affect pace of change



Next >

ons



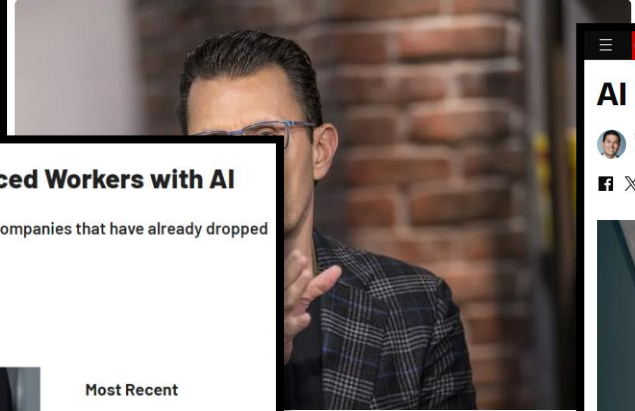
1 million
From a resilient and growing occupation to any other occupation

Tesla posts new AI, robotics jobs after record layoffs



FORTUNE

Exclusive: Intuit is laying off 1,800 employees as AI leads to a strategic shift



Survey reveals almost half of all managers aim to replace workers with AI, could use it to lower wages

Define "collaborative"
By Rob Thubron March 25, 2024 at 9:51 AM | 40

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Tech

AI plays role as tech layoffs surpass 100,000 in 2024

Jul. 14, 2024 8:00 AM ET | Intuit Inc. (INTU) Stock, OTEX Stock, PATH Stock, OTEX:CA Stock
AAPL MSFT META | By Brandon Evans, SA News Editor | 12 Comments

Companies That Have Already Replaced Workers with AI

The AI job takeover is in full swing for many. Here's a list of companies that have already dropped workers for AI.

Written by **Isabel O'Sullivan** Updated on **March 12, 2024**



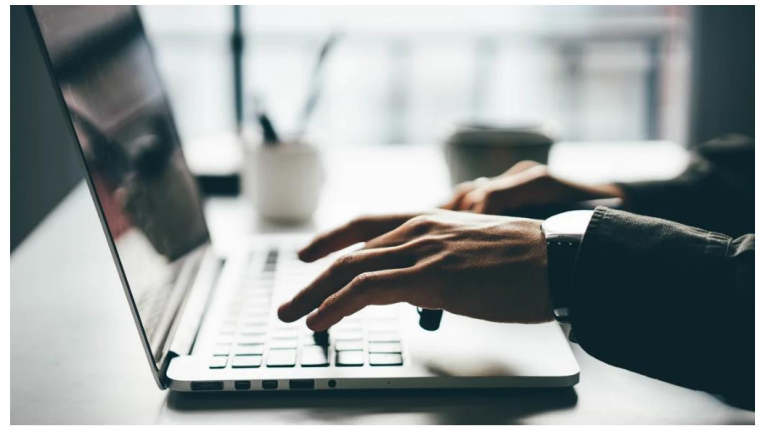
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CNN Business Markets Tech Media Calculators Videos

AI is replacing human tasks faster than you think

By **Matt Egan**, CNN
5 minute read · Updated 2:02 PM EDT, Thu June 20, 2024

f x e



...00 of its global employees—10% of its
...the company. But leadership says the

ChatGPT-5: release date, price, and what we know so far



Suswati Basu | Tech Journalist

Fact Checked by [Sam Shedden](#)

Last updated: 4 July, 2024

Disclosure

Why Trust Us



Reuters

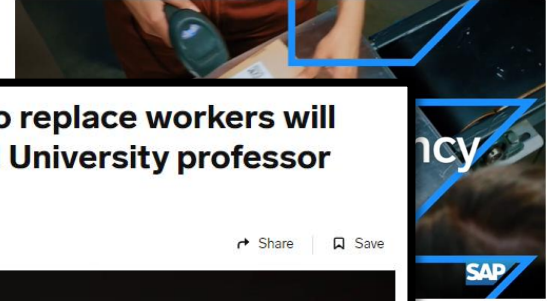
World Business Markets Sustainability Legat Breakingviews Technology Investigation

Artificial Intelligence

Exclusive: OpenAI working on new reasoning technology under code name 'Strawberry'

