
Earnings Business Cycles: The Covid Recession, Recovery, and Policy Response

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Motivation & Relation to Previous Literature

Early research showed disproportionate low-wage 2020 earnings losses

Berman 2020; Cortes and Forsythe 2022; Larrimore, Mortenson, and Splinter 2022; Moffitt and Ziliak 2020; Montenovo et al. 2020

- **Did disparities continue through the early stages of recovery?**
Autor, Dube, McGrew 2023 (CPS cross sections), Guo, Krolikowski, Yang 2023 (CPS)
- **Did fiscal relief offset losses in the recovery?**
Blanchet, Saez, Zucman 2022 (cross sections)

Previous research was based on *cross-sectional* or *survey* data. We ask:

- **What were earnings changes when following the same people through the pandemic using administrative panel data?**
- **How does Covid recession/recovery compare to prior cycles?**

Main Insights into Pandemic-Era Earnings Trends

Median Earnings Changes by 2019 Quintile

- 2020 more regressive than prior two recessions
- Initial recovery was progressive
- Bottom: 31% decline in 2020, improved by 2022
- Top: about unchanged in 2020, fell slightly by 2022

Effect of Fiscal Relief

- Covid fiscal relief *very* progressive
- After relief, median bottom-quintile earnings increased 66% in 2020, stable in 2021 recovery

Data: IRS Panel of Workers

- 5% sample of individuals in tax data: 1999-2022
- Follow workers from year before recessions: 2000, 2007, 2019
 - Sample restrictions: age 24+ & wages>0 in pre-recession year
- Impute wages to account for late-filed forms (negligible effect)

- **Earnings and Direct Fiscal Relief**
 - Earnings: Form W-2 wages & salaries (no self-employment)
 - Unemployment compensation: Form 1099-G, Form 1040
 - CPS missed ~60% of UI in 2020 and 2021: Larrimore [2022](#); Larrimore, Mortenson, & Splinter [2023](#)
 - Other fiscal relief: stimulus checks (EIPs + true ups), MWP credits, advanced CTC from transaction/1040 files

Our Approach

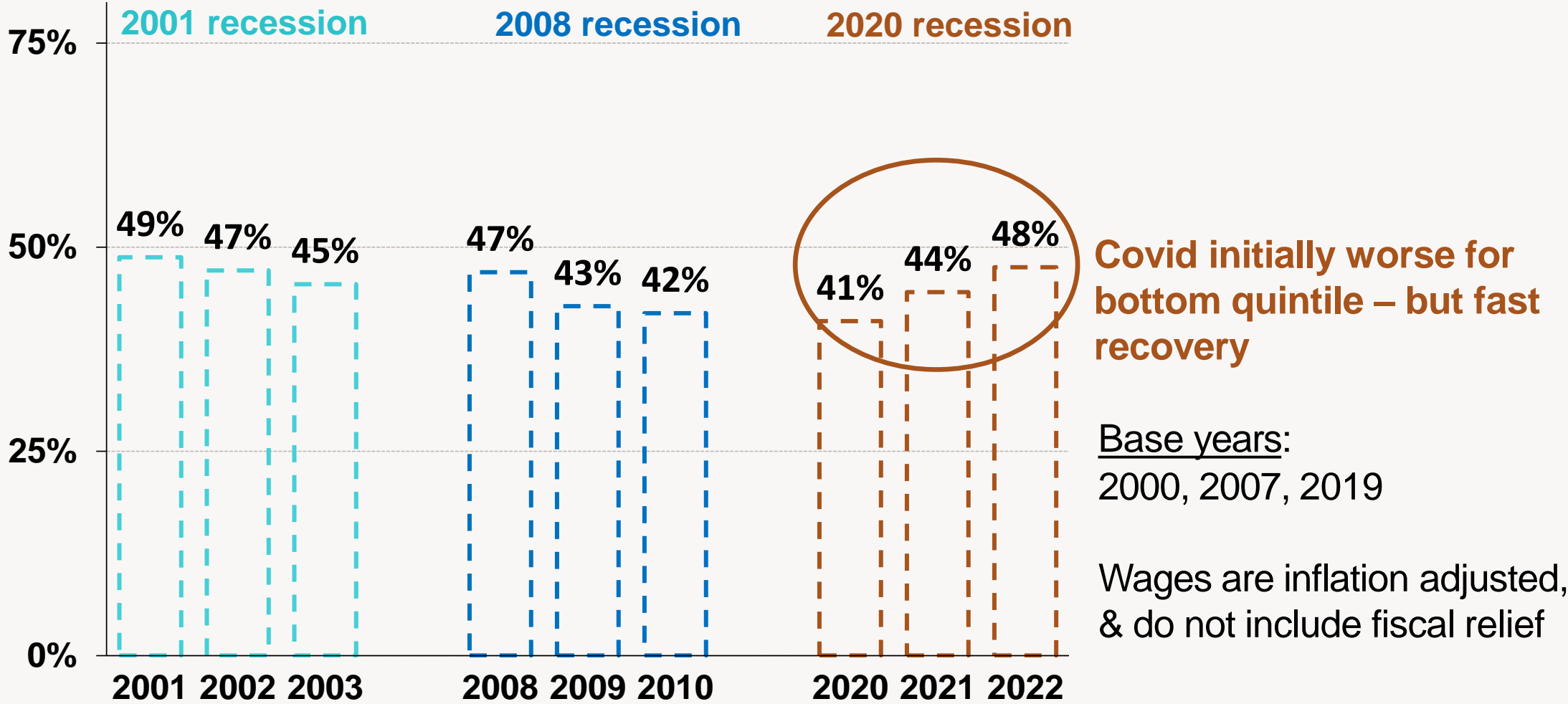
- **Always follow the *same workers*:** “How were workers in the bottom (or top) of the distribution *before a recession* faring 1, 2, or 3 years later?”
- **All estimates use inflation-adjusted earnings:** use Chained CPI
- **Unit of observation is the individual:** not households or tax units

