

From Crisis to Catalyst:
***Workforce, Technology, and the New
Economy in Construction Management***

Jake Smithwick, PhD, MPA, 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



Simplar

- 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	Renovation	DBB
Municipal	Repair	CMAR
Laboratory	Maintenance	DB
Education	Roofing	IDIQ
Hospital	Specialty	JOC
Corrections	Demolition	Low Bid
Financial	Development	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



Minnepolis Park & Recreation Board

The City of SPRUCE GROVE
www.sprucegrove.org



DALHOUSIE UNIVERSITY
Inspiring Minds



UNIVERSITY OF SASKATCHEWAN



Kansas City Kansas Community College



electrical training ALLIANCE
IBEW - NECA



City of Lawrence KANSAS

UC RIVERSIDE
UNIVERSITY OF CALIFORNIA



BEST VALUE EUROPE



COMPASS GROUP



NOTICE:

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

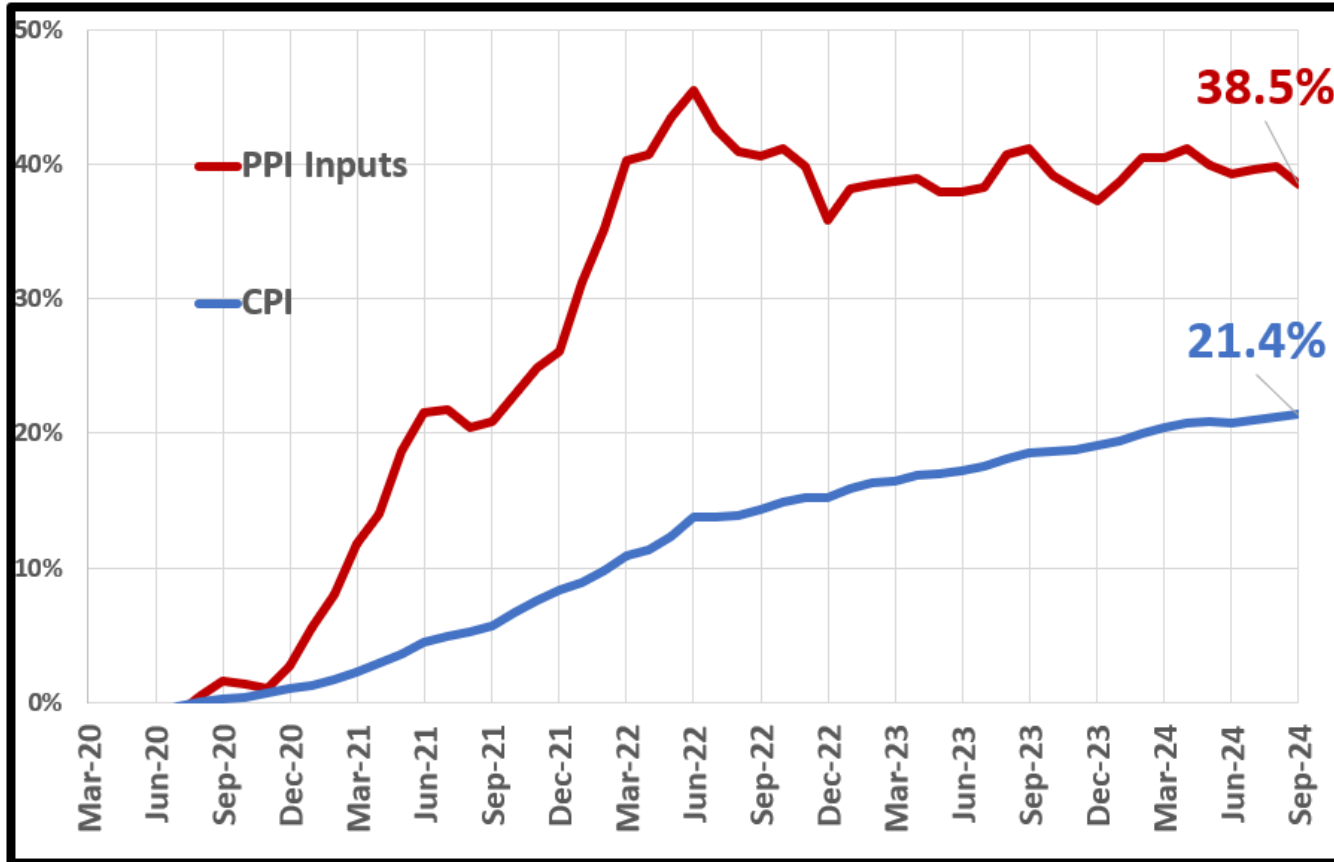
Many Headwinds in Today's Supply Chain

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

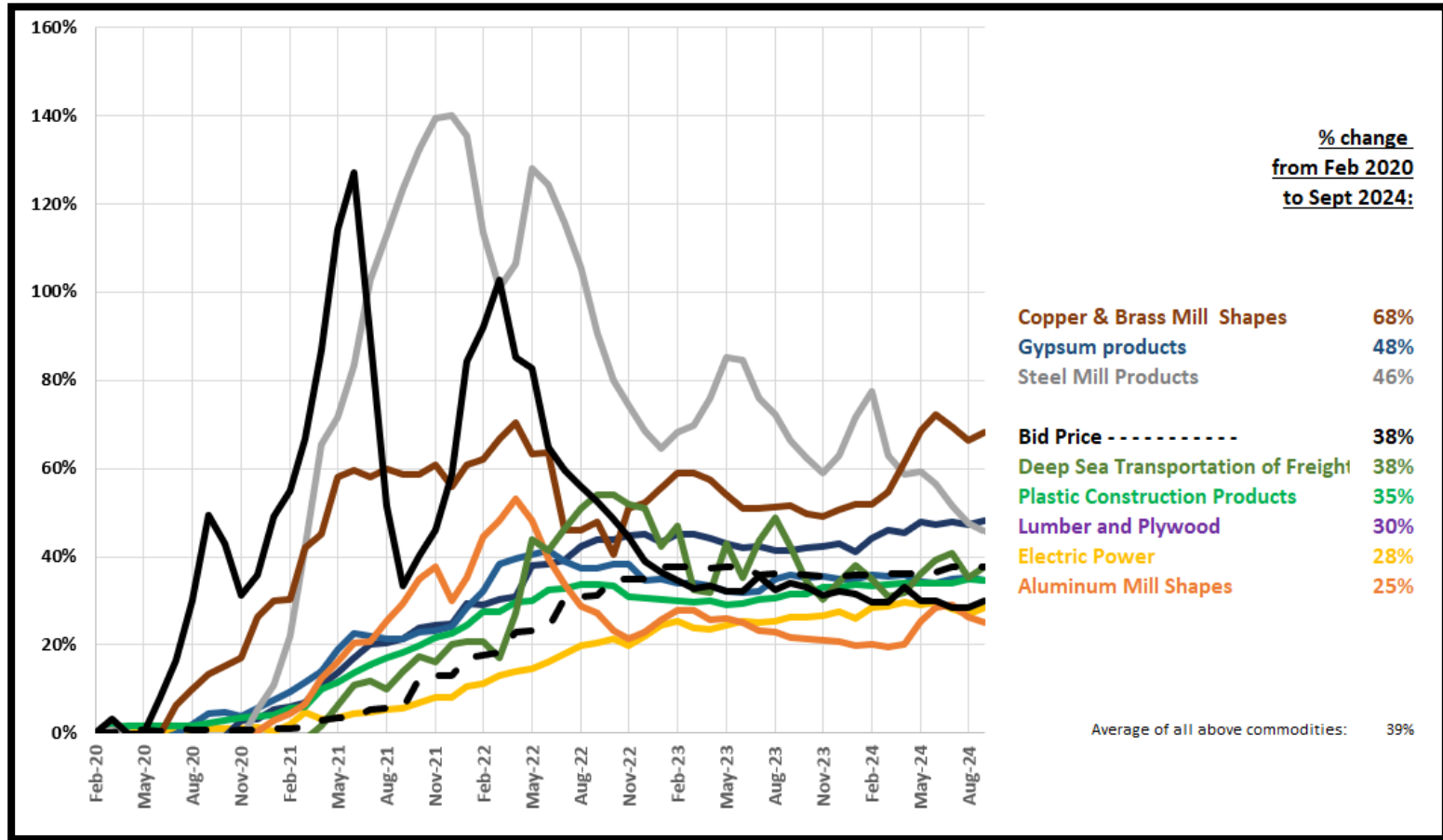
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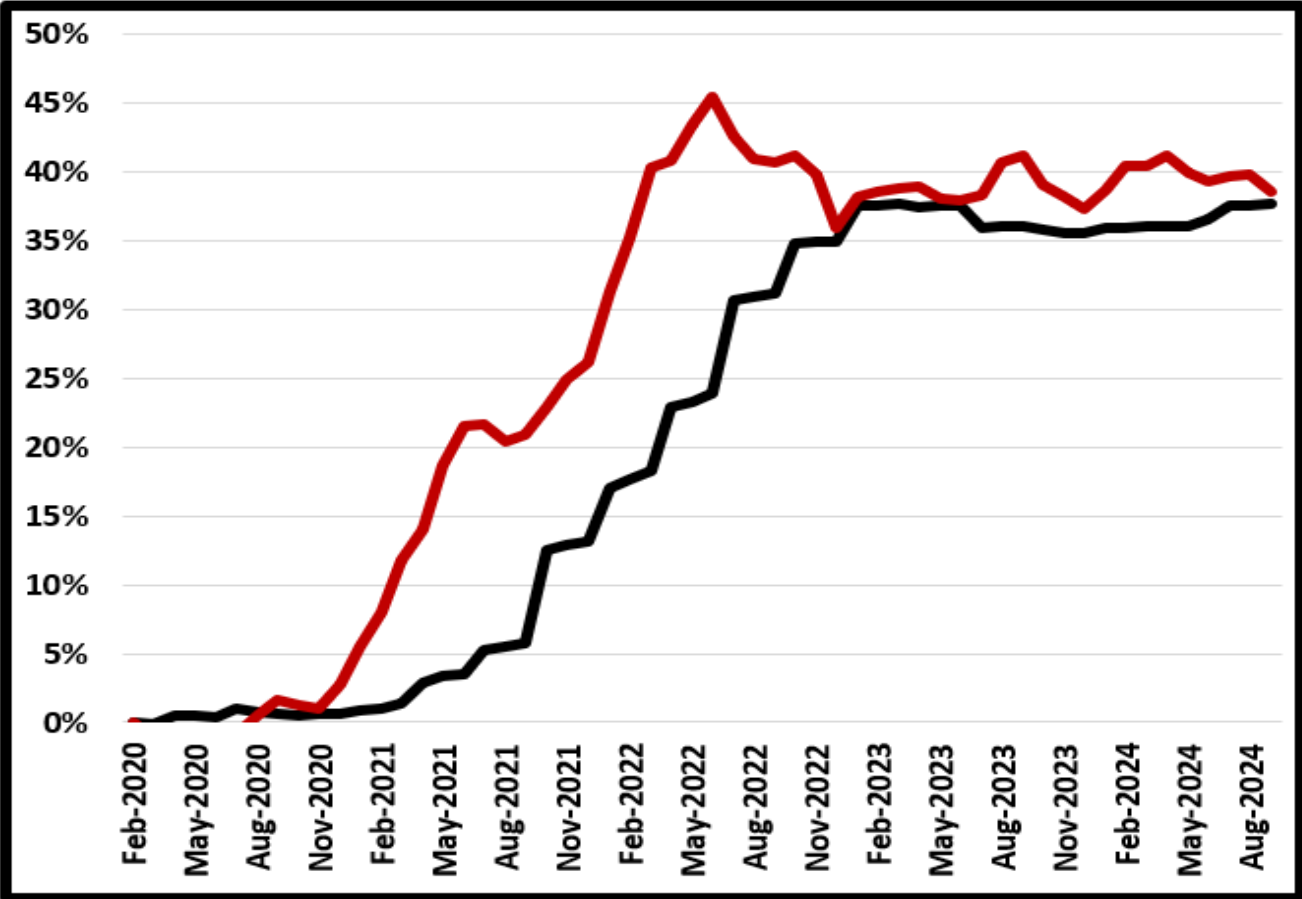
Stuff has Gotten A Lot More Expensive



Material Prices & Uncertainty – Sept 2024 BLS



Economic Uncertainty?



% Change
from Feb 2020
to Sept 2024

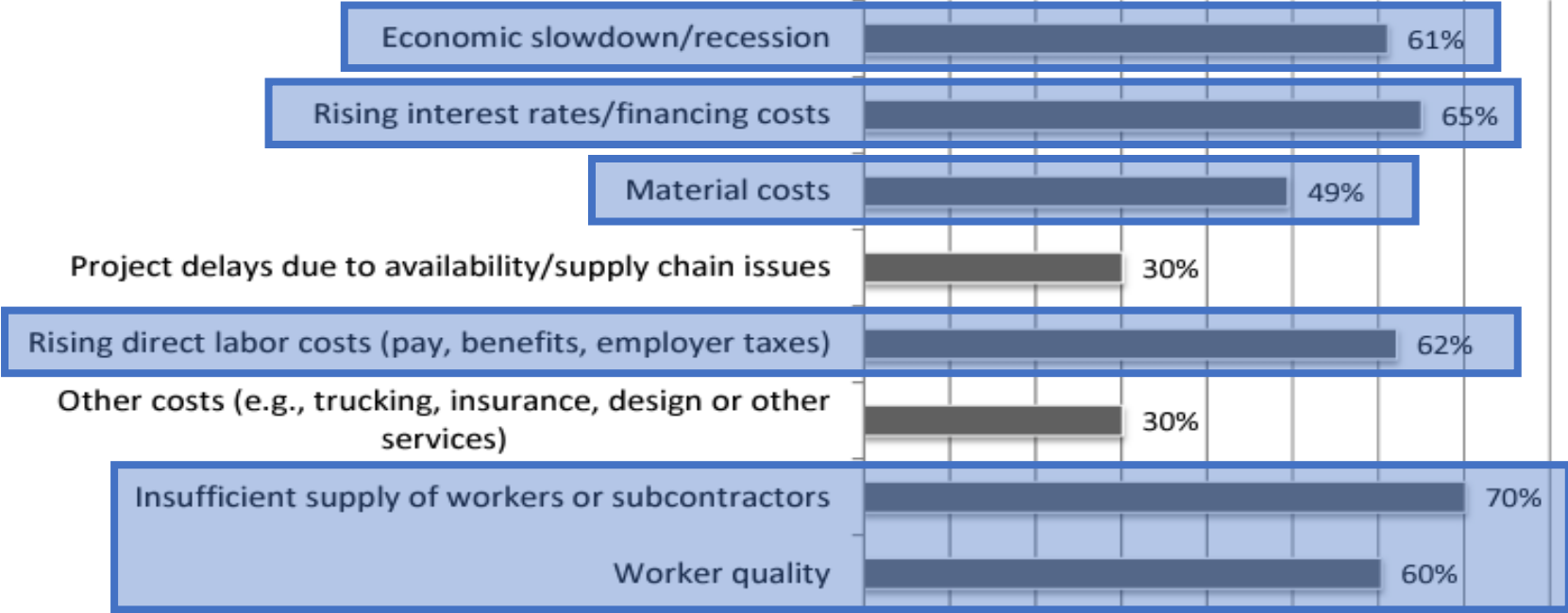
39.8% Inputs PPI (goods)
37.6% Bids

What are your biggest concerns – Aug/Sept 2024?



AGC
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ASSOCIATION

Sage

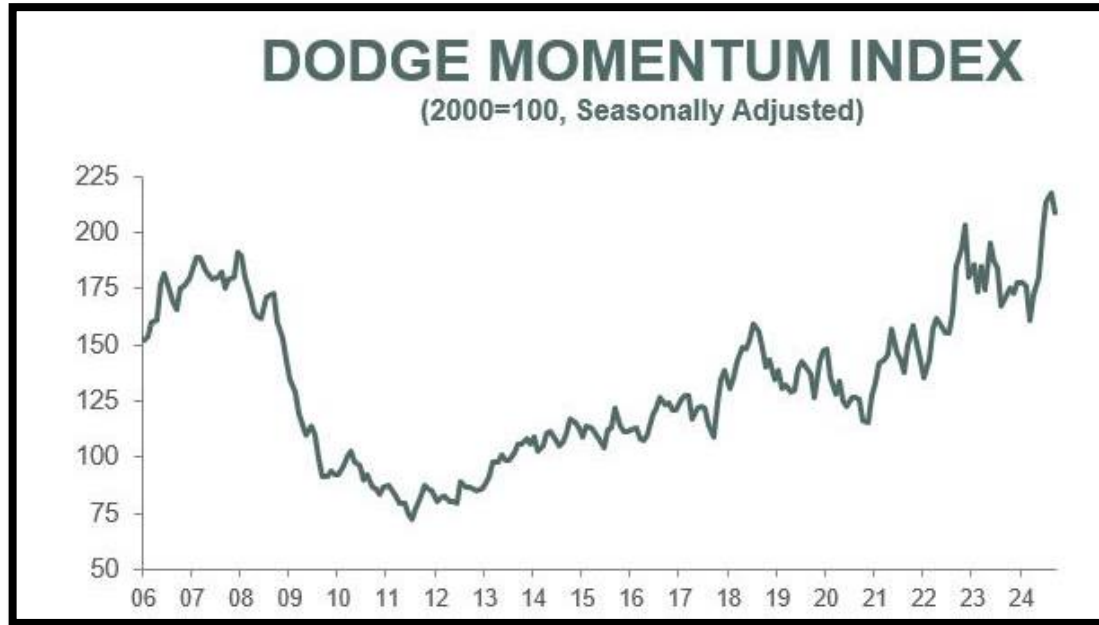


Economic - Dodge Momentum Index

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

Dodge Momentum Index (Sep 2024 update) **D•N** Dodge Construction Network

- Monthly measure of nonresidential projects in planning, [leading](#) indicator of construction [by 1-year](#)
 - Commercial **DOWN** year-over-year by 7.8% ; Institutional **UP** year-over-year by 5.2%



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

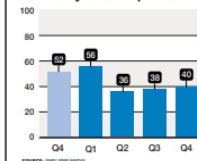
The CICI's results are largely mirrored by those of the Confindex survey from Princeton, N.J.-based Construction Financial Management Association (CFMA). Each quarter, CFMA polls CFOs from general and civil contractors and subcontractors on market and business conditions.

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.

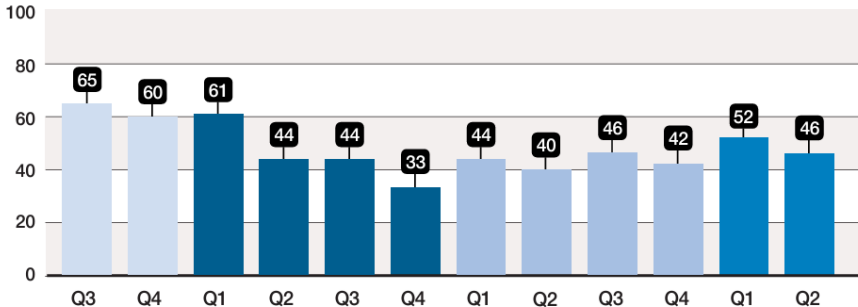
The Confindex fell 2.8% between Q3 and Q4 of 2023, down from a rating of 101. The "current confidence" index also fell down 5.4% to a 106 rating, and the "business conditions" index tumbled 6.