By Anna Tong and Katie Paul

July 15, 2024 7:37 AM MST - Updated a day ago



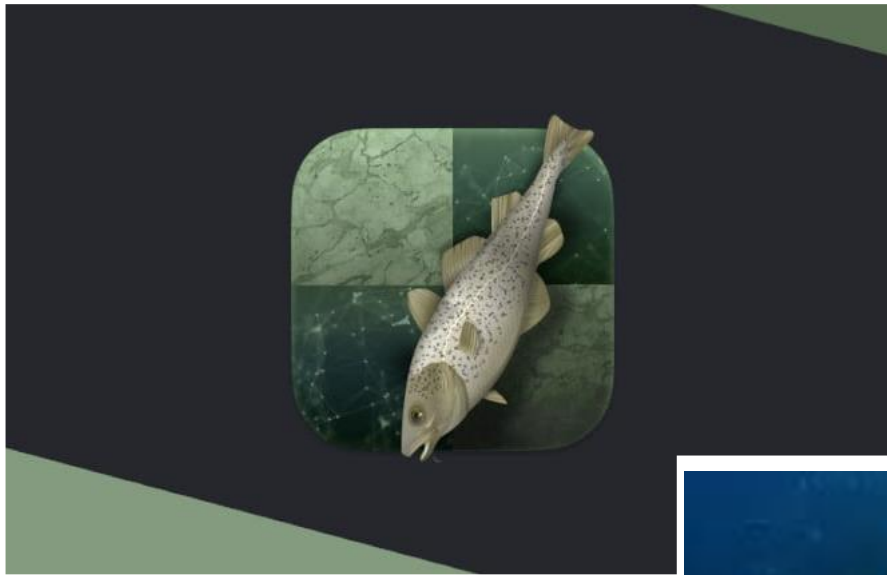
Companies that use AI to replace workers will ultimately lose, Stanford University professor says


[Sawdah Bhaimiya](#) Jan 17, 2024, 9:17 AM MST

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Save





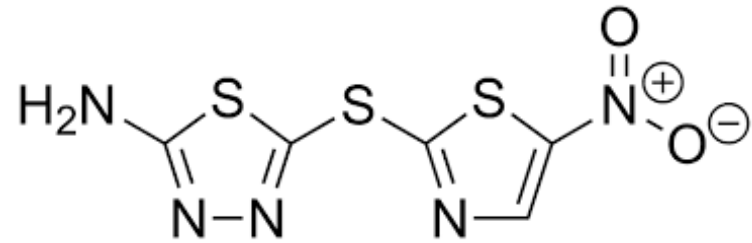


“Chess has
been shaken to
its roots by
AlphaZero”

- Garry Kasparov

*Russian Chess Grandmaster, World Champion (1985
to 2000), Ranked #1 for 255 Consecutive Months*







Col Jeffrey "Paco" Puckett

Capt Bill Gray

RESCUE

USAF Test Pilot School

In-Flight Simulator

Calspan
AEROSPACE

AF 86 048

VISTA

X-62


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.”





K You
what is a gpt

 **ChatGPT**

"GPT" stands for Generative Pre-trained Transformer. It is a type of artificial intelligence model developed by OpenAI that uses deep learning techniques, specifically a type of neural network known as a transformer, for natural language processing (NLP) tasks. Here are the key components of GPT:

This is GPT

1. **Generative:** This term indicates that the model can generate text. It can produce coherent and contextually relevant sentences based on the input it receives, making it useful for a variety of applications like writing assistance, conversation, and content creation.
2. **Pre-trained:** GPT models are pre-trained on a diverse and large corpus of text. This training involves learning the statistical relationships between words, phrases, and other elements of language from this vast dataset. This pre-training helps the model understand language and context before it is fine-tuned for specific tasks.
3. **Transformer:** The model architecture is based on the transformer mechanism, which is highly effective at handling sequences of data (like sentences in text). Transformers use mechanisms called attention and self-attention to weigh the importance of different words in a sentence, regardless of their distance from each other in the text. This allows GPT to generate text that is relevant and contextually appropriate over longer distances than previous models could handle.