Tax units: smaller losses at bottom but similar relief: Larrimore, Mortenson, and Splinter [2022](#)

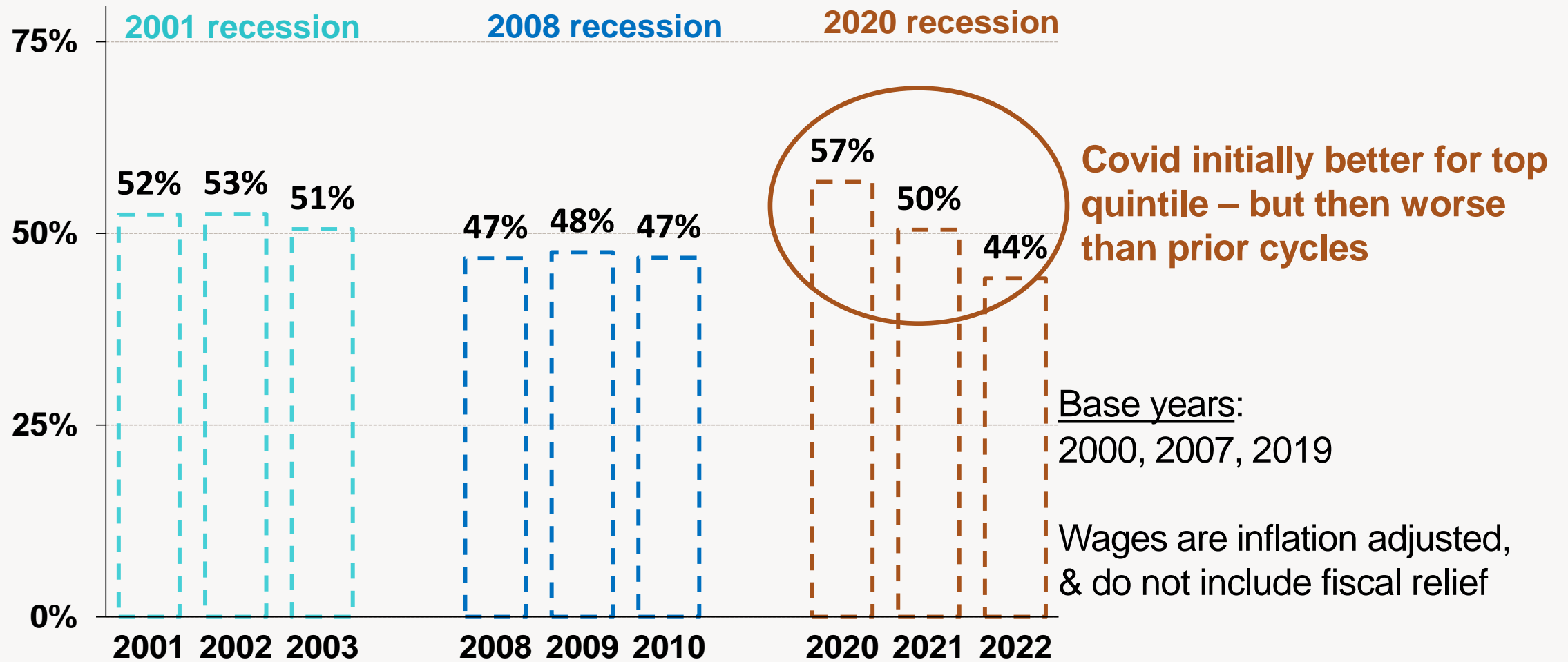
- **Indirect Relief from Paycheck Protection Program (PPP)**
 - Some PPP relief already in wages if workers employed
 - Non-wage share of PPP has little effect on findings
- **Results consistent across measures**
 - (1) share with real earnings increases, (2) median real earnings changes,
 - (3) share with large increase, (4) Gini-based progressivity of earnings changes