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. Mortgage rates are good for the market, because people, at times, can't buy homes. According to Freddie Mac, fixed mortgage rates are at 6.8% as of September 22. That number is down from 7.5% on January 6.

At the other end of the confidence remains low in the rating) and commercial of markets. Basu does not see citing data from Castle 5 provides security to 2,000 America. "On average, 41% of workers swiped in he reports. He foresees a 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.

Quarterly Cost Report Confidence Index



SOURCE: ENR/BNP MEDIA

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.

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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	78	71	28	1	65	31	4	35
DISTRIBUTION, WAREHOUSE	48	32	35	25	36	39	4	52
EDUCATION K-12	58	7	65	27	5	66	29	4
ENTERTAINMENT, THEME PARKS, CULTURAL	33	10	55	27	19	56	31	9
HOSPITALS, HEALTH CARE	67	4	54	42	1	51	48	3
HEALTH EDUCATION	71	48	48	34	17	52	31	51
HOTELS, HOSPITALITY	51	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	15	47	46	2
TRANSPORTATION	37	8	41	31	6	39	56	3
WATER, SEWER AND WASTE	38	6	58	36	6	56	39	3
POWER	28	4	45	50	4	32	64	3
PETROLEUM, PETROCHEMICAL	31	11	27	33	0	27	73	0
ENVIRONMENTAL, HAZARDOUS WASTE	18	30	40	33	20	36	30	10



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

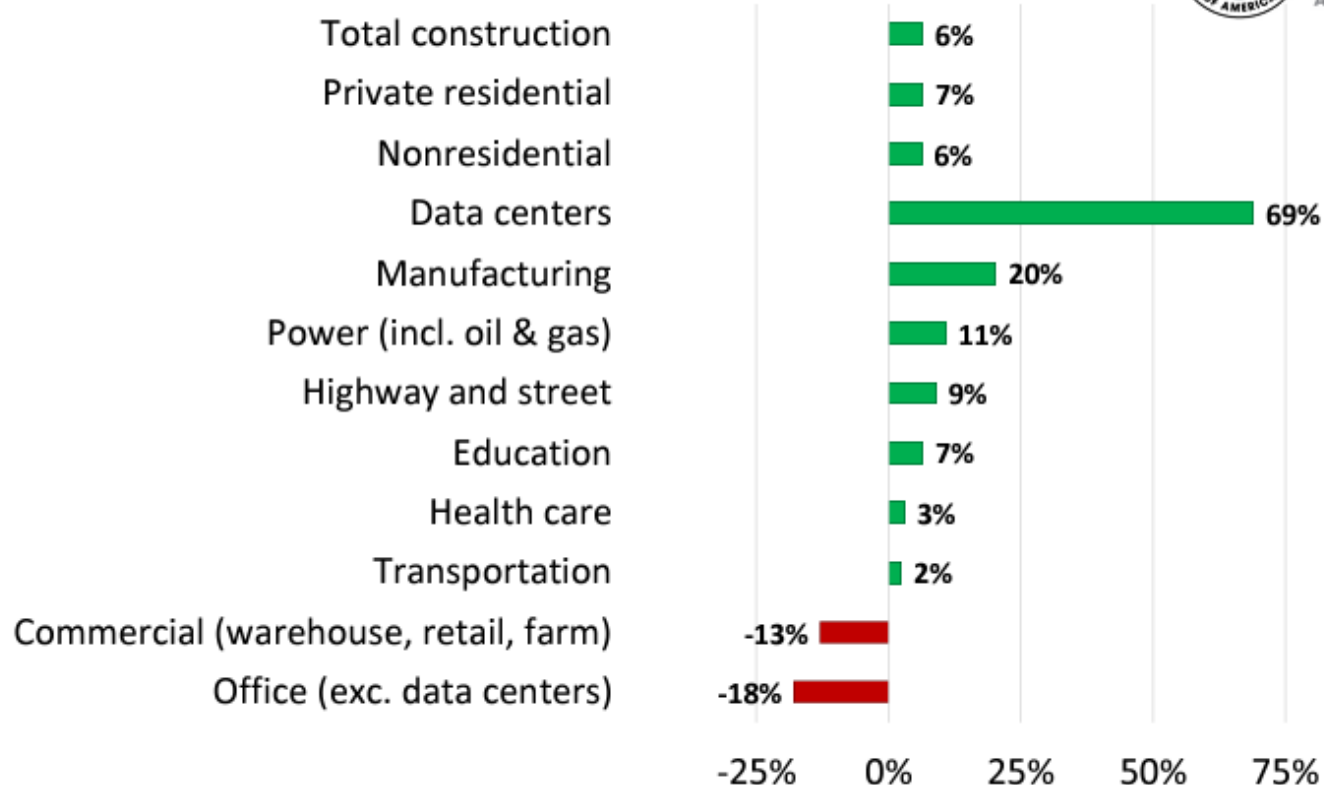
SOURCE: ENR/BNP MEDIA. FIGURES MAY NOT ADD UP TO 100% DUE TO ROUNDING

Change in construction spending: May 2023-May 2024

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

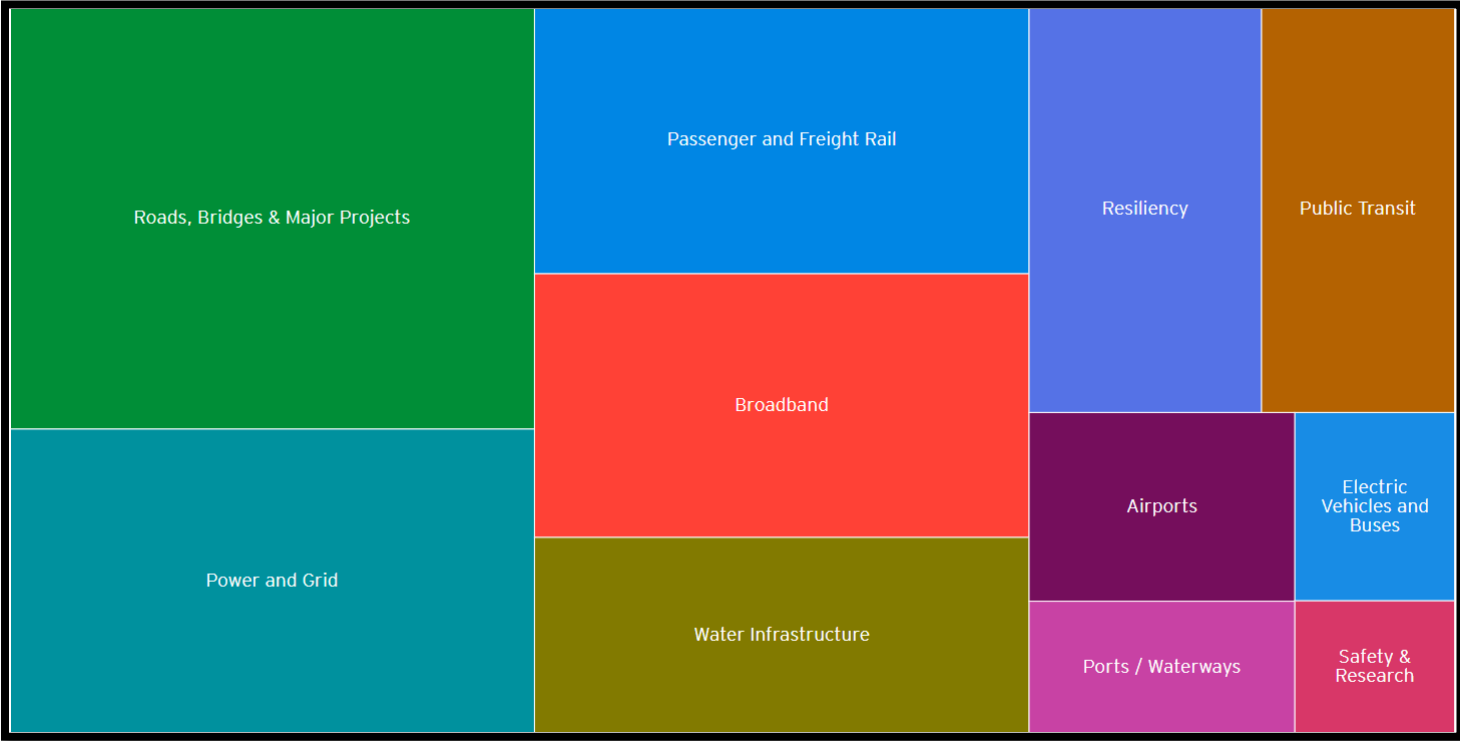


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IIJA (“Infrastructure Bill”) - \$1.2T/5yr (Nov ’21)

- 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

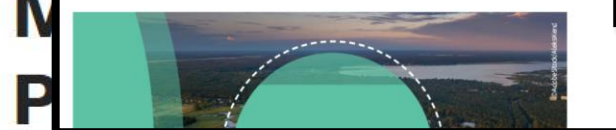
ntable state’ amid drone

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



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

1:07 am

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

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



Many Headwinds in Today's Supply Chain

- Cost Escalation & Volatility

- **Materials Shortages & Supply Chain Challenges**

- Quick Macro

- Workforce

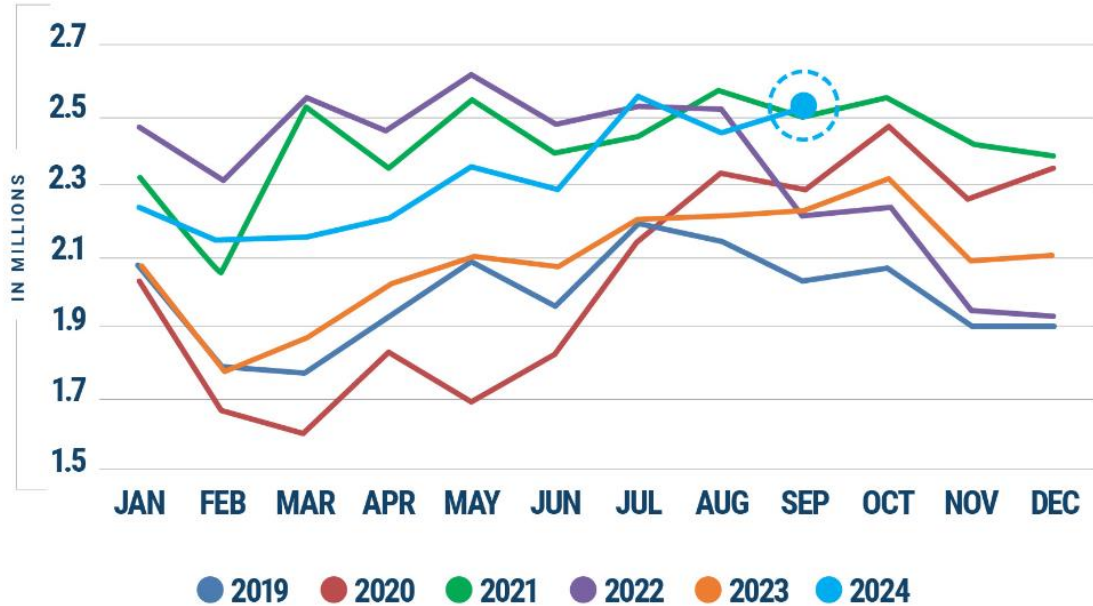
Supply Chain Issues

- **90% of projects have had supply chain impacts**
- **84% of projects have had higher cost**
- **72% of projects have taken longer**

- **Actions People are Taking:**
 - Accelerated purchasing after contract award (cash flow)
 - Alternative suppliers
 - Alternative materials/products (change the spec)
 - Stocking inventory
 - Increasing Bids/Budgets
 - Longer Completion Times
 - Some Primes advising Owners to push Risk to Subs

Supply Chain: shipping

2019-2024 U.S. CONTAINER IMPORT VOLUME (TEUs)



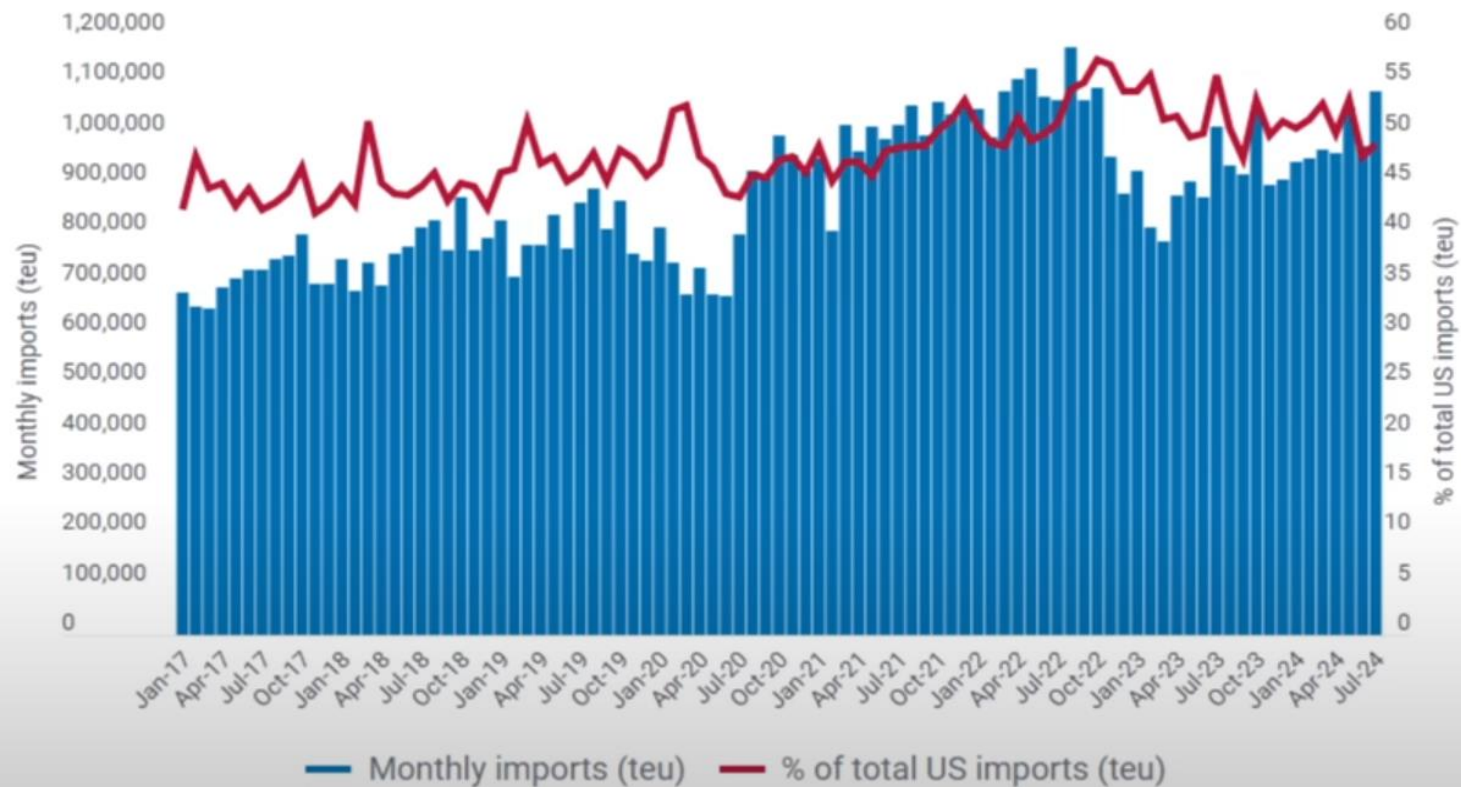
US Container Imports:

- July '24 is a 26-month high since May '22
- 1st time in 22mo where volume >2.4M TEU level which created port congestion in COVID
- Growth in 2024 is 15.6% higher than same months in 2019.
- Top commodities were furniture/bedding + plastics / articles thereof
- 40% of imports are from China.
- Panama canal back to near-full operating depth and rising.
- Cargo avoiding Suez for longer more expensive routes, disrupted by weather at tip of South Africa



- US East and Gulf Coast Ports strike
(current agreement expired on Oct 1st – Oct 3rd tentative deal in place till Jan 15th – automation and AI...and then workers to vote on it...)
- The USMA-ILA were not at the table together.
 - ILA is largest US union of maritime workers
 - Prior west-coast union negotiations proceeded without a contract. ILA not same.
 - ILA Pres is *“certain ILA members will achieve a landmark agreement, even if it takes a coast-wide strike beginning Oct 1st to get it.”*
- A strike would have shut down **1M+ TEUs** entering the US.
 - *And everything leaving.*

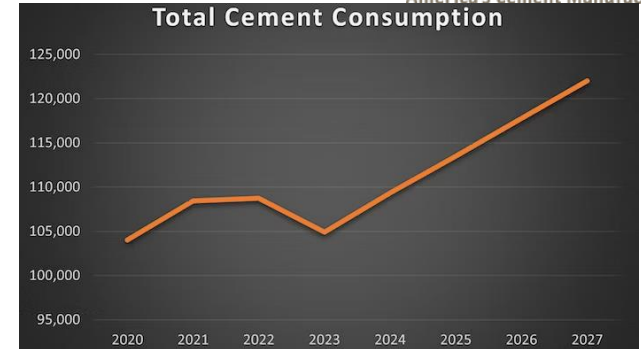
Imports to top five US east and Gulf coast ports



Ports covered: Houston, Savannah, New York/New Jersey, Norfolk, Charleston. Percent of total based on top 10 ports in US. Source: John McCown / McCown Container Volume Observer

Others: Materials Shortages

- 43 states had shortages in cement
- No cement capacity has been added in the US since 2009
- Additional cement production capacity coming, but PCA expects demand to outpace supply
- *Fly Ash Shortage Coming – some stockpiling*
- **IV Fluid Shortage – Nation Wide**
- Hurricane Helene