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

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

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“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)



ChatGPT-5: release date, price, and what we know so far



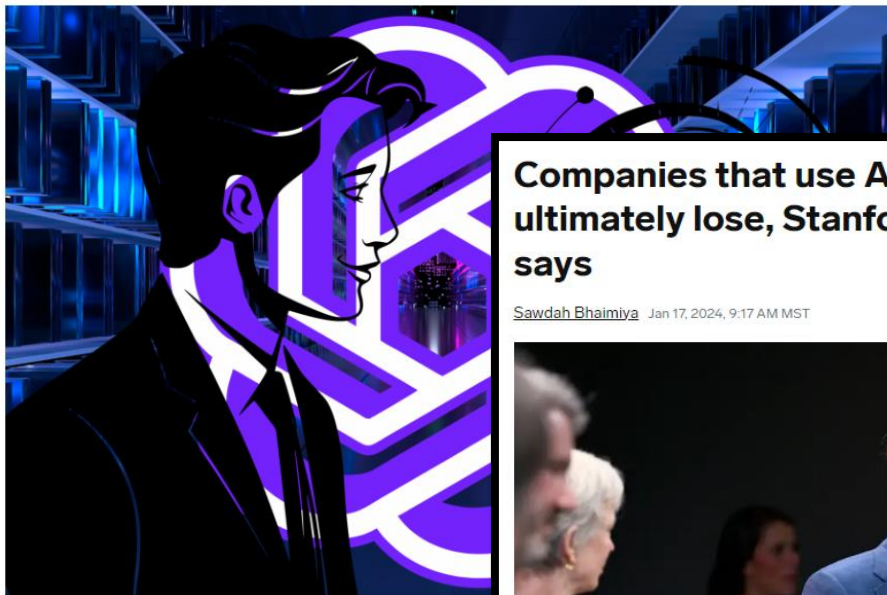
Suswati Basu | Tech Journalist

Fact Checked by [Sam Shedden](#)

Last updated: 4 July, 2024

Disclosure

TRV Why Trust Us



World Business Markets Sustainability Legal Breakingviews Technology Investigation

Artificial Intelligence

Exclusive: OpenAI working on new reasoning technology under code name 'Strawberry'

By Anna Tong and Katie Paul

July 15, 2024 7:37 AM MST · Updated a day ago



Aa



Companies that use AI to replace workers will ultimately lose, Stanford University professor says

Sawdah Bhaimiya | Jan 17, 2024, 9:17 AM MST

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Security & privacy

OpenAI is committed to building trust in our organization and platform by protecting our customer and user data, models, and products.

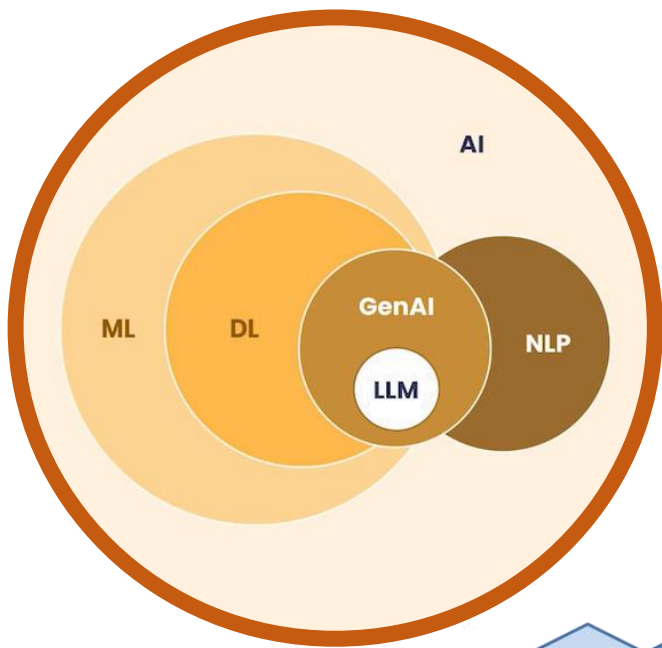
Enterprise privacy

Consumer privacy

OpenAI invests in security as we believe it is foundational to our mission. We safeguard computing efforts that advance artificial general intelligence and continuously prepare for emerging security threats.

What is AI?