1. Share of Workers with Real Earnings Above Pre-Recession Amounts

Bottom Quintile Share with Real Earnings Increases Relative to Before Recessions



Top Quintile Share with Real Earnings Increases Relative to Before Recessions

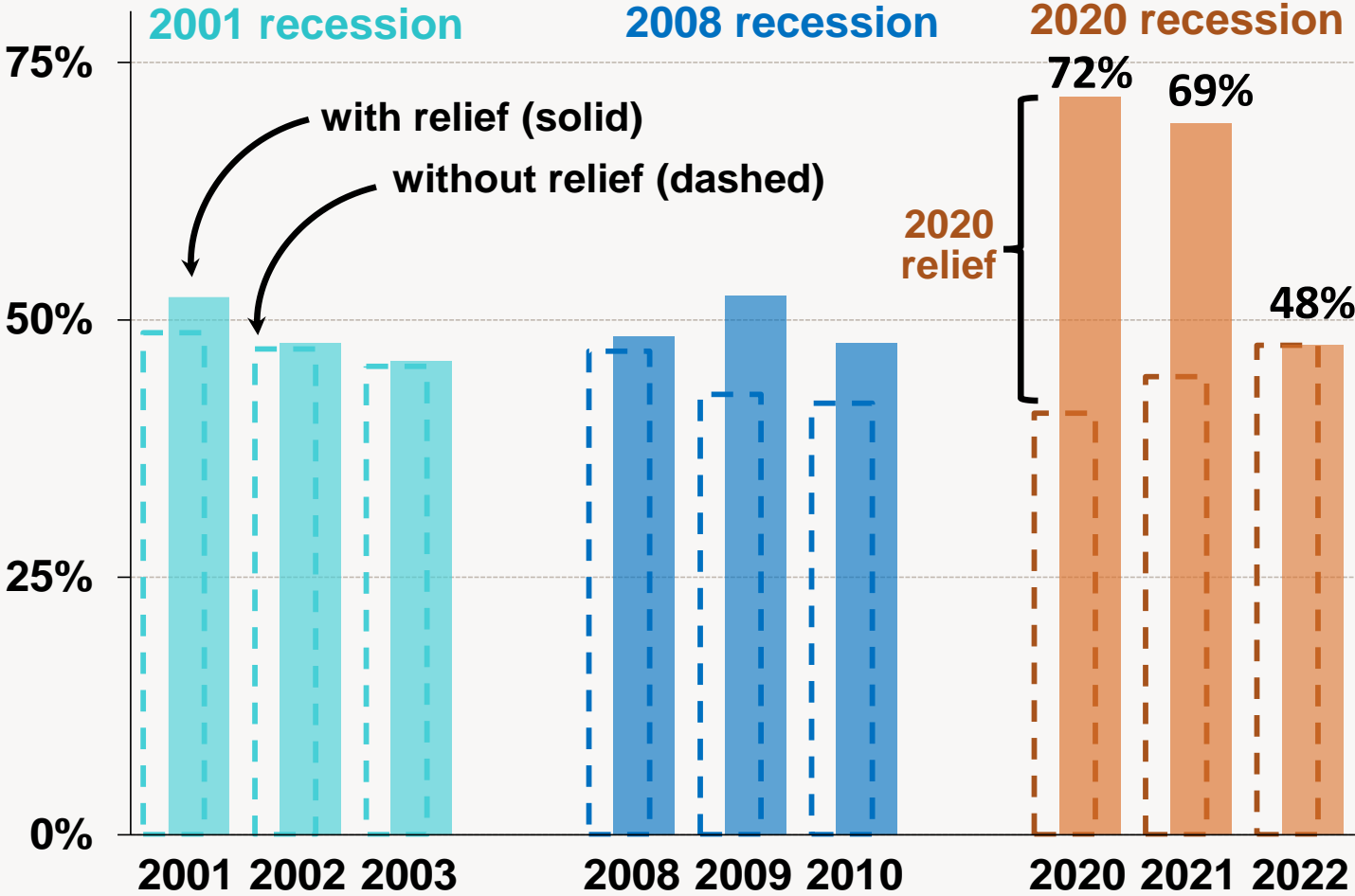


Direct Fiscal Relief During Recessions (billions)

Year	Unemployment Insurance	Stimulus, MWP, ¹ Advanced CTC, & True ups	Total
2001	33	38	71
2002	55	6	61
2003	55	---	55
2008	53	96	149
2009	143	13	156
2010	152	60	212
2020	565	413	978
2021	314	548	862

¹MWP credit was based on income in tax years 2009 and 2010, but to be consistent with other provisions in our analysis, we included the year the funds were received by the taxpayer (for MWP this is when they filed their return the following Spring).