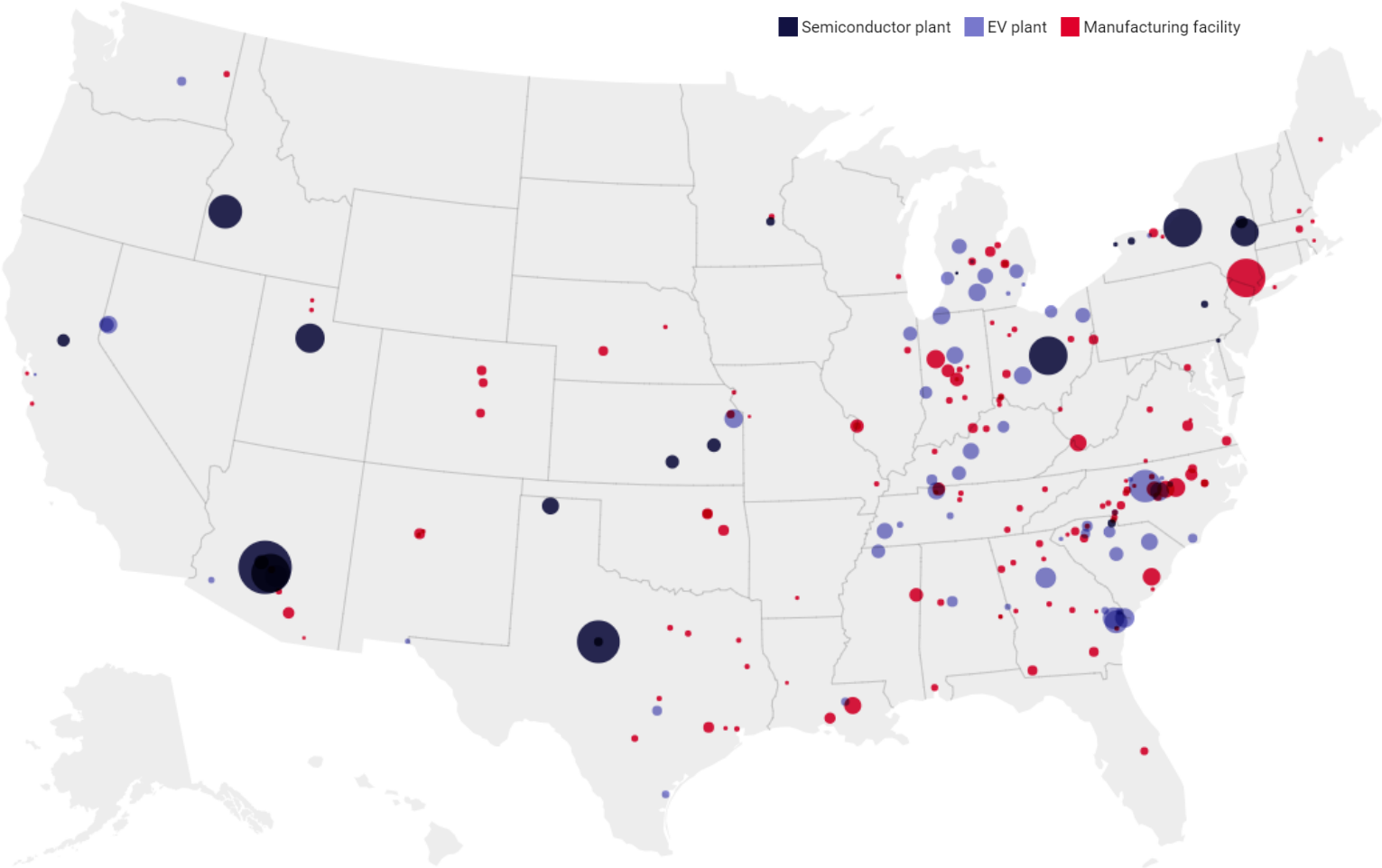


Hurricane Helene exacerbated the issue by shutting down a key IV fluid manufacturing plant in North Carolina, owned by Baxter International, which supplies 60% of the nation's IV fluids.

Manufacturing construction surges across US

Top projects by value and location since August 2022

■ Semiconductor plant ■ EV plant ■ Manufacturing facility



More “Megaprojects”

- 2023 = new annual record of 41 megaprojects (\$103.9B)
- 2022 = at the time, record of 31 megaprojects (\$103.2B)
- Pre-2019 = prior best of 35 megaprojects (\$79.1B)

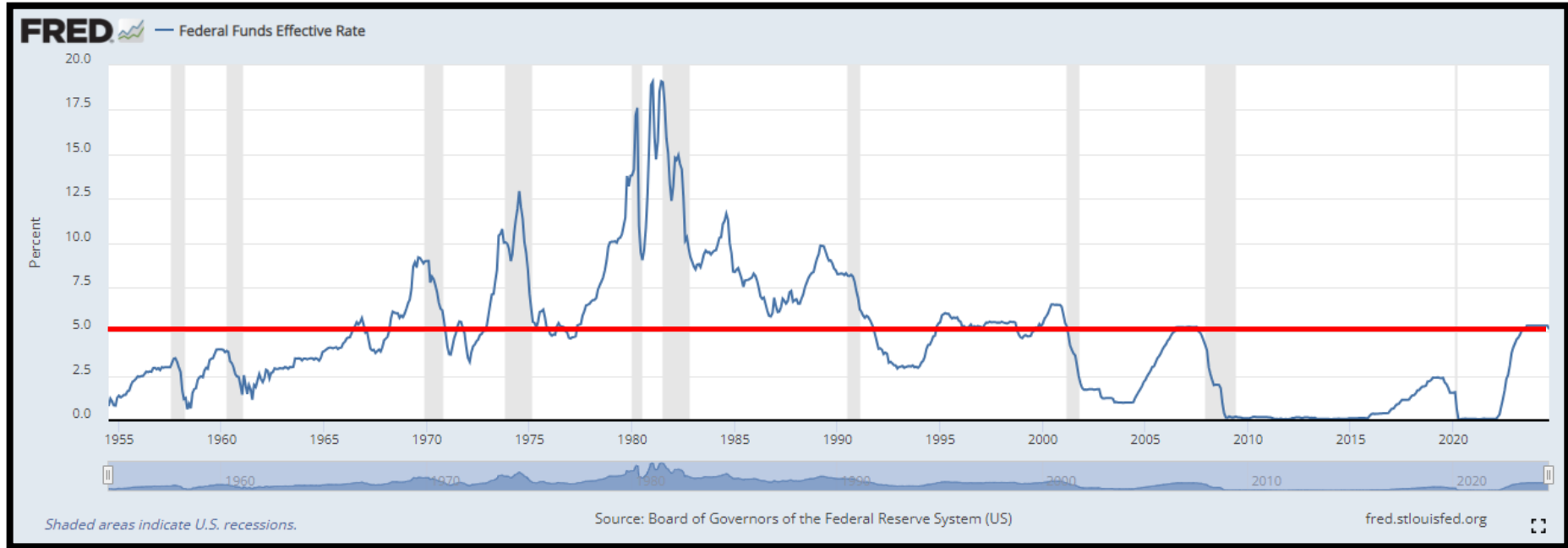
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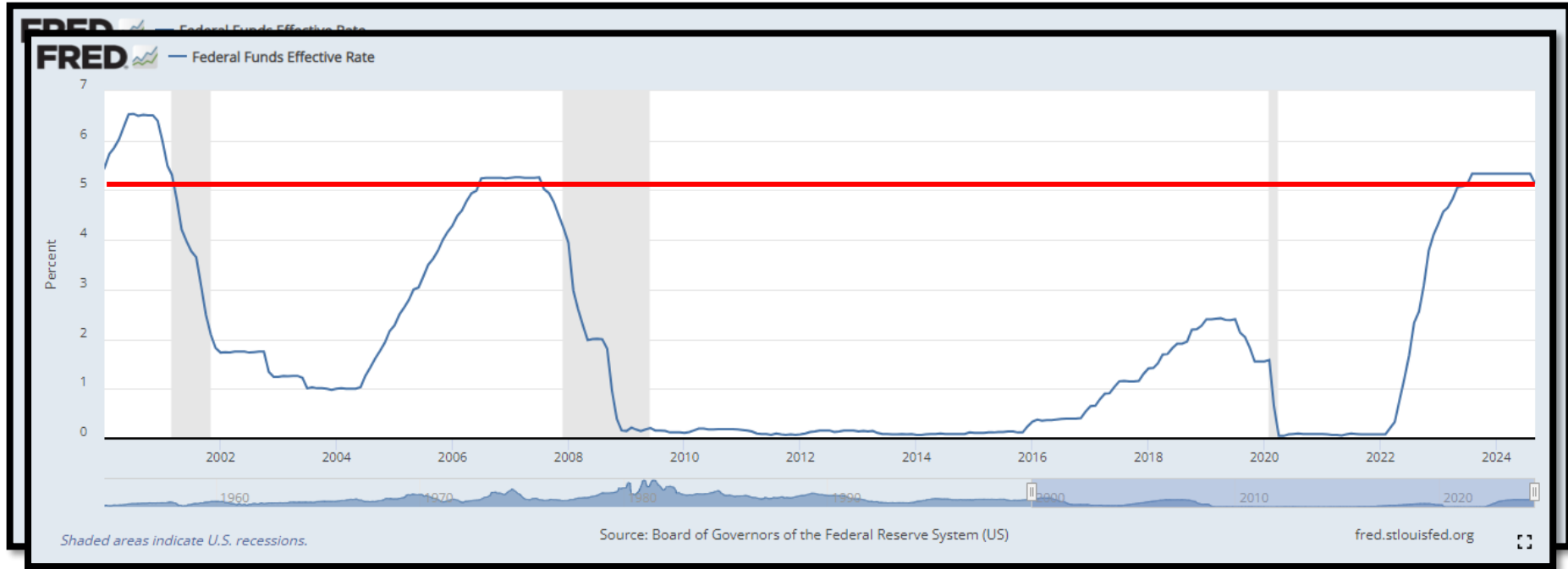
We Have Been Here Before vs. Not Been Here Before

- **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

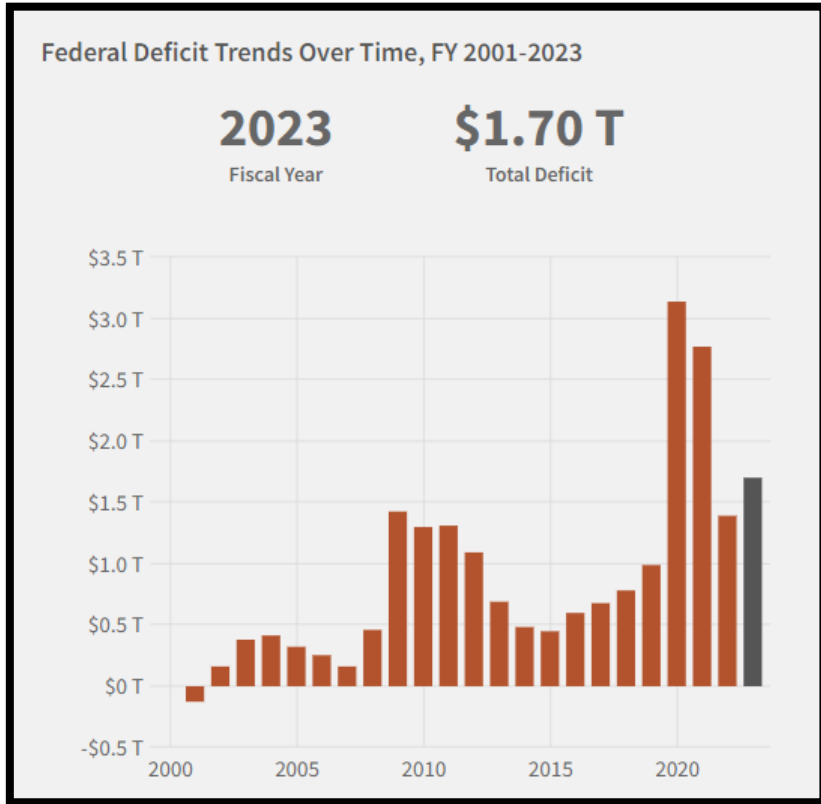


Fed Funds Rate – Been Here Before



US National Debt & Deficit

- **Not Been Here Before**



U.S. National Debt Over the Last 100 Years
Inflation Adjusted - 2024 Dollars

2024
Fiscal Year

\$35.46 T
Total Debt

Visit the [Historical Debt Outstanding](#) dataset to explore and download this data. The inflation data is sourced from the [Bureau of Labor Statistics](#).

Last Updated: September 30, 2024

US National Debt & Deficit

- Not Beer

U.S. National Debt Over the Last 100 Years



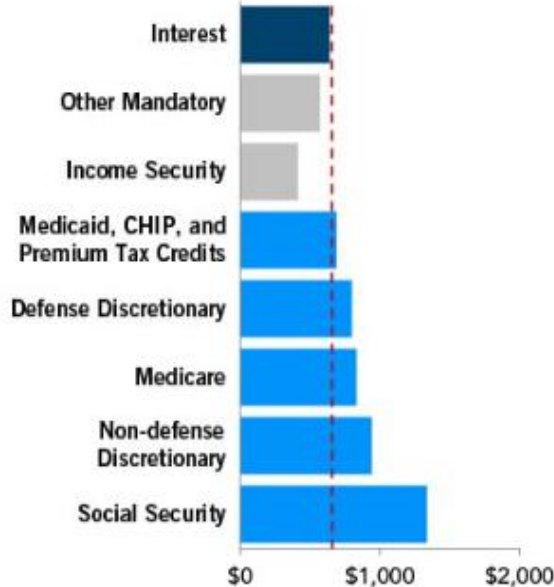
Spending on interest will exceed spending on a number of categories over the next decade

Federal Deficit Trends

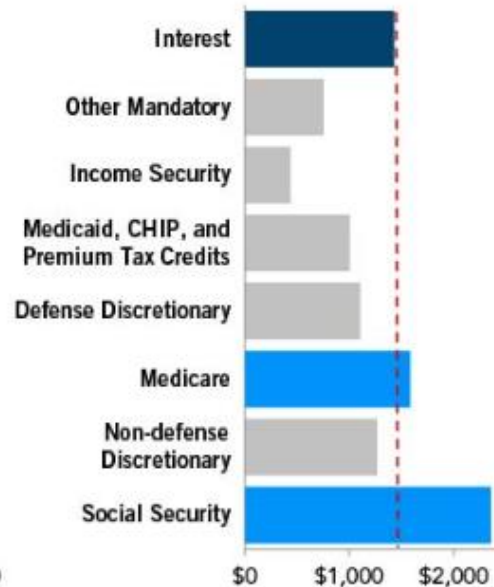
2022
Fiscal Year



FISCAL YEAR 2023 (BILLIONS OF DOLLARS)



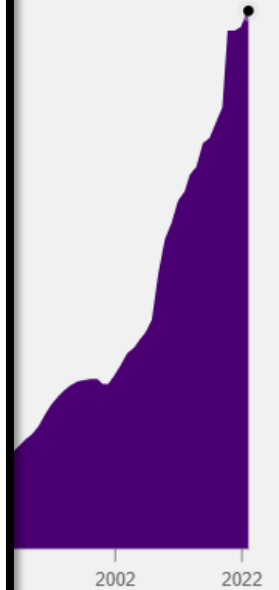
FISCAL YEAR 2033 (BILLIONS OF DOLLARS)



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

1.17 T
National Debt



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

Last Updated: September 30, 2023

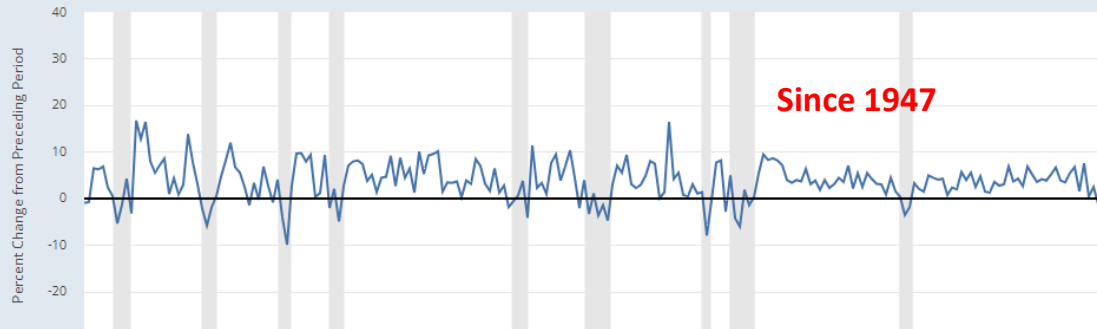
GDP Growth – Been Here Before

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.



FRED — Real Gross Domestic Product



FRED — Real Gross Domestic Product

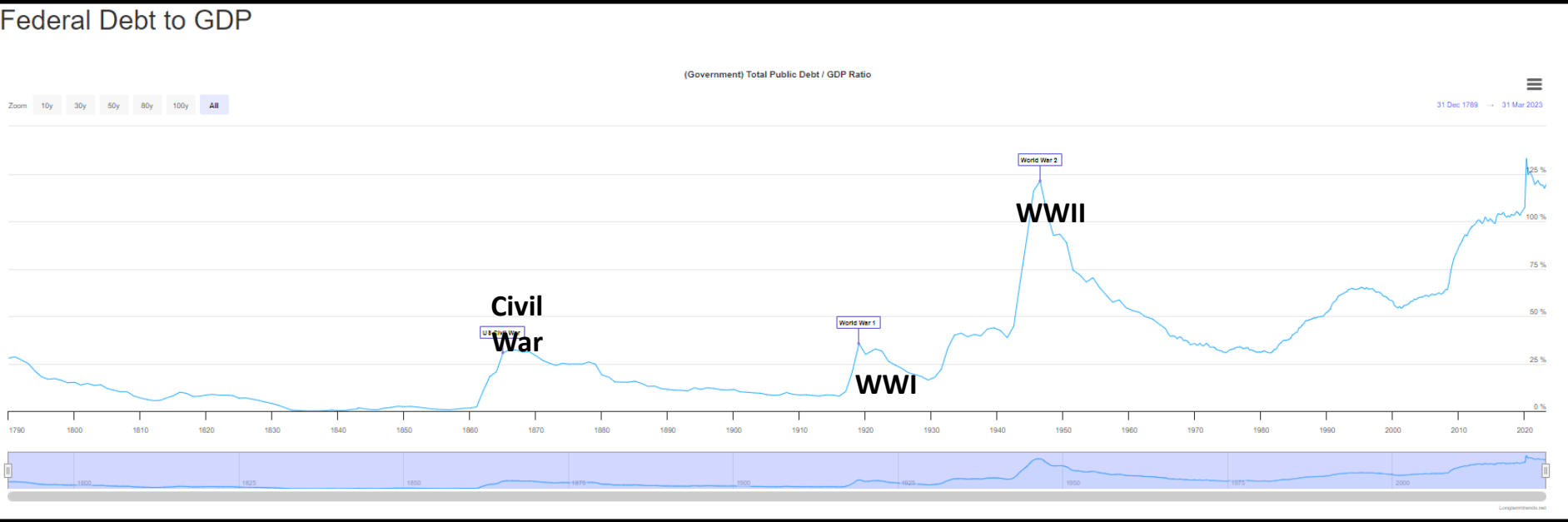


Shaded areas indicate U.S. recessions.