- Artificial intelligence (AI) refers to systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect. AI manifests in various forms, such as:
 - **Machine Learning (ML):** This involves algorithms that learn patterns and insights from data without being explicitly programmed. For instance, a machine learning model could learn to identify cats in photos by analyzing thousands of images.
 - **Deep Learning (DL):** is a subfield of machine learning that is particularly effective at learning from large amounts of data. It uses algorithms called neural networks that are designed to recognize patterns and features in data in ways that mimic human brain function, albeit at a very simplified level. Uses large sets of raw data
 - **Natural Language Processing (NLP):** It mimics human language and is the technology behind how machines understand and interact with human language. It's used in applications like chatbots, translation services, and voice-activated assistants. Uses data to make predictions.
 - **Large Language Model (LLM):** No longer just mimicking natural language, but able to understand and respond/speak with contextually relevance.
 - **Generative AI (GenAI):** A type of artificial intelligence that can create new content like text, images, music, audio, and videos. Generative AI uses neural networks to identify structures and patterns in existing data to generate new content. This allows computers to produce outputs that are often indistinguishable from human-generated content.
 - **Robotics:** This involves designing robots that can perform tasks that are usually done by humans. These robots often use AI to handle tasks such as navigating around obstacles or manipulating objects.
 - **Computer Vision:** AI in this field enables machines to interpret and make decisions based on visual data. Applications include facial recognition systems, medical image analysis, and autonomous vehicles.
 - **Expert Systems:** These are AI systems that use databases of expert knowledge to offer advice or make decisions in such areas as medical diagnosis and the stock market.



WRITING	CHATGPT	BARD	COPILOT
DESIGN	CANVA	MIDJOURNEY	BRANDBIRD
PAYMENT	DUKAAN	LEMON SQUEEZY	PADDLE
WEBSITES	TYPEDREAM	WEBFLOW	FEATHER
PRESENTATION	PITCH	TOME	SLIDEBEAN
PRODUCTIVITY	NOTION	LOOP	EZRA
AUTOMATION	ZAPIER	MAKE	N8N

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

Machine Learning-Gen (138 Companies)

Machine Learning-App (138 Companies)

Computer Vision-Gen (138 Companies)

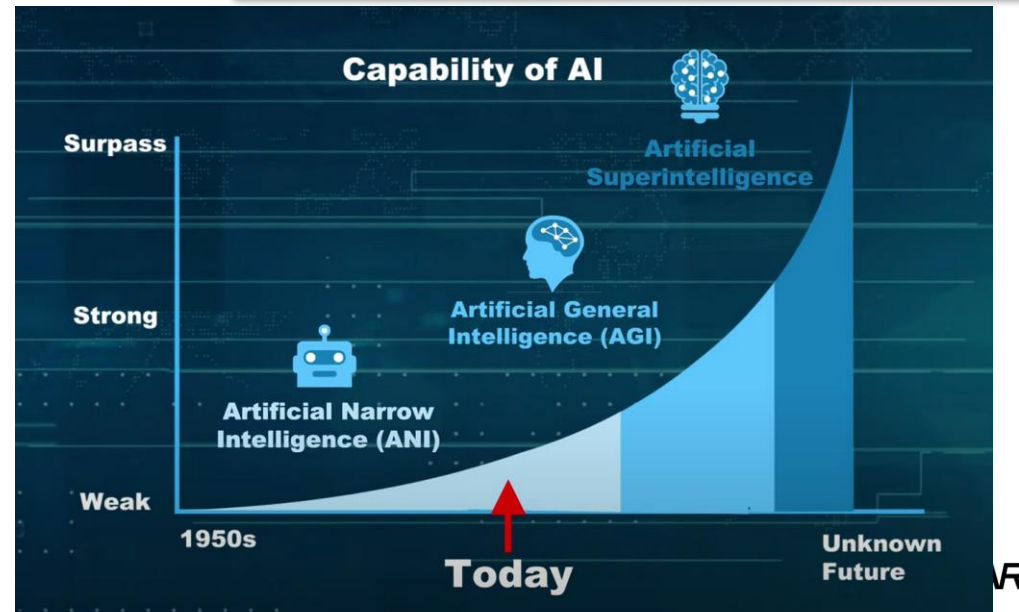
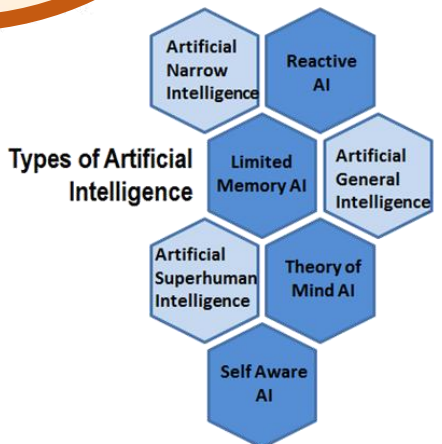
Computer Vision-App (138 Companies)