Bottom Quintile Share with Real Earnings Increases: Large Increase from Covid Fiscal Relief



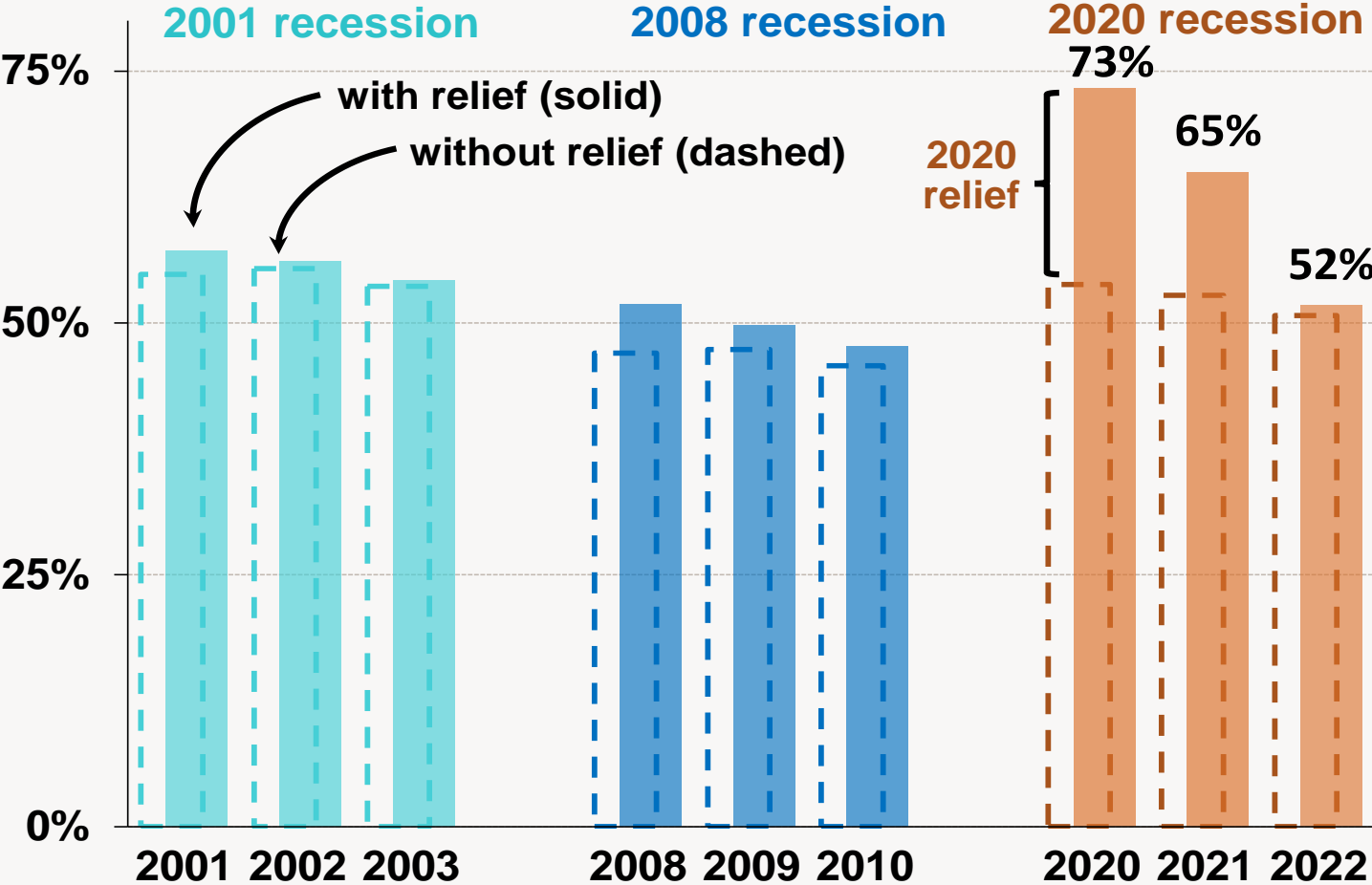
\$7,600 median 2019 wages
\$7,700 median 2020 relief

Base years:
 2000, 2007, 2019

Post-relief includes wages, UI,
 stimulus checks, other relief

All results inflation adjusted

Middle Quintile Share with Real Earnings Increases: *Medium* Increase from Covid Fiscal Relief