Source: U.S. Bureau of Economic Analysis

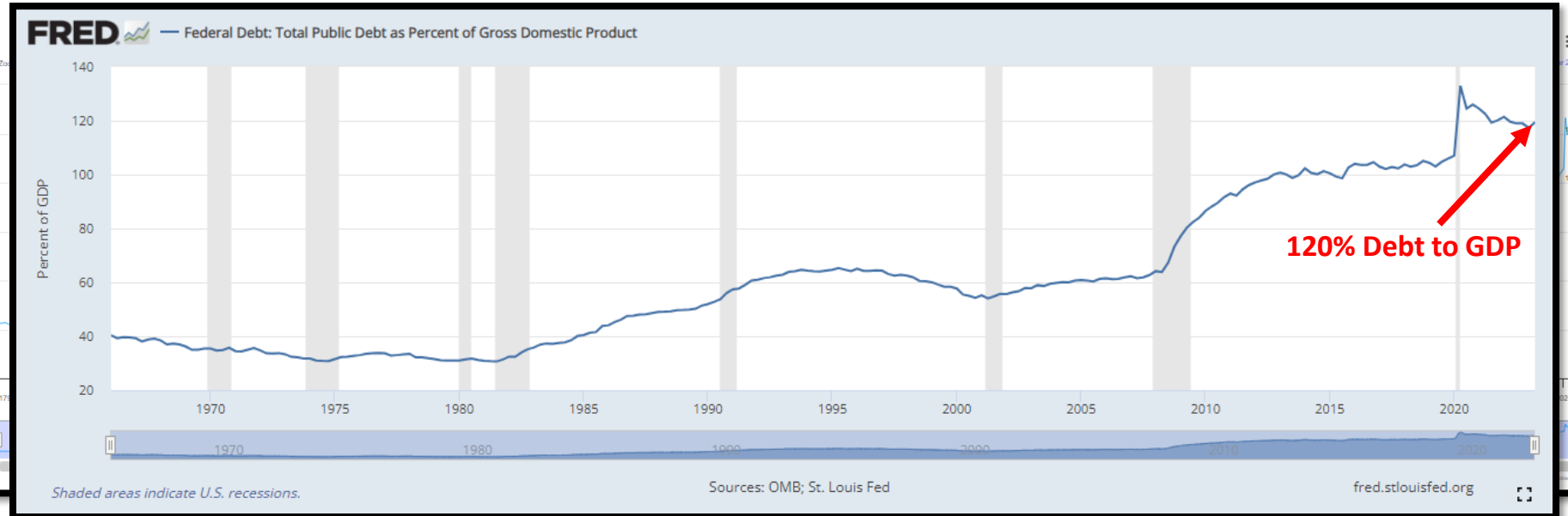
fred.stlouisfed.org

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

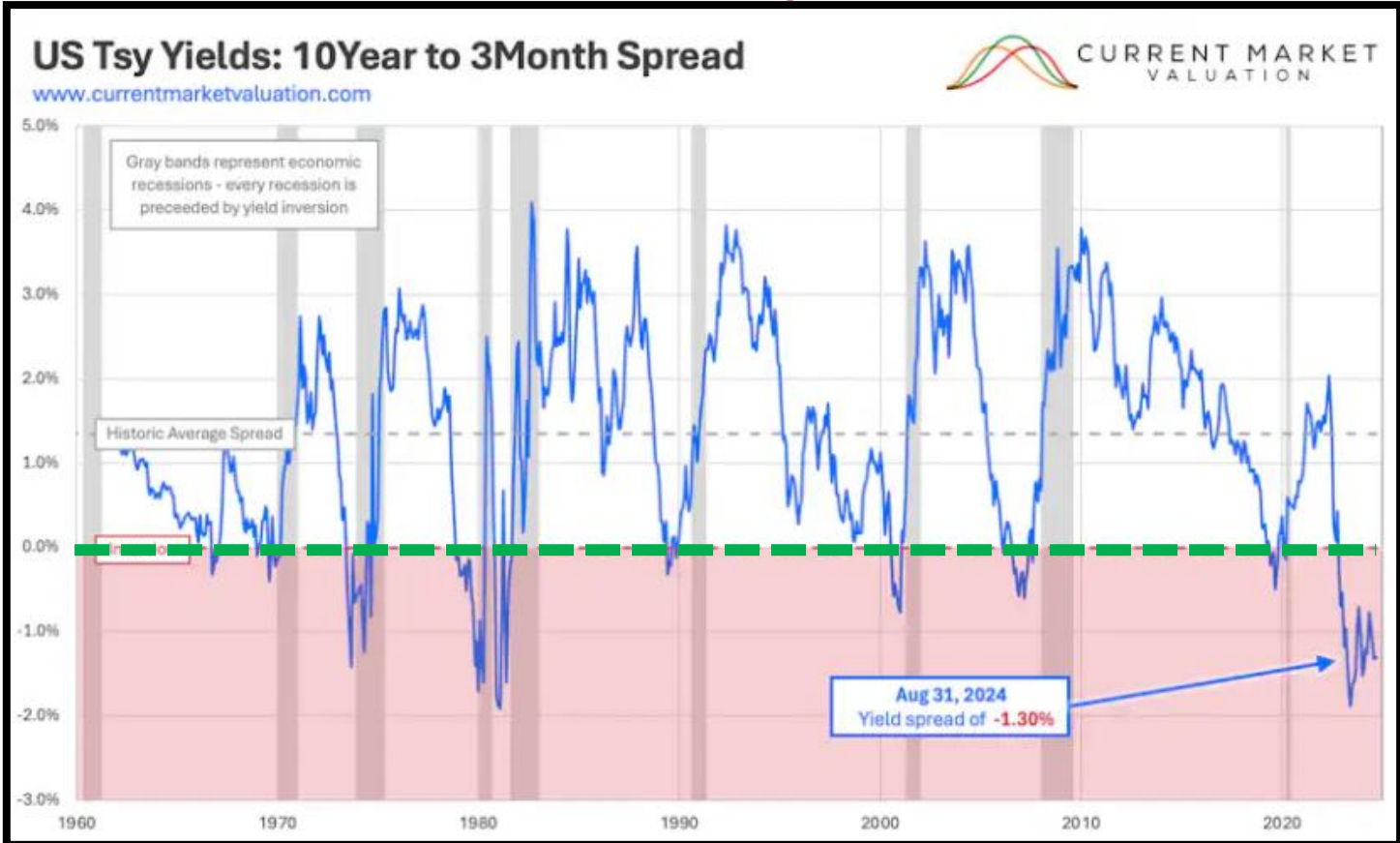
What is the national deficit?

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

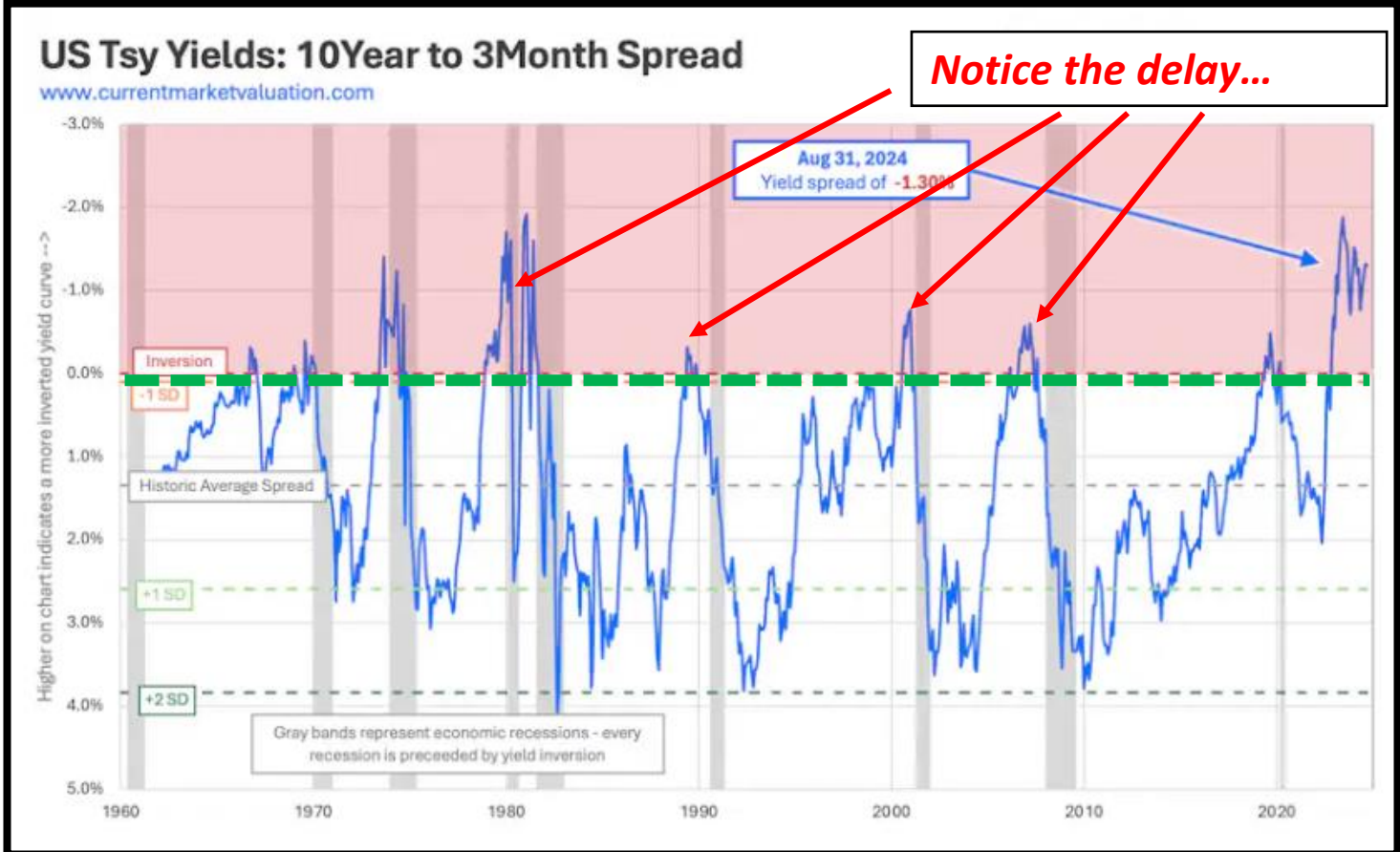
What Else....

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



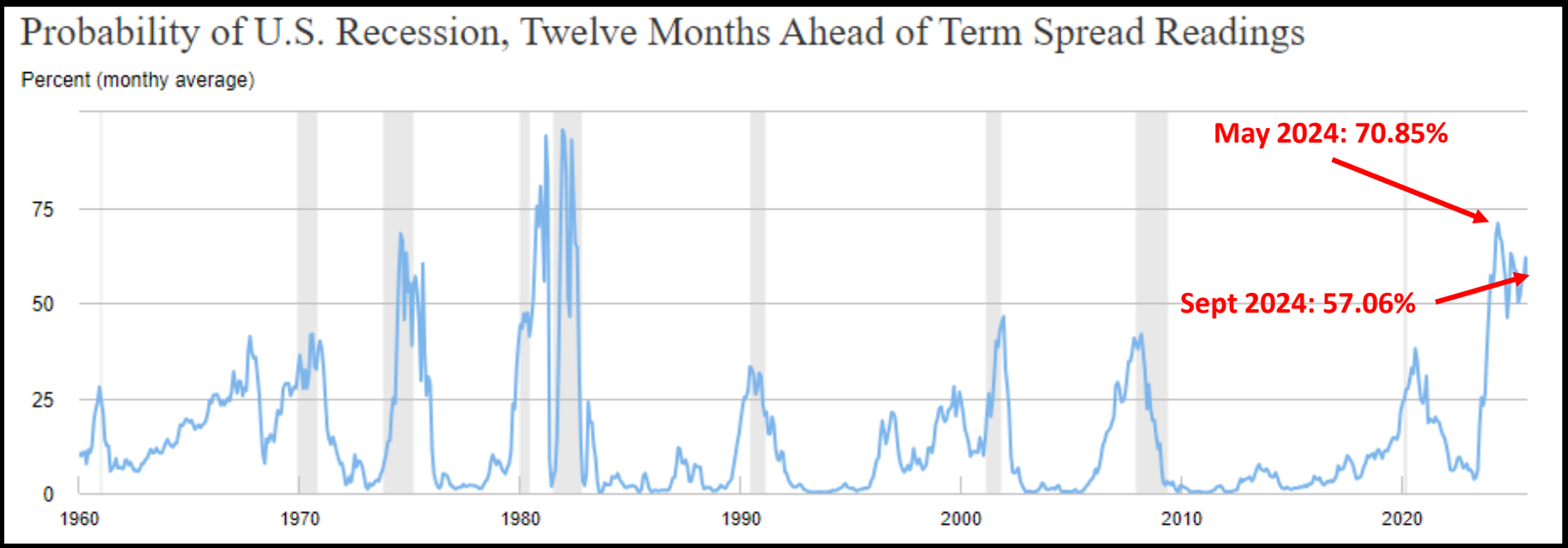
What Else....

- Yield Curve...



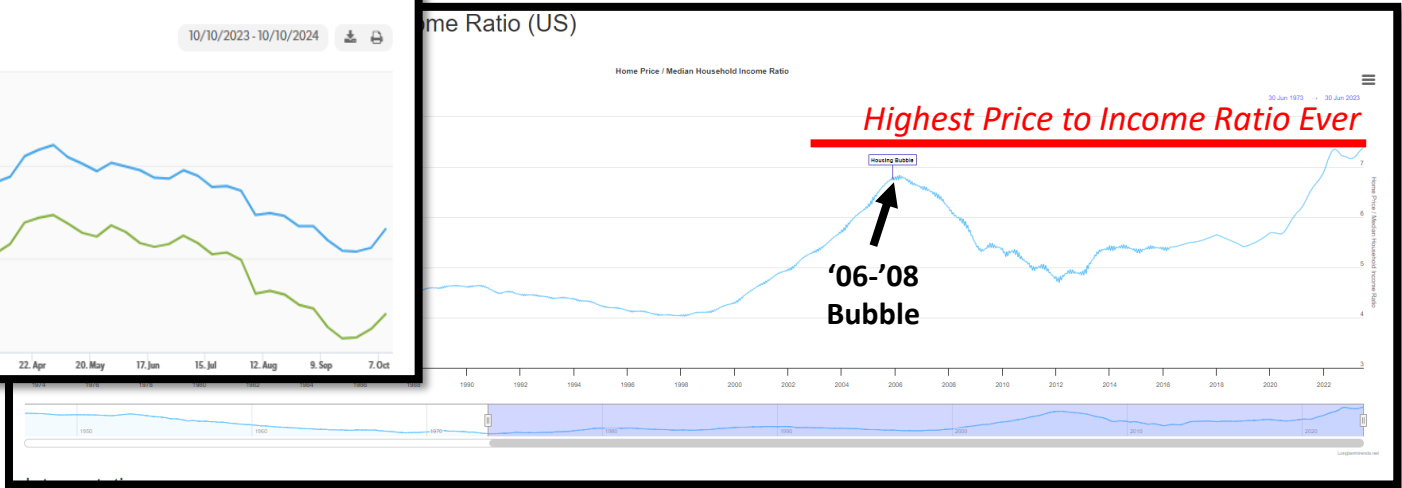
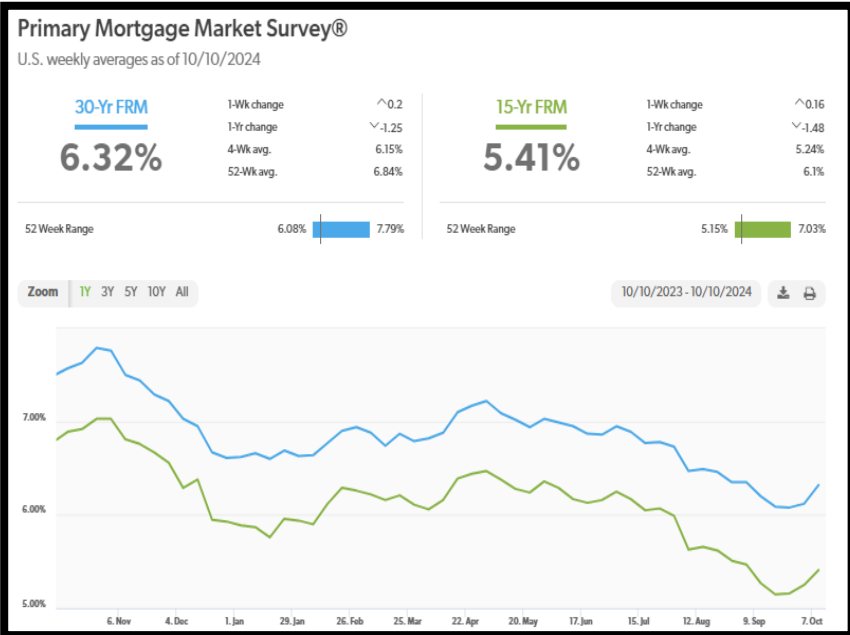
Fed uses Yield Curve to put Odds on a Recession

- Been Here Before



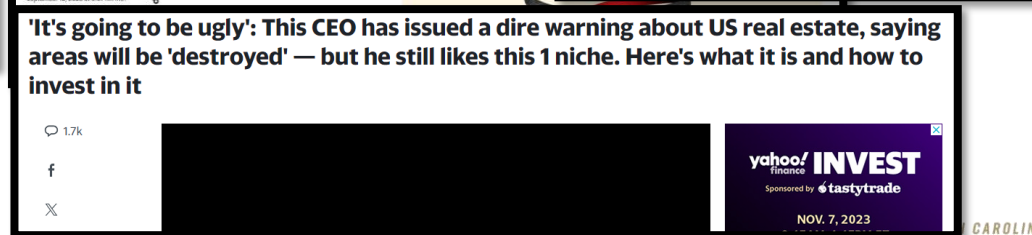
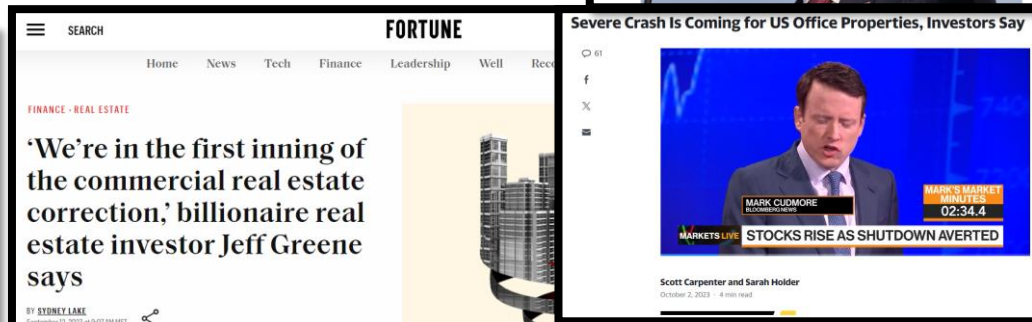
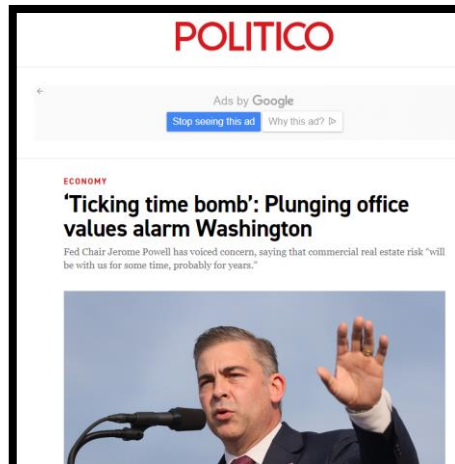
Residential Real Estate Been Here Before? - **Yes & No**