Smart Robots (138 Companies)

Virtual Personal Assistants (138 Companies)

Artificial Intelligence

contact info@venturescanner.com to see all 957 companies





GPT Options

Featured

Curated top picks from this week



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Diagram creation: flowcharts, mind maps, UML, chart, PlotUML, workflow, sequence ERD, database & architecture visualizations.



WebPilot
Search, Browse, Write & Agent. Actionable API Offering



Presentation and Slides GPT
Powerful PowerPoint presentations. Exports to PowerPoint, Google Slides PDF.



Resume
By combining the expertise of top resume writers with advanced AI, we assist in diagnosing and enhancing your resume...



Slide Maker
Create engaging presentations



Whimsical
Explains and generates diagrams.

Writing

Enhance your writing with tools



Write For Me
Write tailored, engaging content with focus on quality, relevant keywords.



AI Humanizer Pro
Best AI humanizer to bypass AI detection. Humanize content to bypass AI detection.



Generator Text to Video Maker
The Assistant helps you create high-quality video prompts by easily utilizing InVideo technology. By Mr Sora



ChatPRD - AI for Product Managers
An on-demand Chief Product Officer that drafts and improves your PRDs, while coaching you to become an elite product manager.



Fully SEO Optimized Article including FAQs
Create a 100% SEO Optimized Article | Plagiarism Free Content | Title | Meta Description | Headings with Proper H1-H6...



Humanize AI
Top 1 AI humanizer to help you get human-like content. Humanize your AI-generated content for FREE.



CV Writer - the CV Expert
Expert in crafting personalised, professional and humanized CVs optimised for ATS (Applicant Tracking System) -



Book Creator Guide
A writing assistant specializing in book creation, web research, and format recommendations.

Research & Analysis

Find, evaluate, interpret, and visualize information



Consensus
Your AI Research Assistant. Search 200M+ academic papers from Consensus, get science-based answers, and draft content...



AskYourPDF Research Assistant
Free Chat Unlimited PDFs. Access 400M+ Papers (PubMed, Nature, Arxiv, etc). Analyze PDF (Unlimited PDFs), Generate...



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UX Design Mentor
I provide specific UX or Product Design feedback.



Web Browser
I can browse the web to help you find information.

MARKETING

Your expert mentor in advertising >>>



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Enhance research with 200M+ resources and built-in critical reading skills. Access Google Scholar, PubMed, JSTOR, Arxiv, and...



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Your travel planning assistant for flights, hotels, & cars



Fitness, Workout & Diet - PhD Coach
Get turn-key scientific fitness and workout guidance plus advanced nutritional insights. Trained on 212,750 PhD-level...



Song Maker
Create music using musical theory. Discover essential songwriting tips to compose music and create songs. This...



DeepGame
Play any story as a character. You decide what to do next.



Rizz GPT
Your go-to dating message expert, ready to boost your charm!



Books
Your AI guide in the world of literature and reading. New updated instructions !! (Sponsored actions)



AutoExpert (Chat)
Tired of lightweight answers? I am the ideal GPT for the curious human that always wants to learn more. I'll impanel a dynamic...