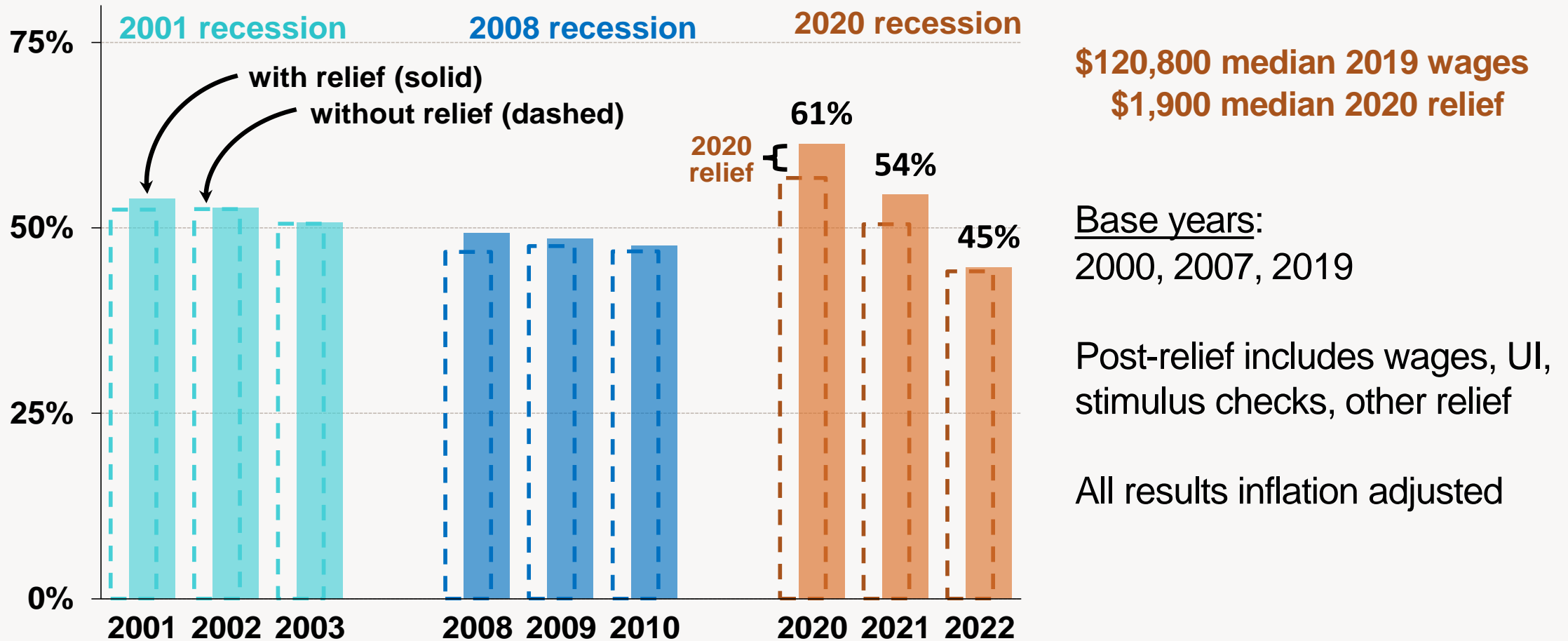
\$42,800 median 2019 wages
\$4,000 median 2020 relief

Base years:
2000, 2007, 2019

Post-relief includes wages, UI,
stimulus checks, other relief

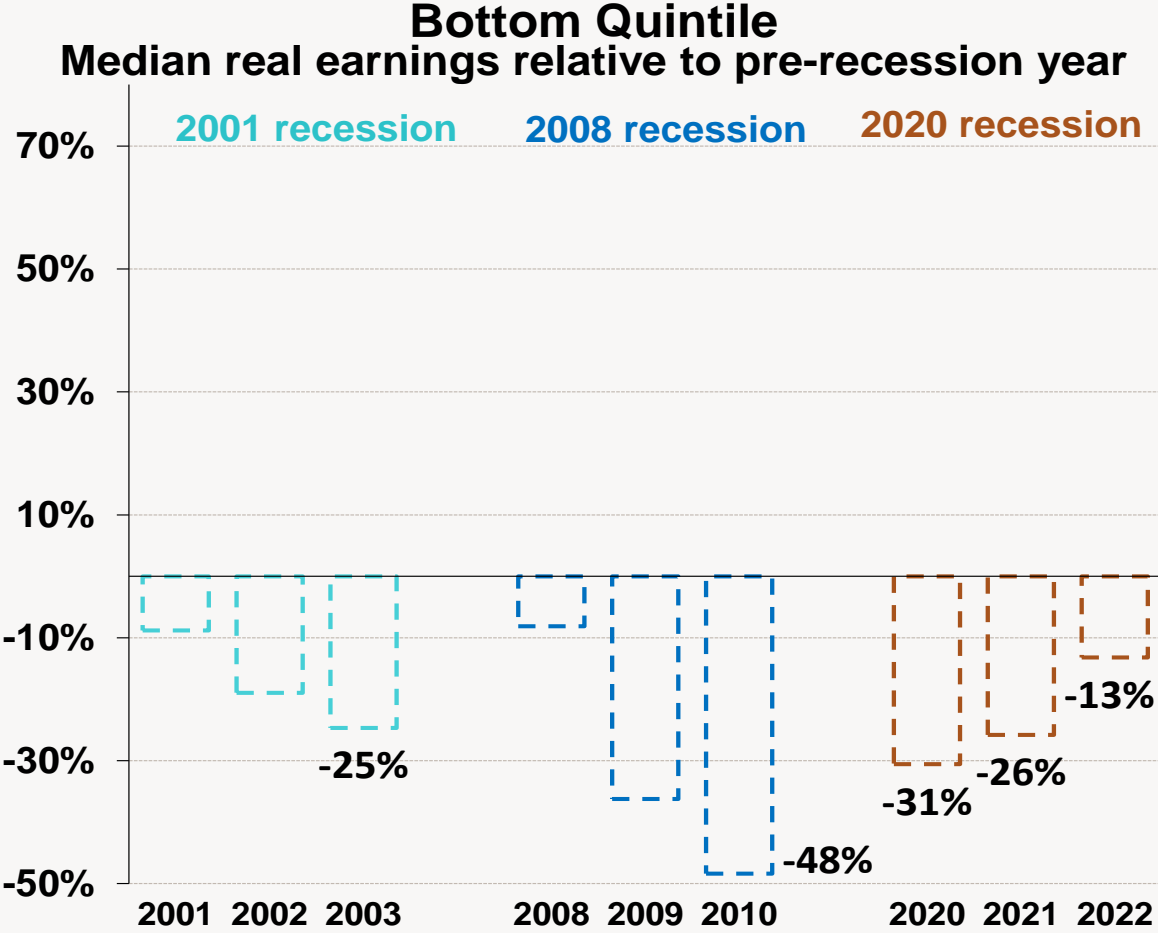
All results inflation adjusted

Top Quintile Share with Real Earnings Increases: *Small Increase from Covid Fiscal Relief*