- 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)**

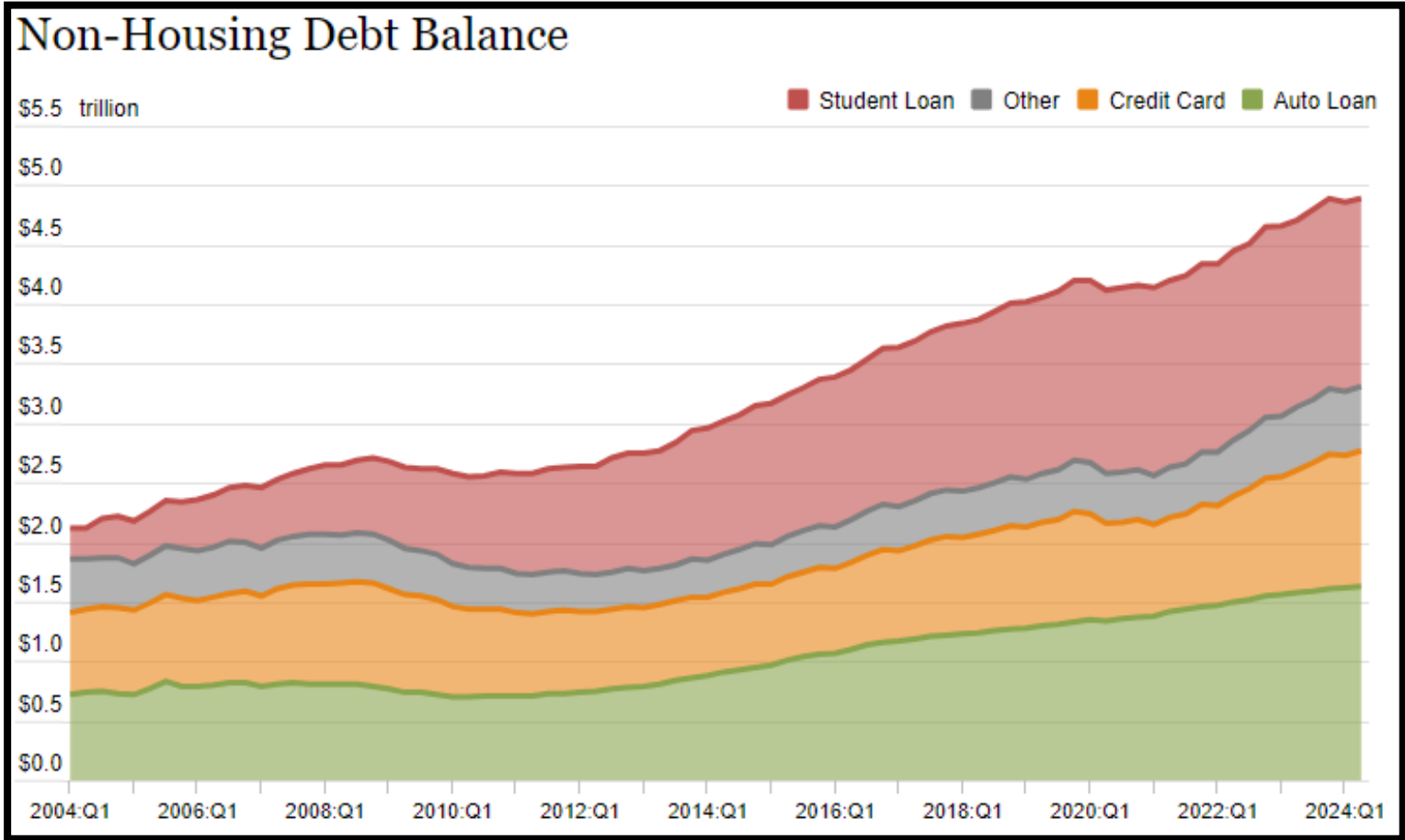


Commercial Real Estate – Not Been Here Before (Post Covid)

- 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

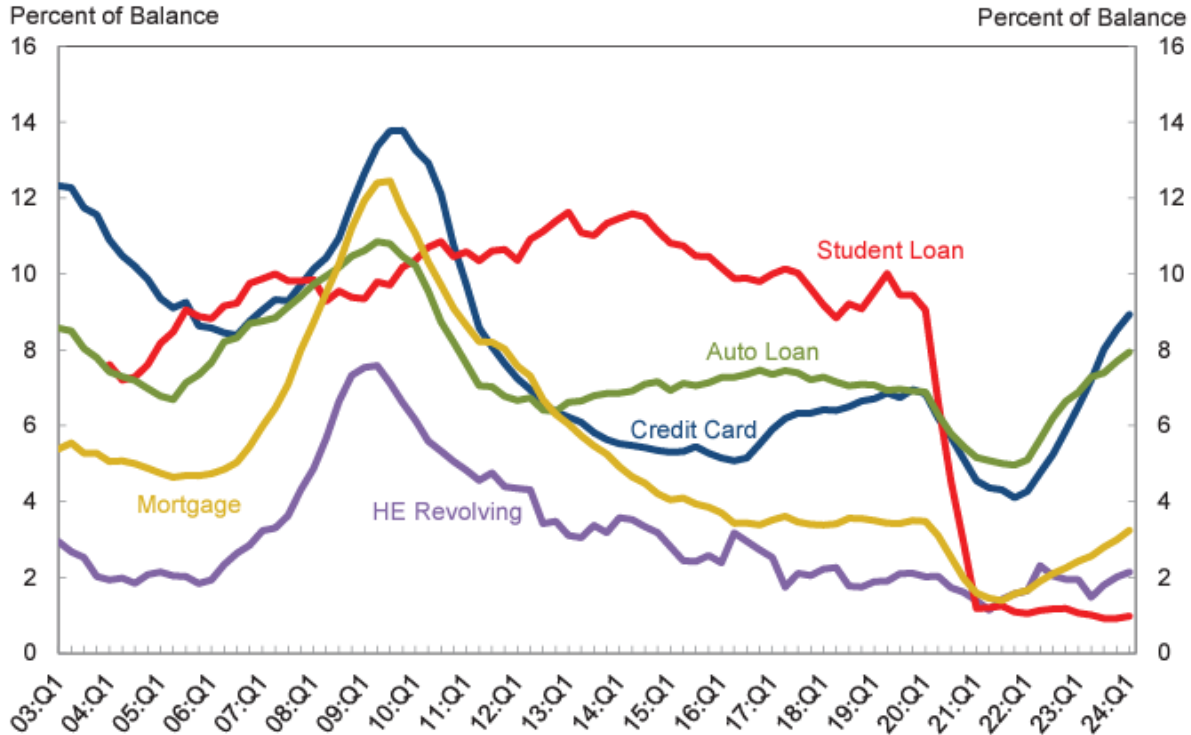


Non-Housing Debt Balance (FRBNY) – Not Before



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**

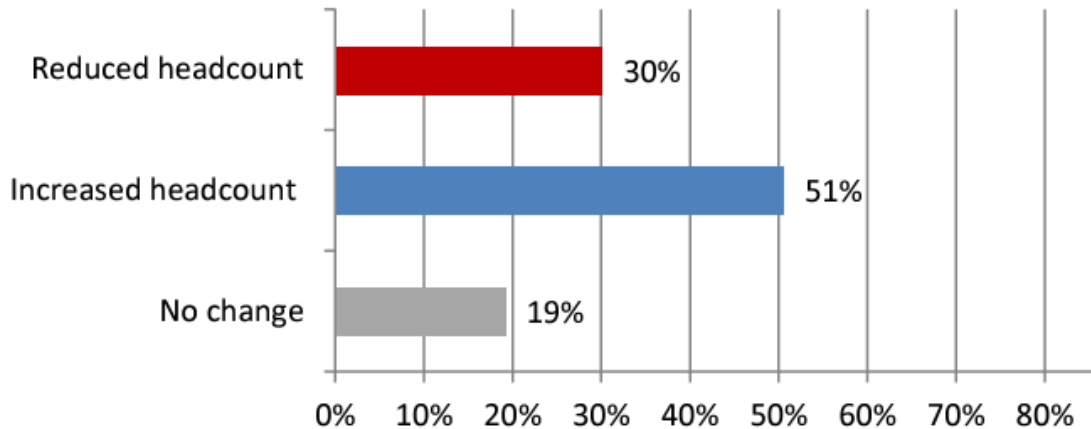
Workforce Shortages

- **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**

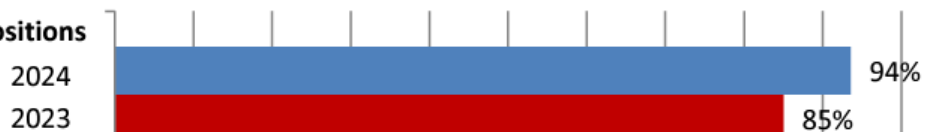
By what percentage has your firm's headcount changed in the past 12 months? Responses: 1,492



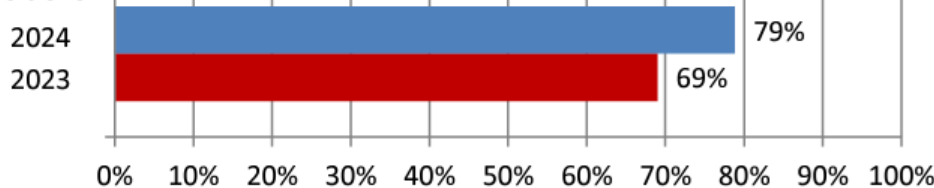
Do you currently have an open hourly craft or salaried position? Responses:

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

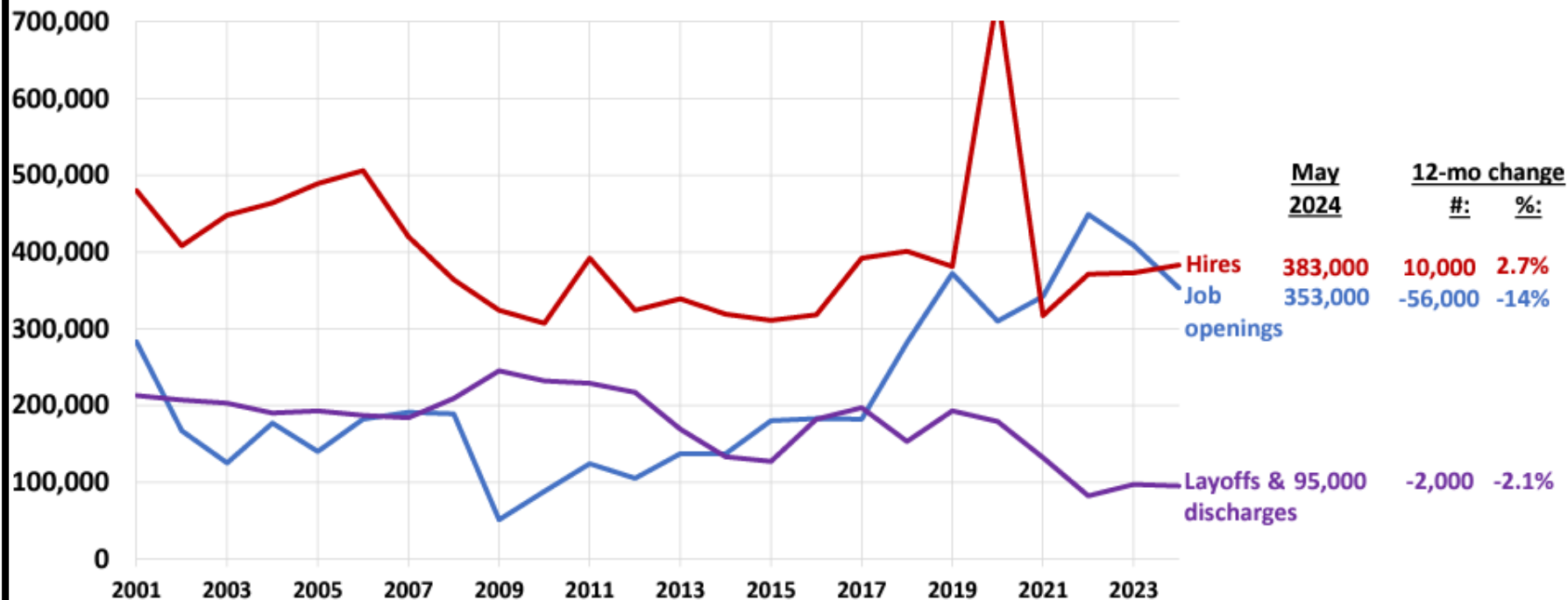


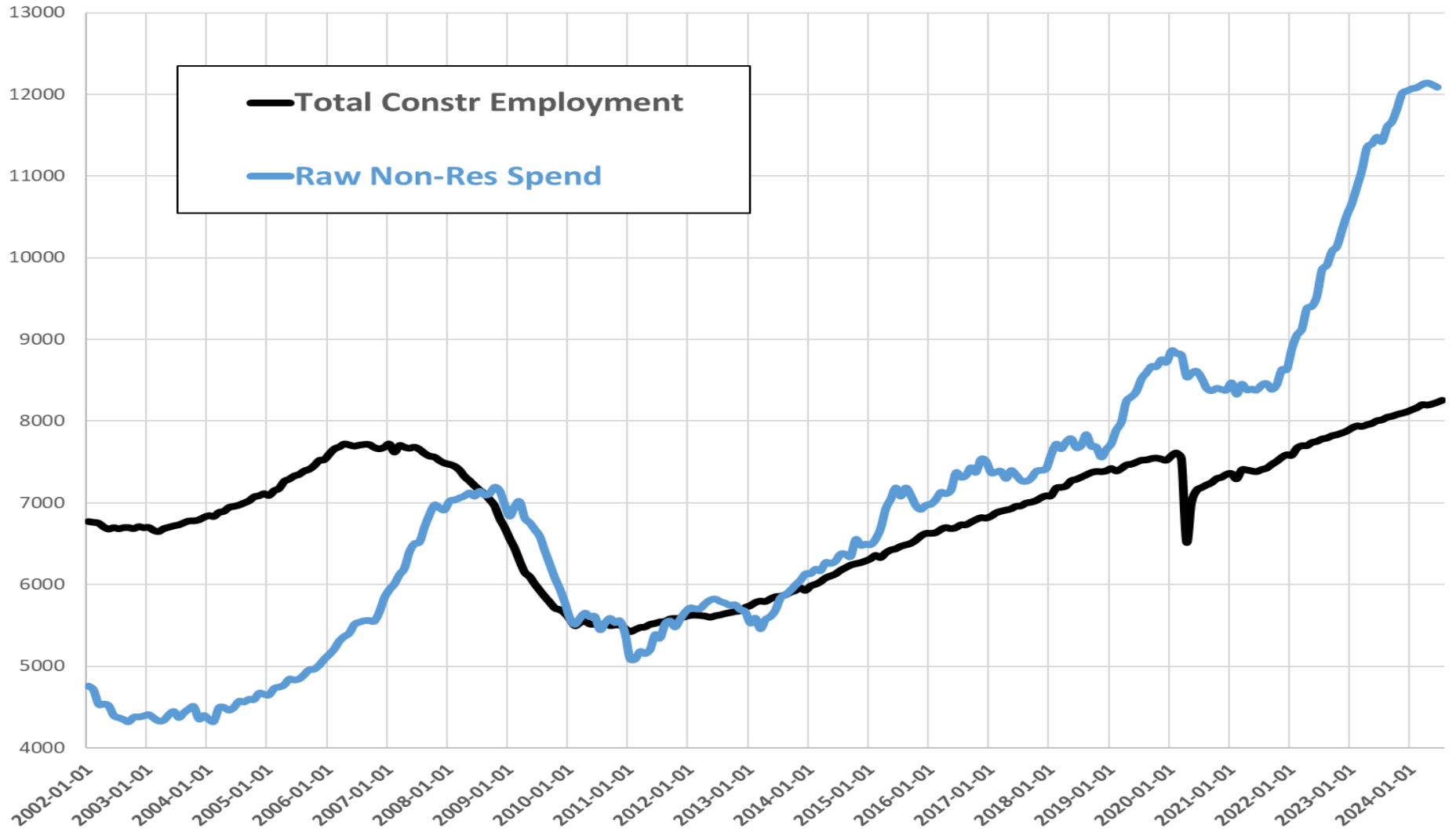
Construction job openings, hires & layoffs

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)

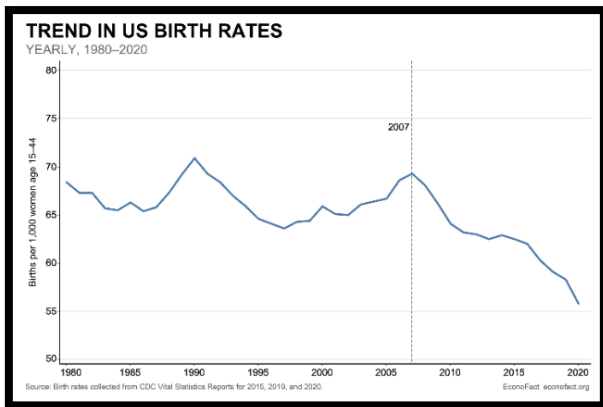
Workforce Challenges

*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

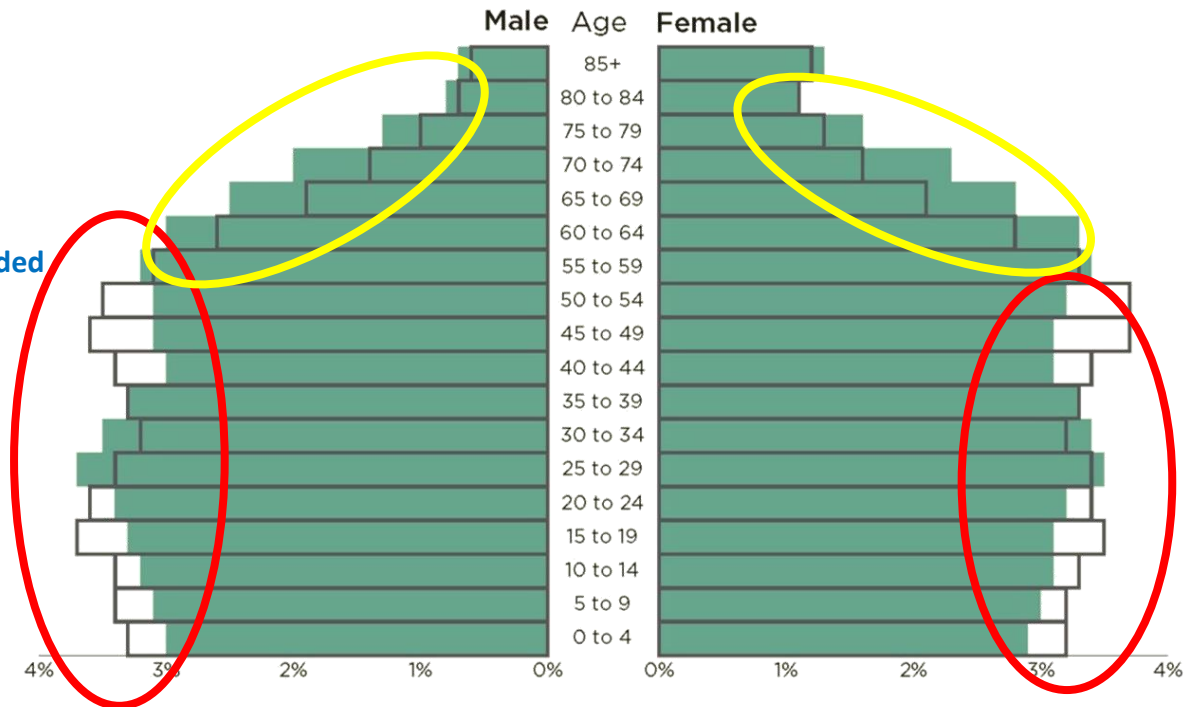
(was 31% higher in 1990)