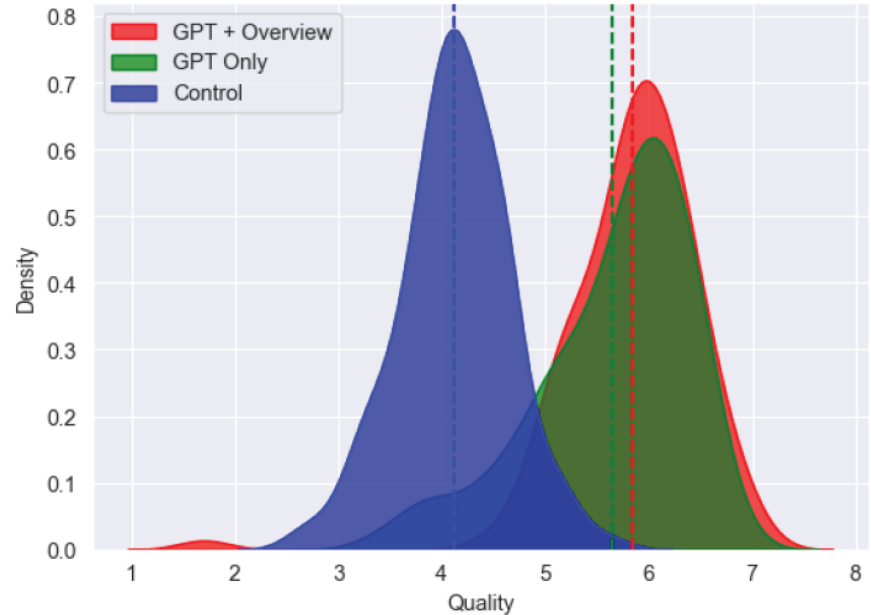


One Aspect of Training: AI - Currently Two Paths

- People say “AI” but really “two paths”
- Path 1: Generative + Assistance (Good to OK now)
 - ChatGPT, Gemini, Co-Pilot, plugins for current apps/software
- Path 2: AI Enable Solutions (Wild West)
 - “Applications/Software”
 - 6000+ in past 12 months

A Piece of the Workforce Solution?

- Generative AI is here NOW
- Recent Study of impact of GenAI
 - **12.2%** More Tasks Completed
 - **25.1%** Less Time per Task
 - **40%** Higher Quality
 - **AI Training Significantly Increase Efficacy**
 - For control performance
 - For those starting below average performance – **AI improved performance 43%**
 - For those starting above average performance – **AI improved performance 17%**
- My study on students with AI enable tech was significant improvement – 10 to 30% performance impact (+ speed impact)



One Quick Thing About AI....

- In most all previous technologies and innovations – junior (or younger) employees were very effective at teaching and helping the more experienced and senior employees learn and adopt the new technology
 - Largely due to willingness to try innovation that conflicts with traditional or standard practice (and not having invested as much time & expertise)
- For AI, this is being proven to NOT BE TRUE for AI. Juniors are not more capable than seniors at adopting AI
- Thoughts are the technology is so different that being younger is not as advantageous....

Unique Leadership Considerations for Leaders

- **Actions today vs tomorrow – what is the timeline?**
 - Generative (ChatGPT) – NOW
 - AI Apps/Enabled requiring investment – WAIT (18-36months)
- **New Impacts - Not experienced from other innovations**
 - Structural impacts – organizational (depts, functions), foundational (basics of procurement process, contract, owner role, etc.)
 - Cultural & Mind Impacts – changing work patterns (80%/20% - losing the 80%)
 - Constant Change – change adoption culture
 - Outperforming Humans – new baseline for value and expectations

Realistic & Immediate Solutions

- Become a “Client of Choice”
 - (for External Vendors & Internal Customers)
- Move to a Collaborative Approach – Authentic Partnerships
- Increase your HD IQ (Human Dimensions)
- Train your People the right way – become better sooner

Upcoming IFMA Research Projects

- Life Cycle Costing for FMs (90% done)
- Understanding the “exemplary” FM (in progress)
- Global 12-City Study (in progress)
- Making the Case at the C-Suite (90% done)
- Salary Dashboard (in progress)
- Early involvement of FM (need volunteers!!!) 😊
- “Benchmarking the World” (all major regions)

Future – I am Very Excited

‣ What do I know? = Nothing

‣ Prices = Uncertainty; Materials = More Certain; Limited control of either

‣ Labor = A New Model Needed; Key Differentiator

‣ Possibility of Tremendous Improvements– but window may be tight

- Technological Revolution
- Moving into a New Economy

Questions? – More Info?

PPT version of Slides?

Email:

Jake.Smithwick@simplar.com