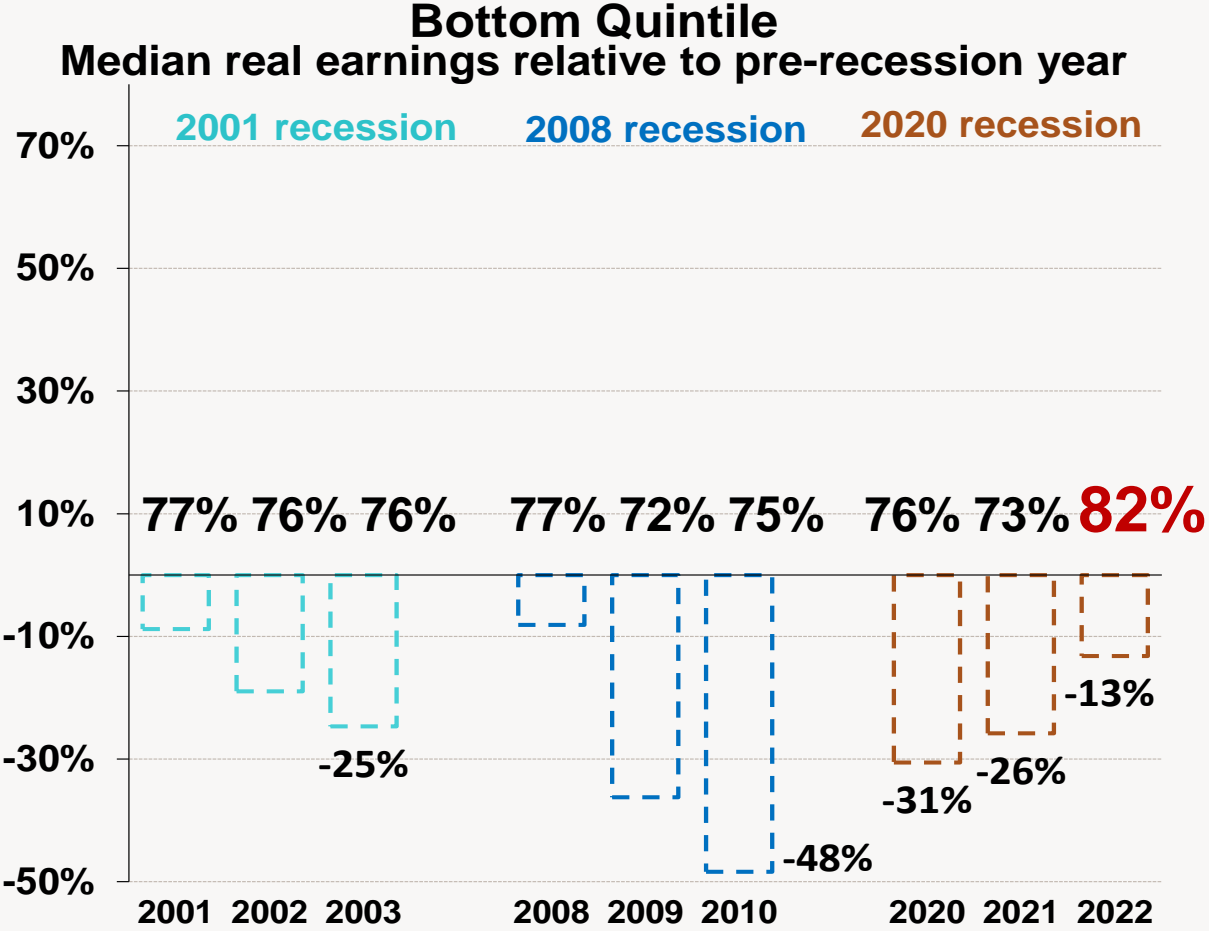


2. Change In Median Real Earnings by Pre-Recession Earnings Quintile

Median Earnings of Bottom-Quintile Workers Fell Sharply in 2020, Mostly Recovered by 2022...