(was 102% higher in 1950)

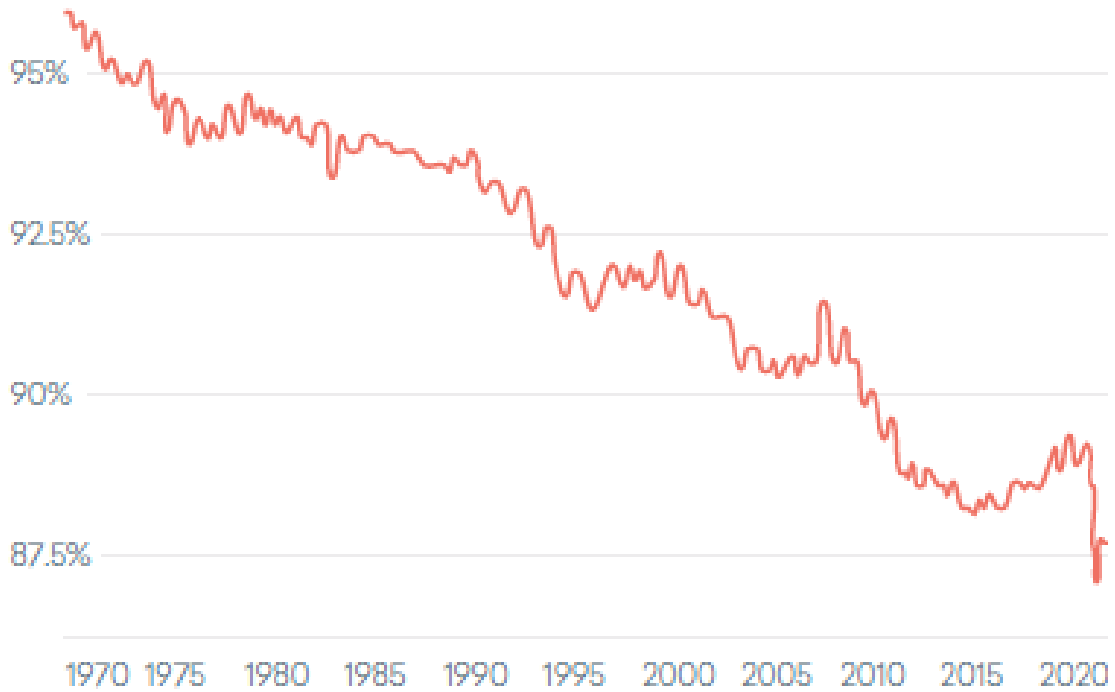


Percent of Total Population in 2010 and 2019

□ 2010 ■ 2019

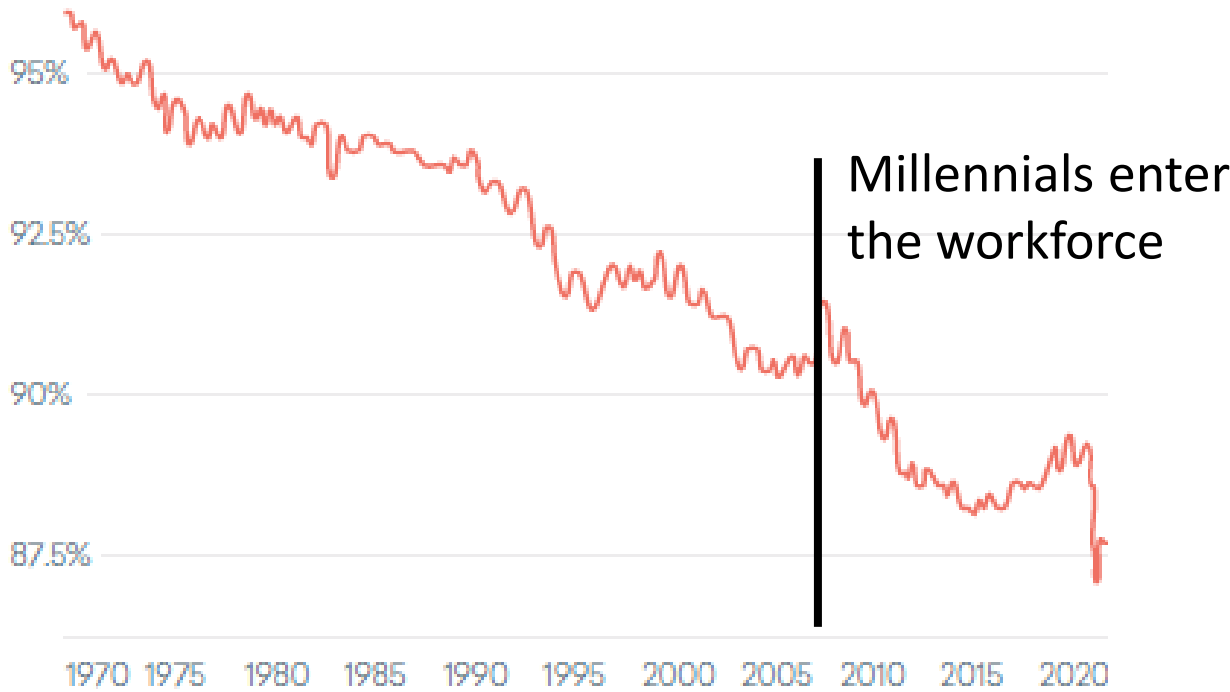


Workforce Challenges – Prime Age (25-54) Male Workforce Participation



Source: BLS Current Population Survey.

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

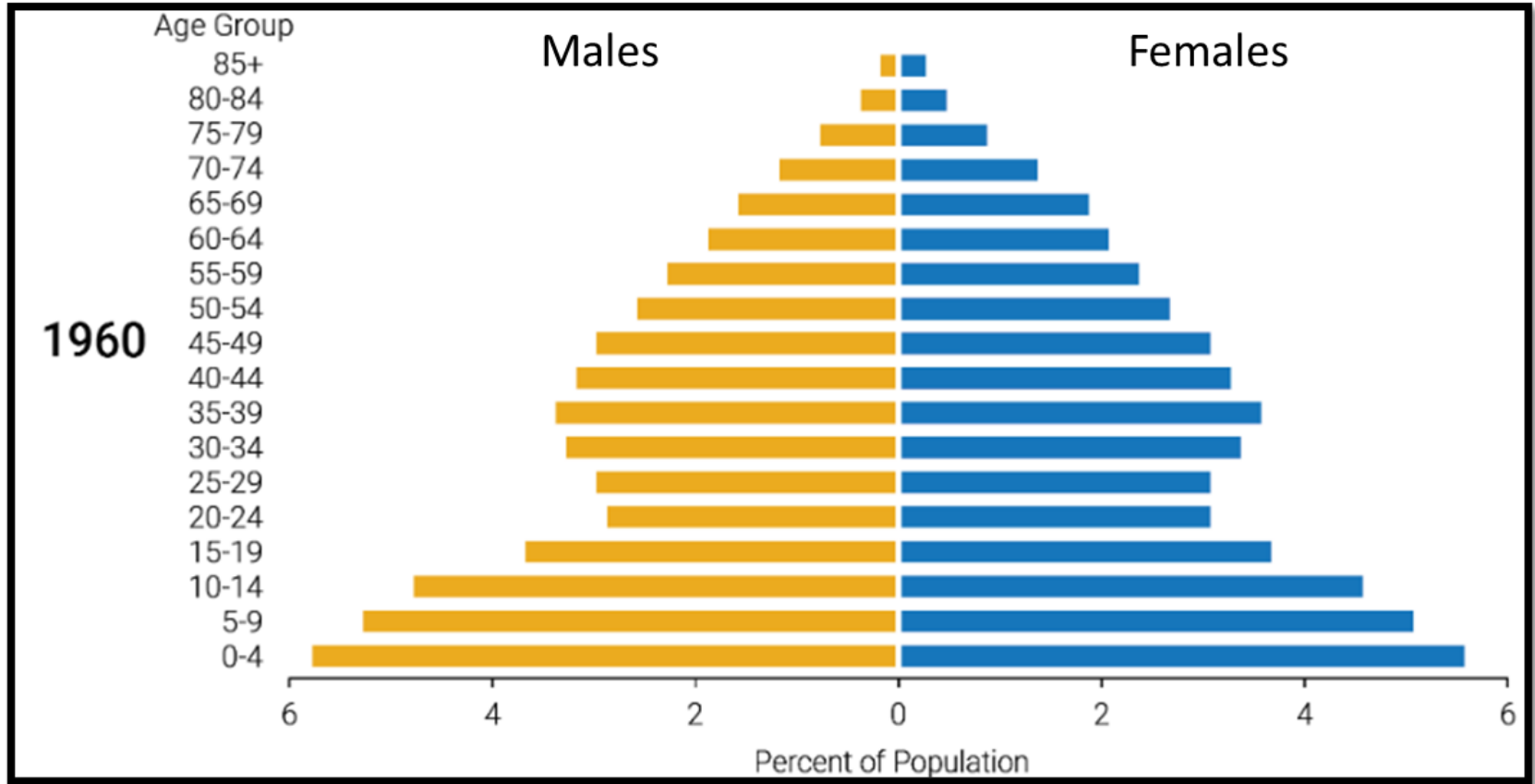


Source: BLS Current Population Survey.

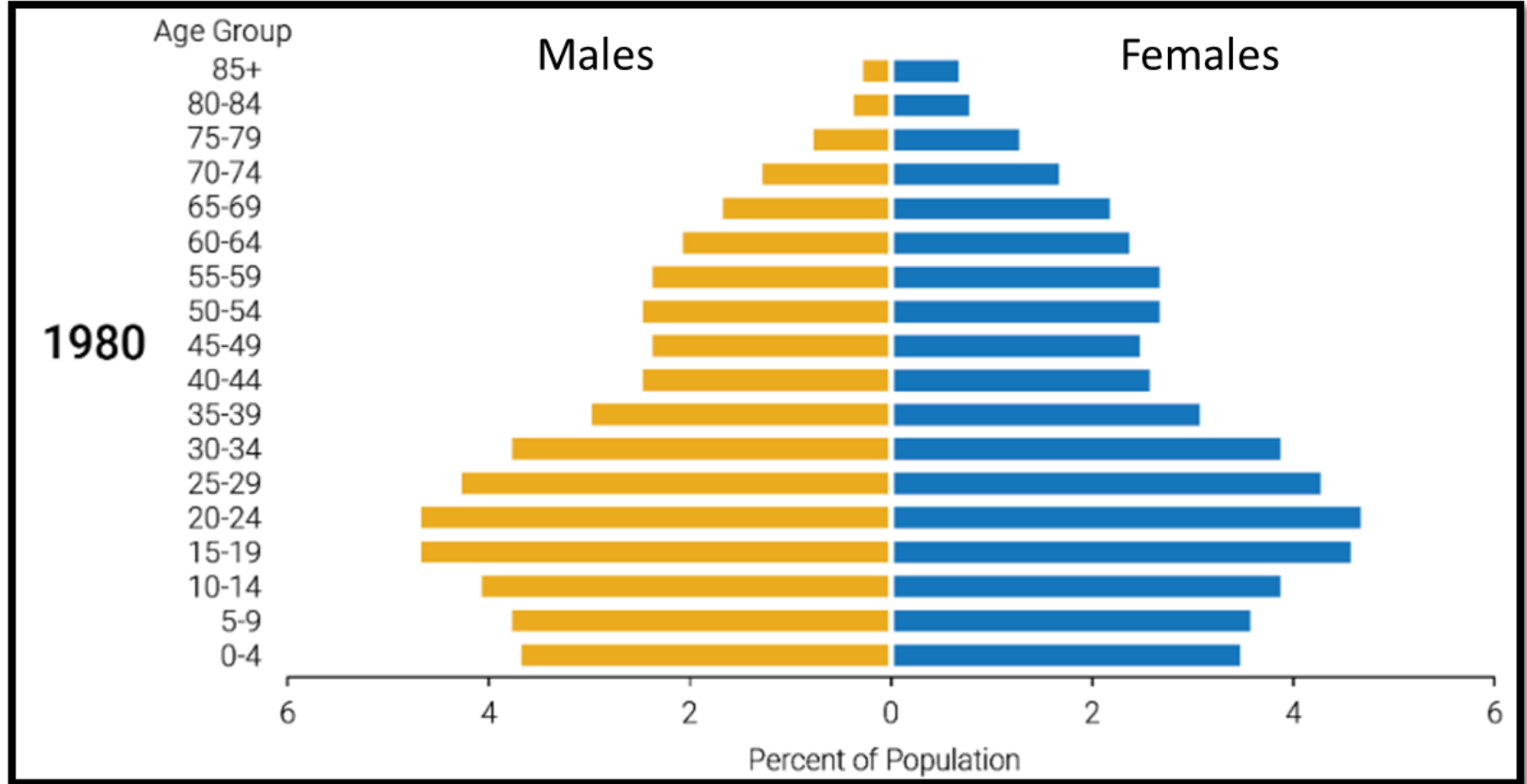
Workforce Challenges

- 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

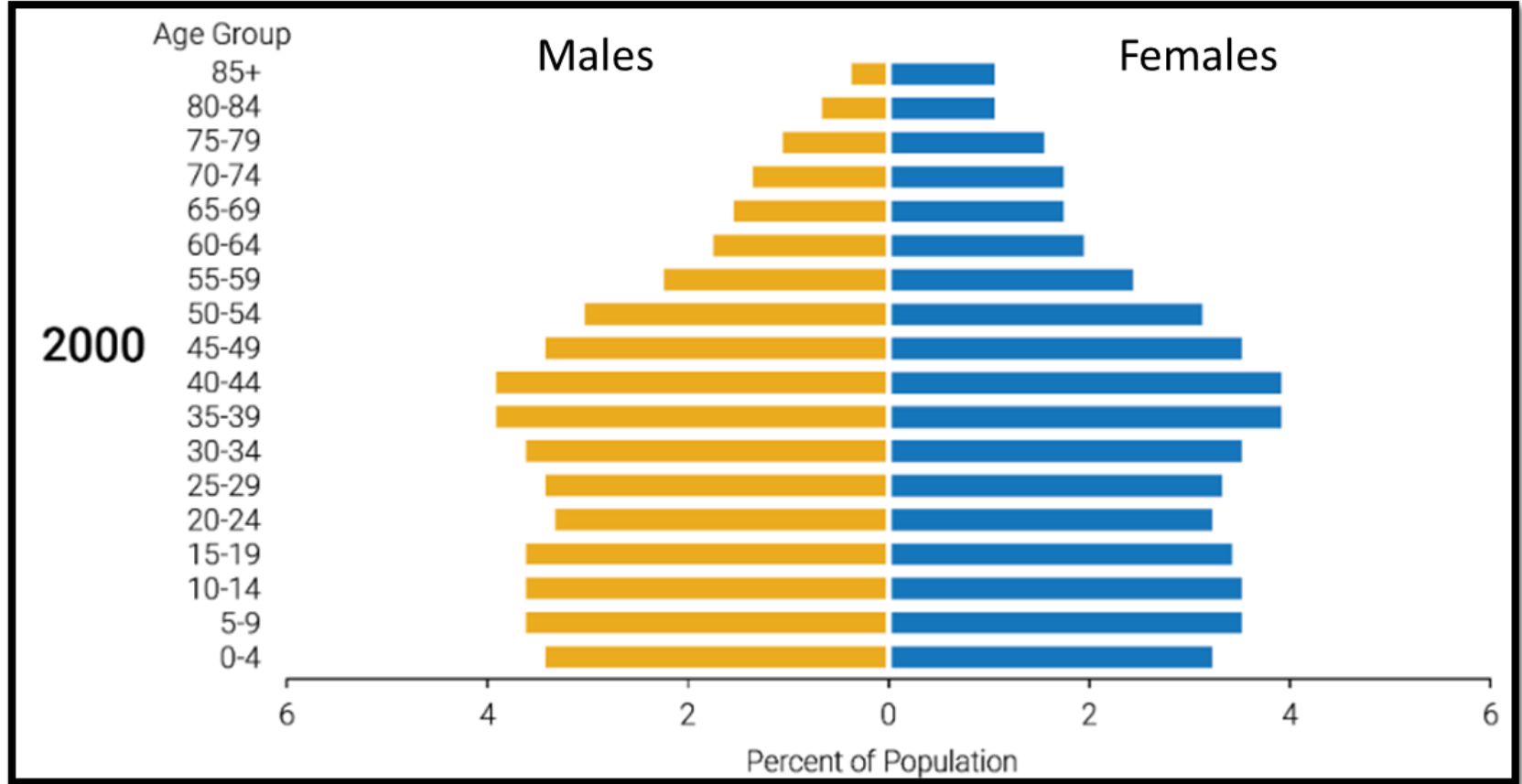
US Population Histogram



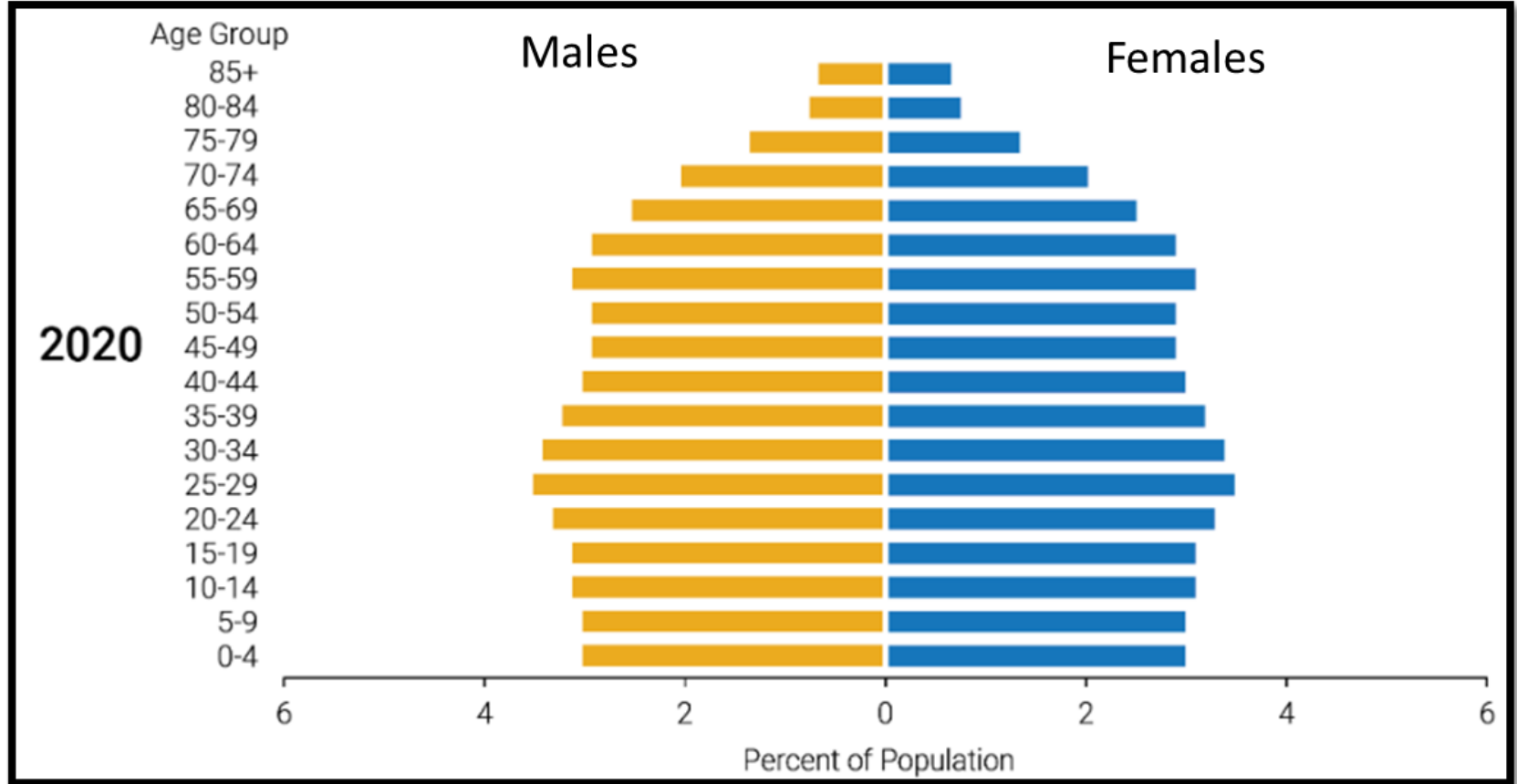
US Population Histogram



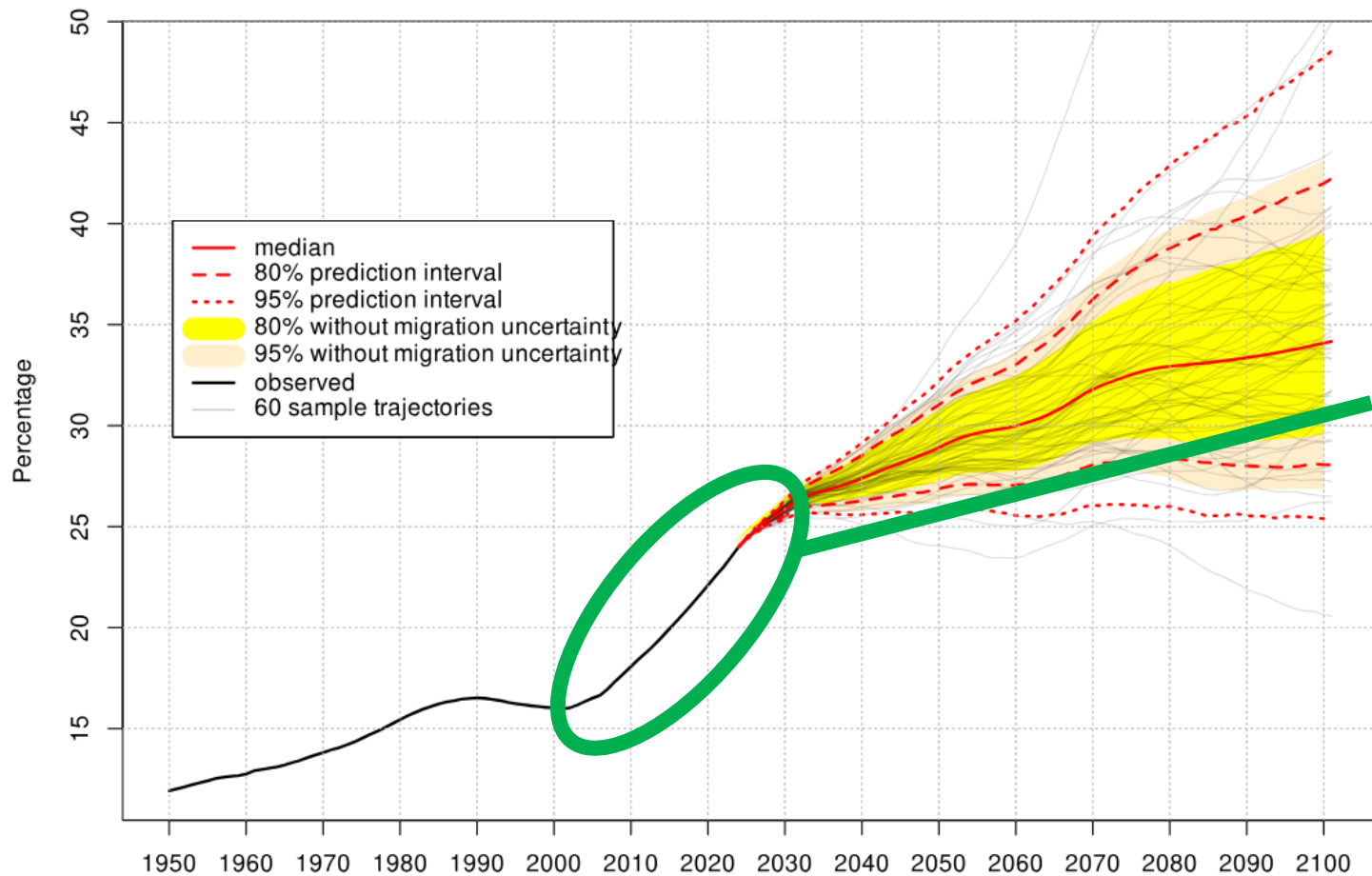
US Population Histogram



US Population Histogram



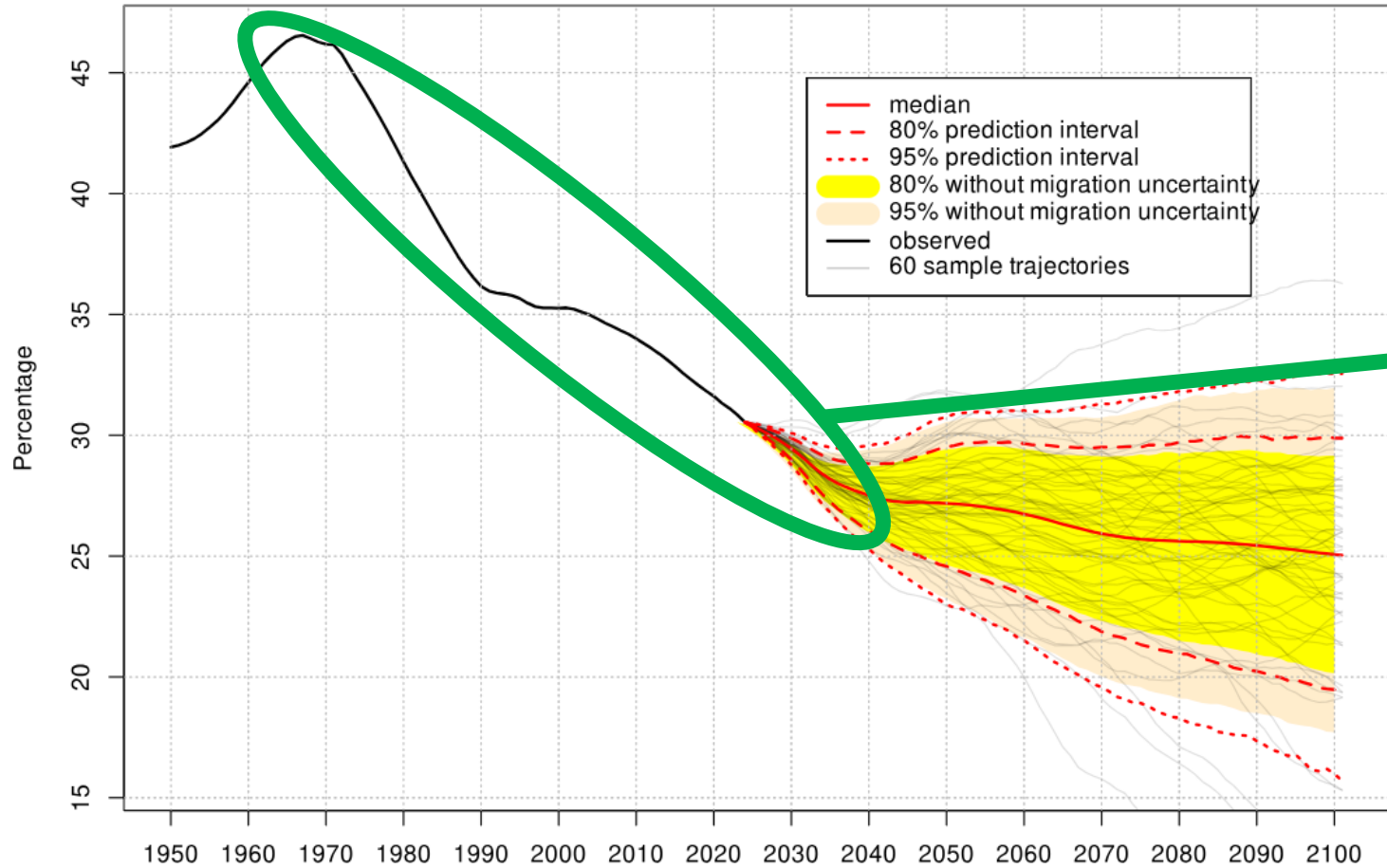
United States of America: Percentage of population aged 60 years or over



Near Exits

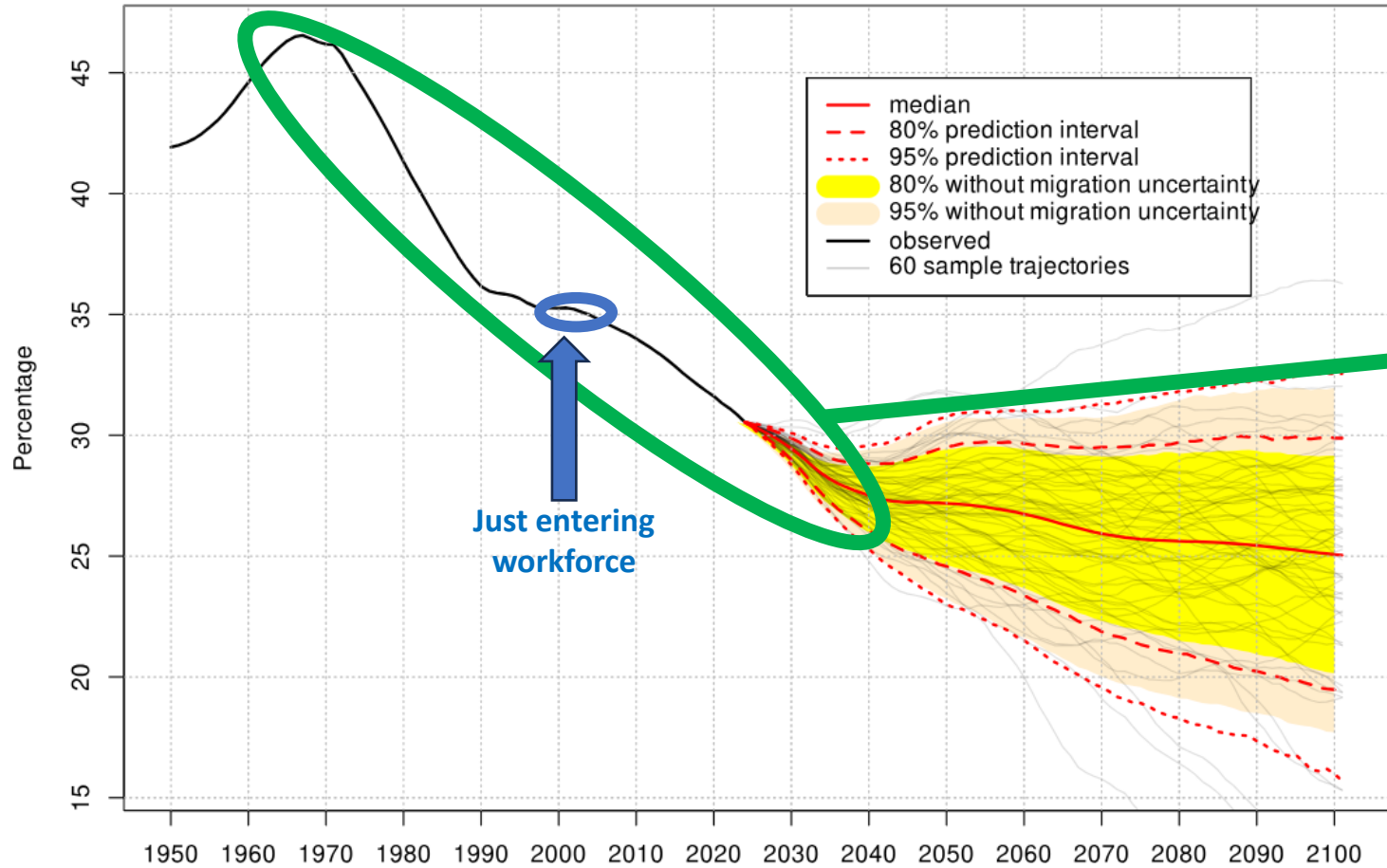
*-60+ yr olds as a % of population has grown 50%
-Doesn't level off to mid-2030s*

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

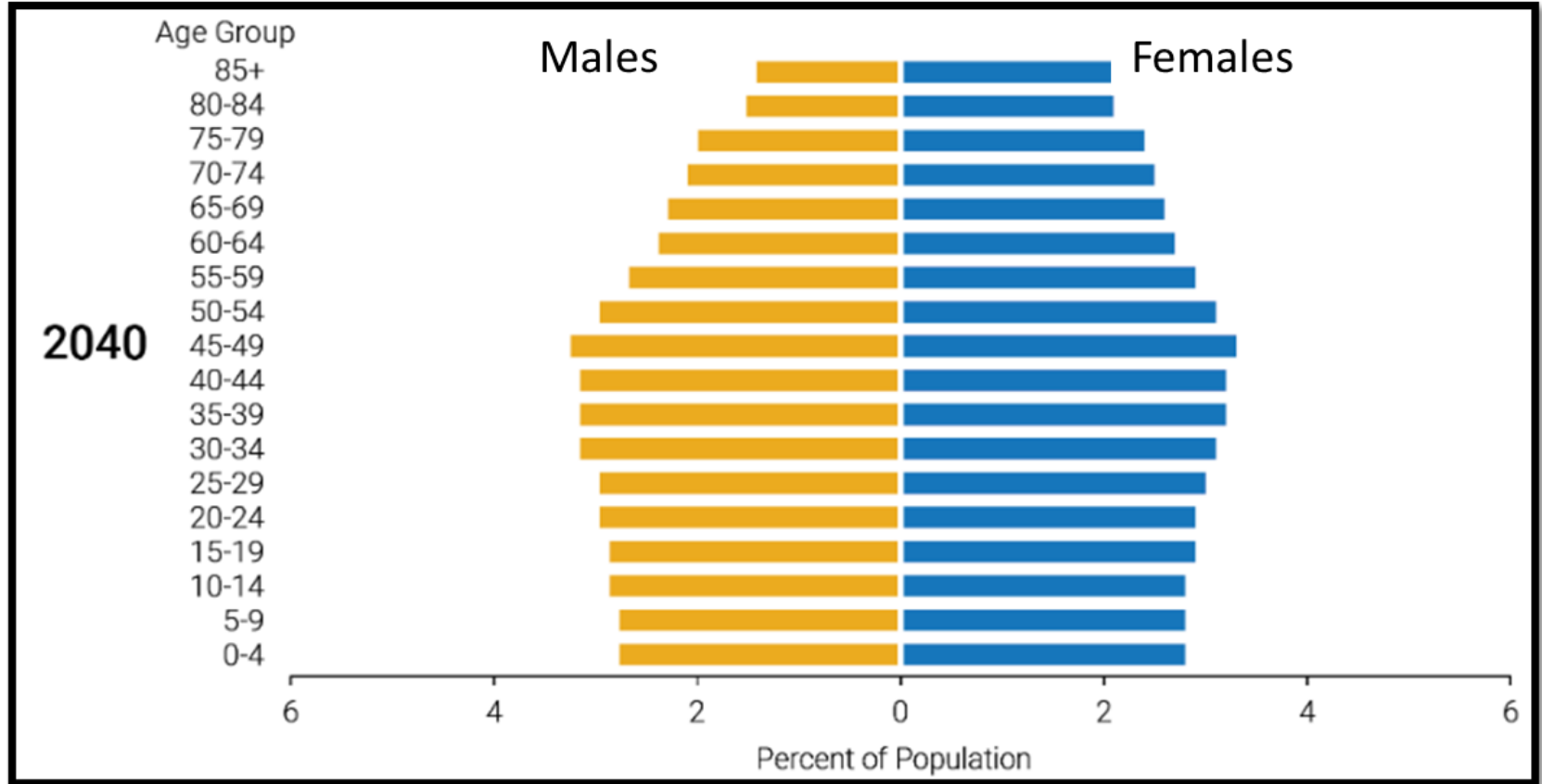
United States of America: Percentage of population under 25 years of age