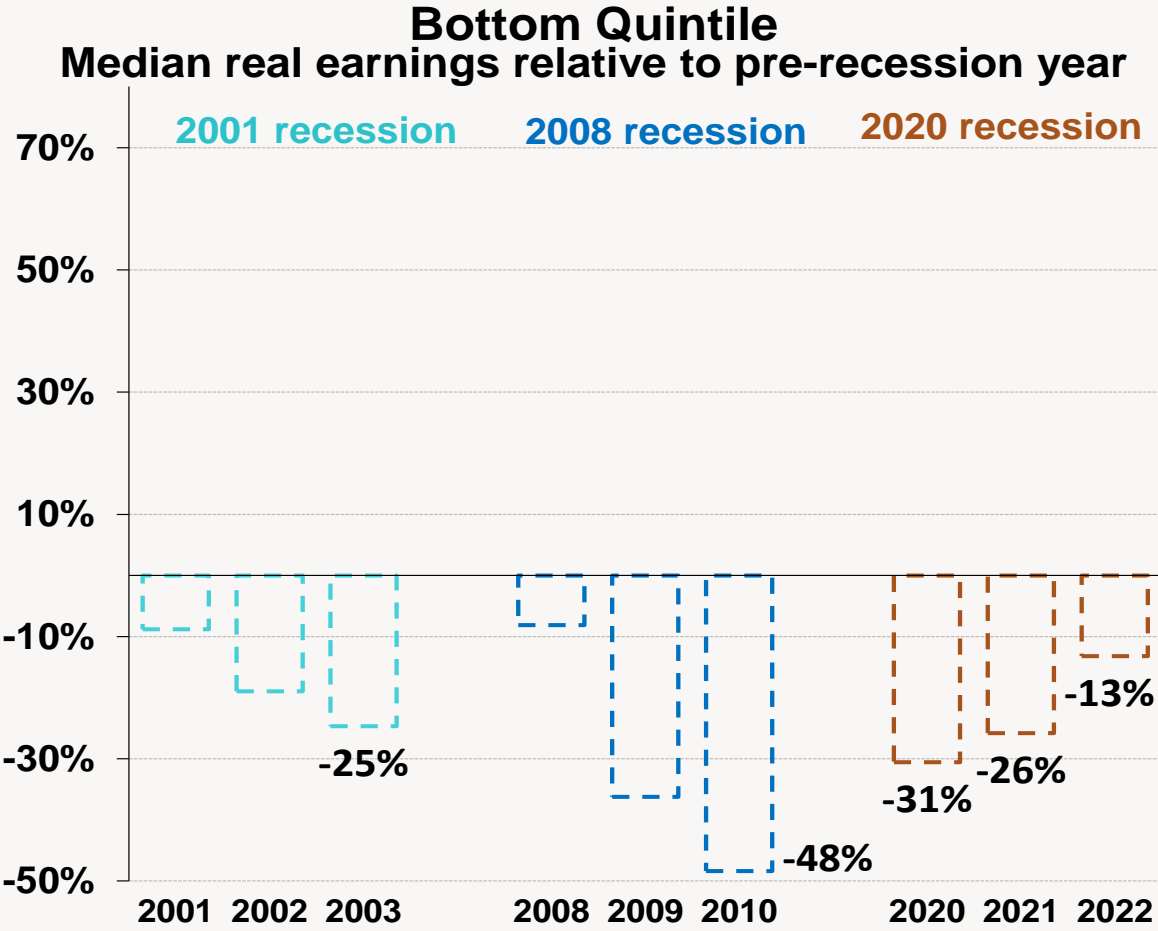


Median Earnings of Bottom-Quintile Workers Fell Sharply in 2020, Mostly Recovered by 2022...