Just entering
workforce

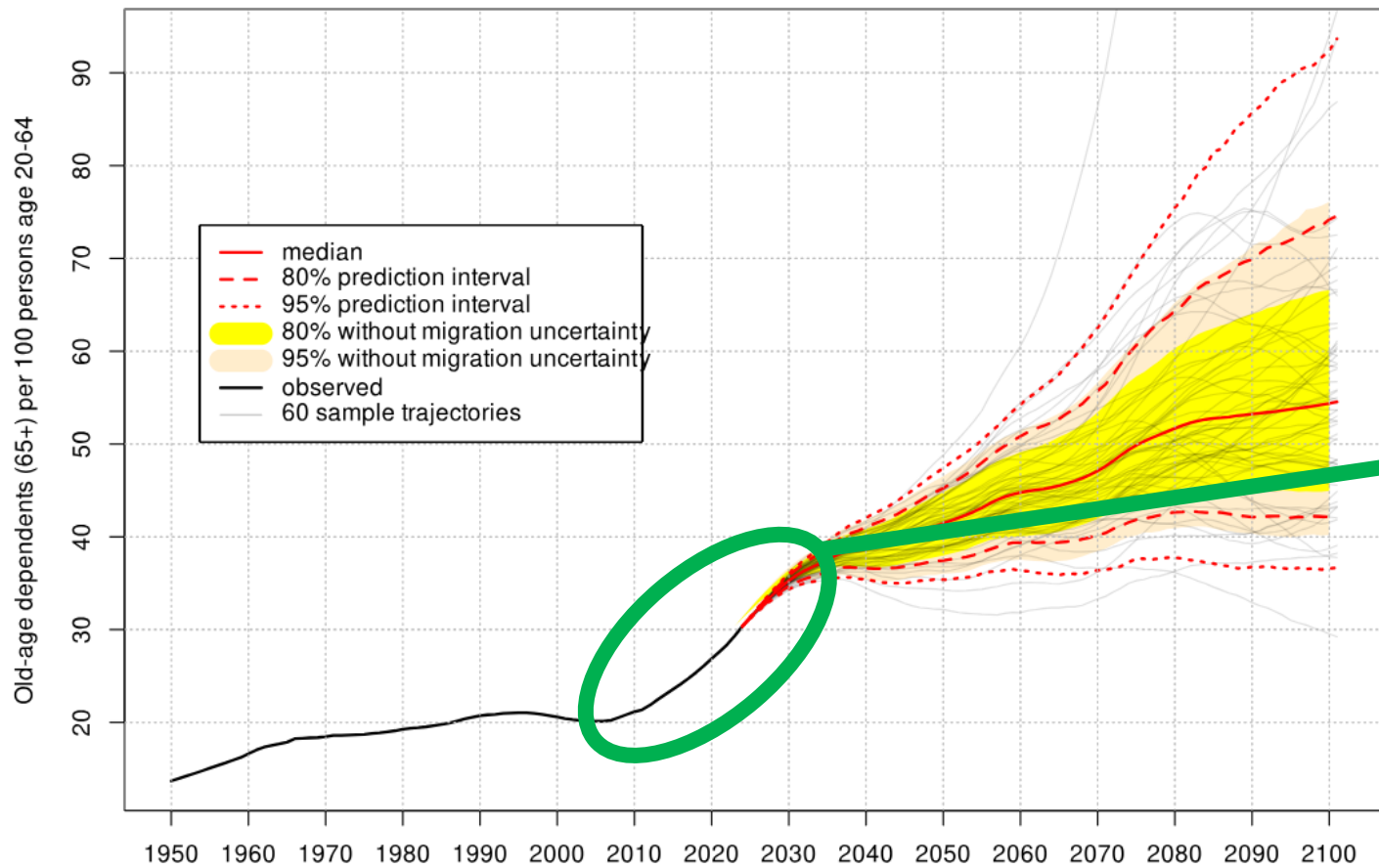
**No More Senior
Discounts**
*Massive decrease
in future
workforce as a %
of population*

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 $p < 0.05$

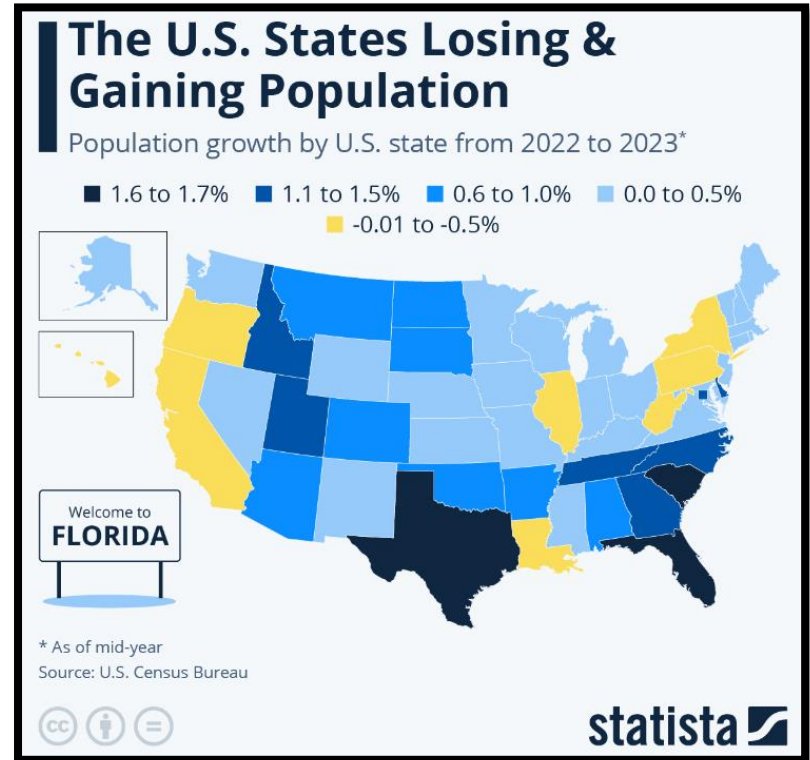
Client/Buyers Experiences:

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....

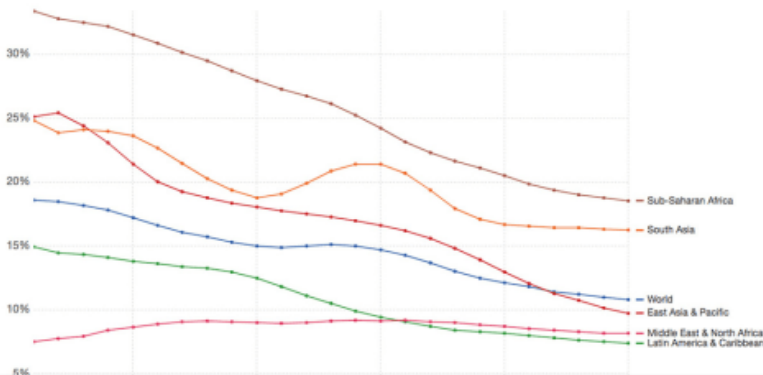
So.....

- 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

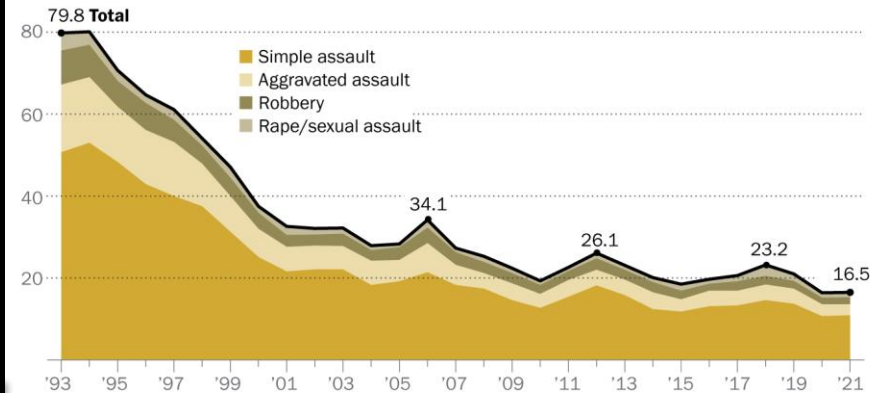


Share of the population that is undernourished

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.

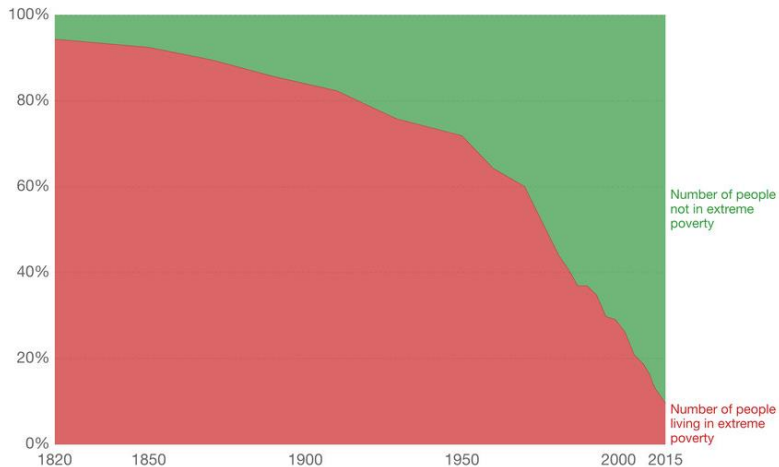


Violent victimizations per 1,000 Americans ages 12 and older



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).

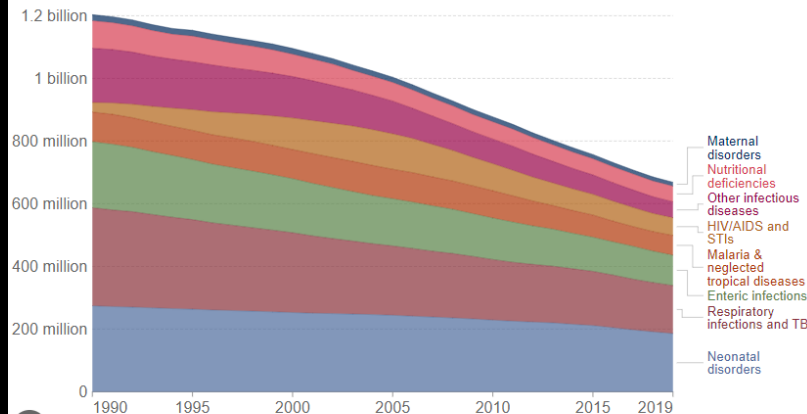


Source: OWID based on World Bank (2016) and Bourguignon and Morrisson (2002) [OurWorldInData.org/extreme-poverty/](https://ourworldindata.org/extreme-poverty/) · CC BY-SA

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](https://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

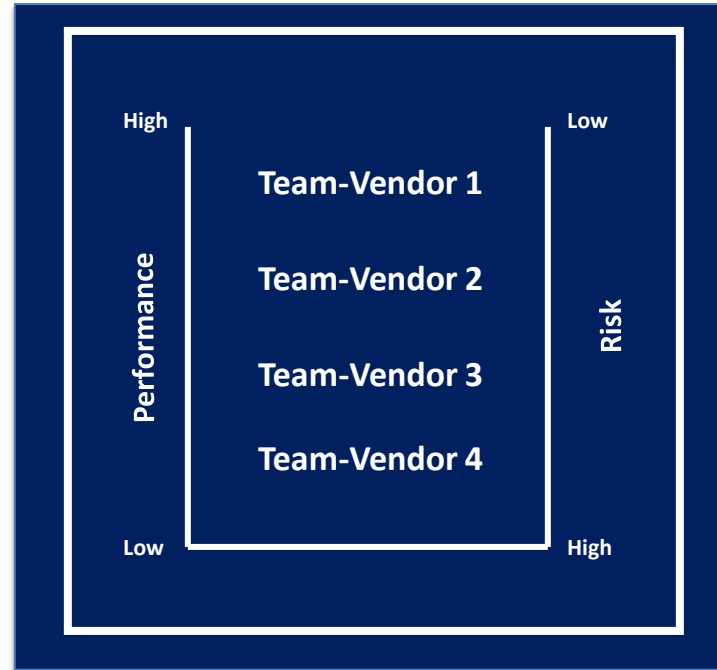
KEY TAKEAWAY

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

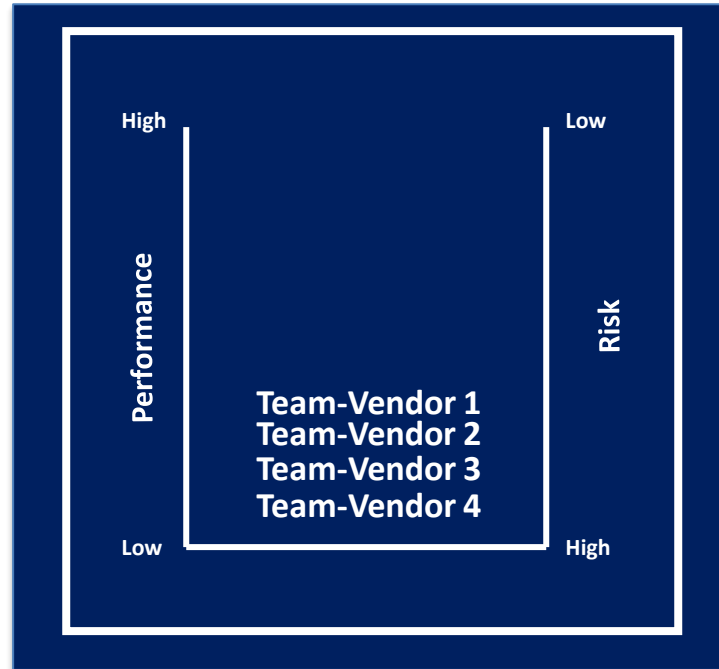
Not Enough

- 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

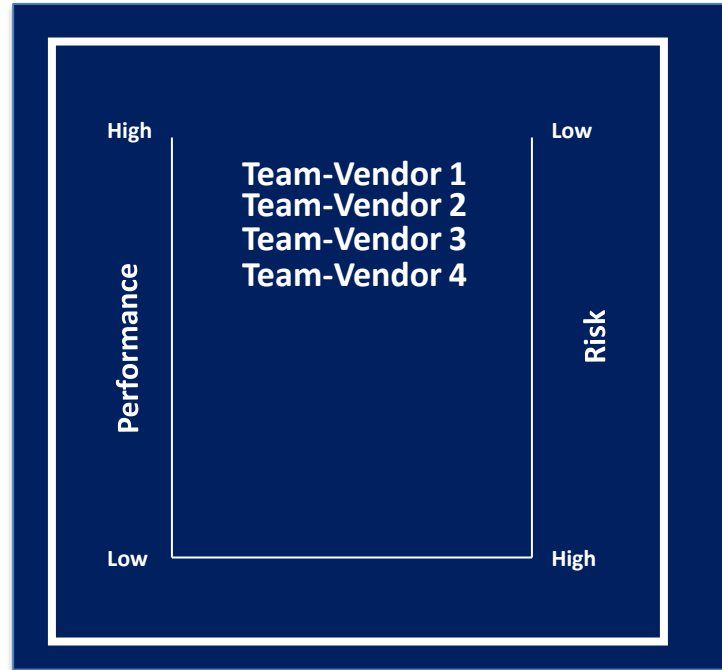
Which of these teams brings your project the most risk?



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

...nt 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

Follow

Oct 14, 2023, 11:20am EDT

Guardian

...m with \$5 per month

The Guardian

...nion 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



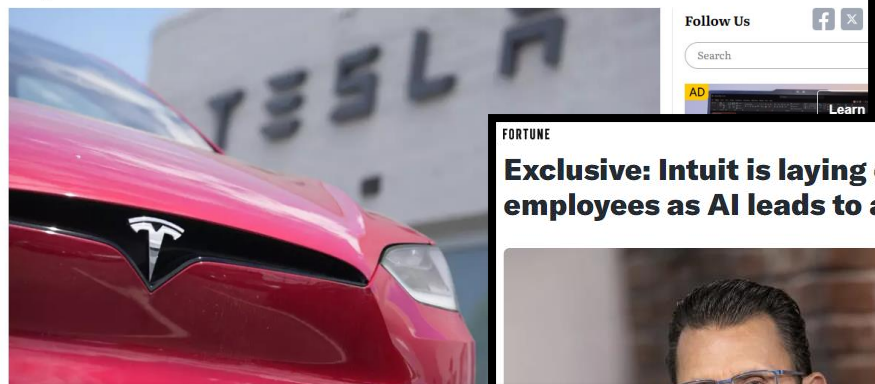
Next >

ons



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

Tesla posts new AI, robotics jobs after record layoffs



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

FORTUNE

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

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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 **Isaiah O'Sullivan** Updated on **March 12, 2024**



- Most Recent**
- The iPhone iOS 18 Features You Should Be Most Excited About
Adam Marshall - 17 mins ago
 - How to Recover Lost iPhone and iPad Photos on iOS 18/iPadOS 18
Adam Marshall - 5 hours ago
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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

TRW Why Trust Us



Reuters

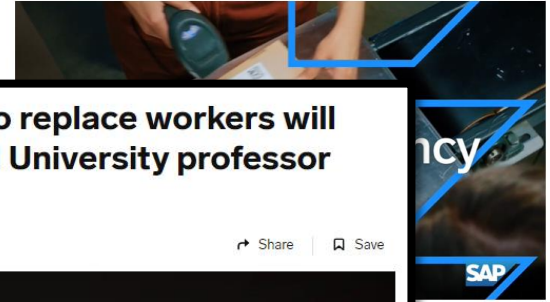
World Business Markets Sustainability Legat Breakingviews Technology Investigation

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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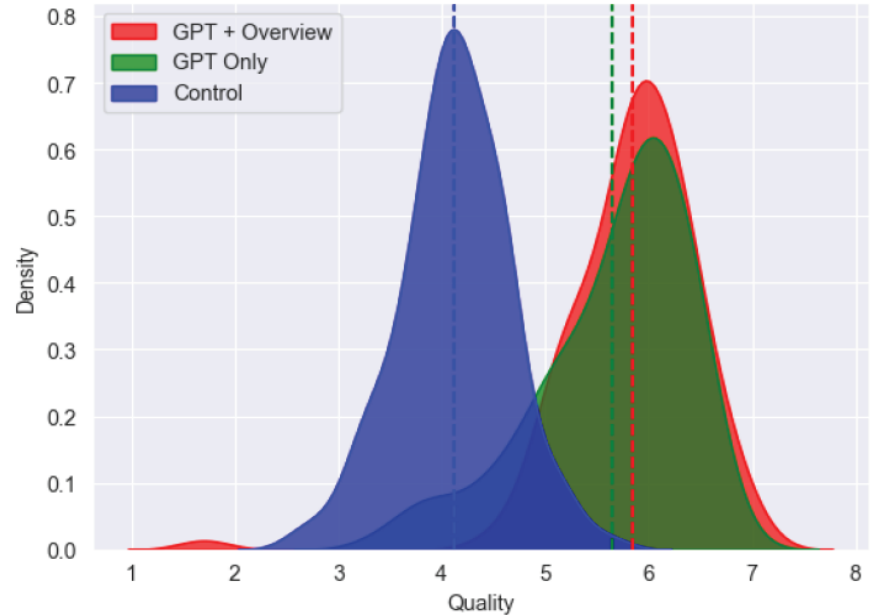


One Aspect of Training: AI - Currently Two Paths

- 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

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@charlotte.edu