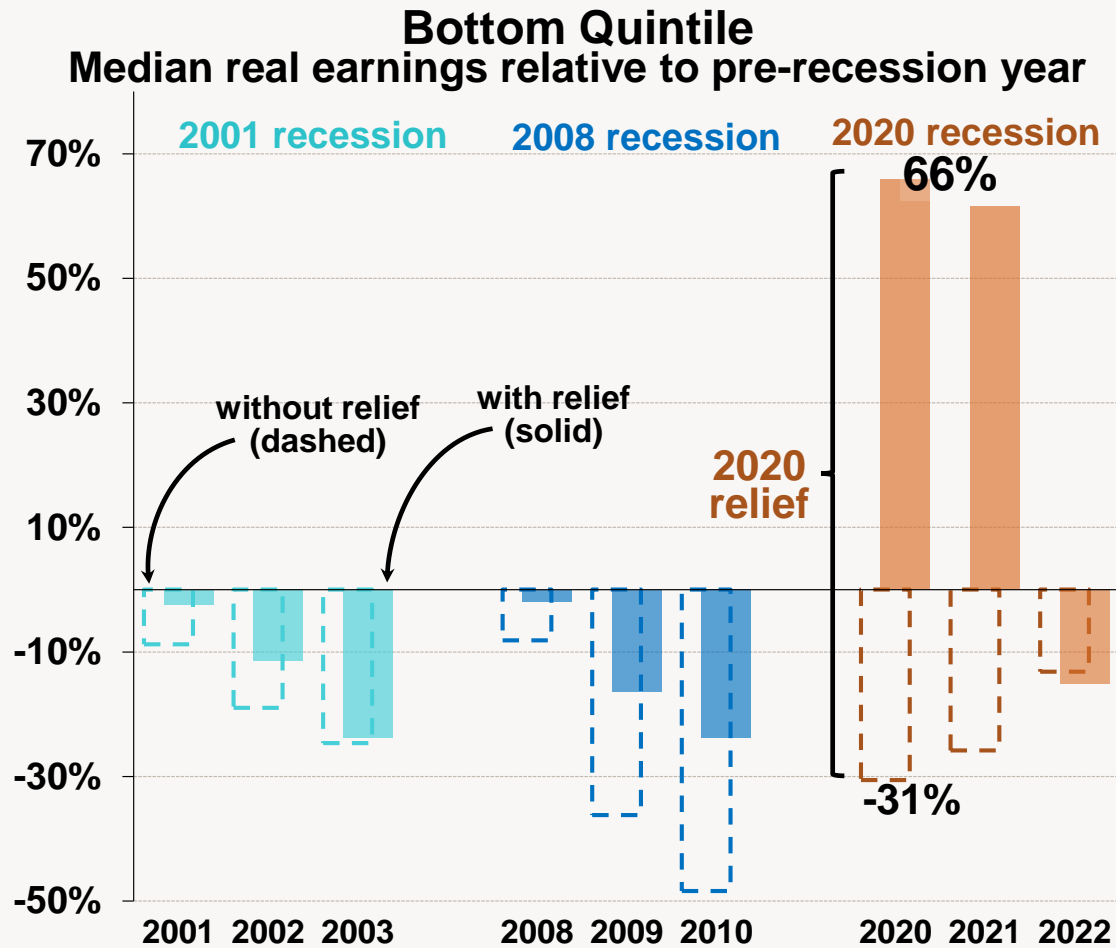


Still-Employed Rates (relative to base year) do not explain differences across recoveries ...except for 2022 labor “re-entry” (always >96% for top three quintiles)

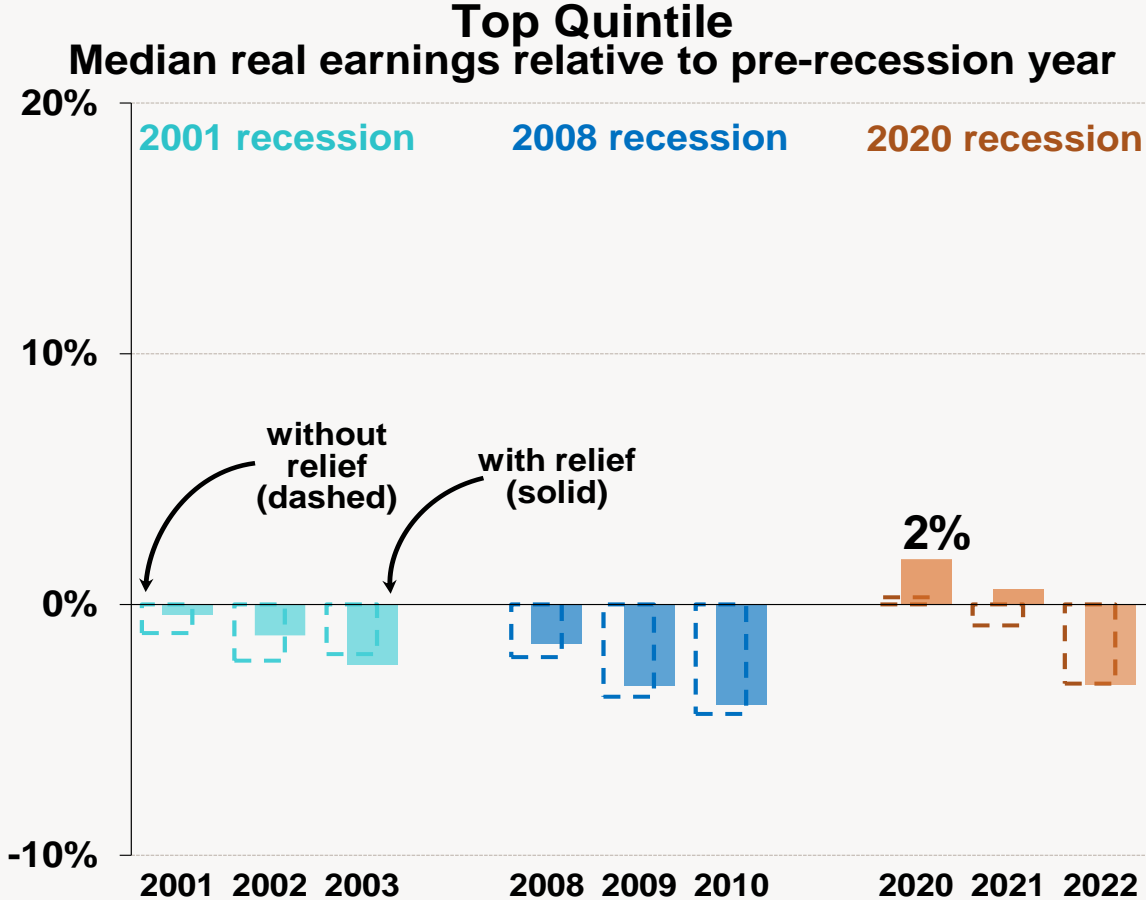
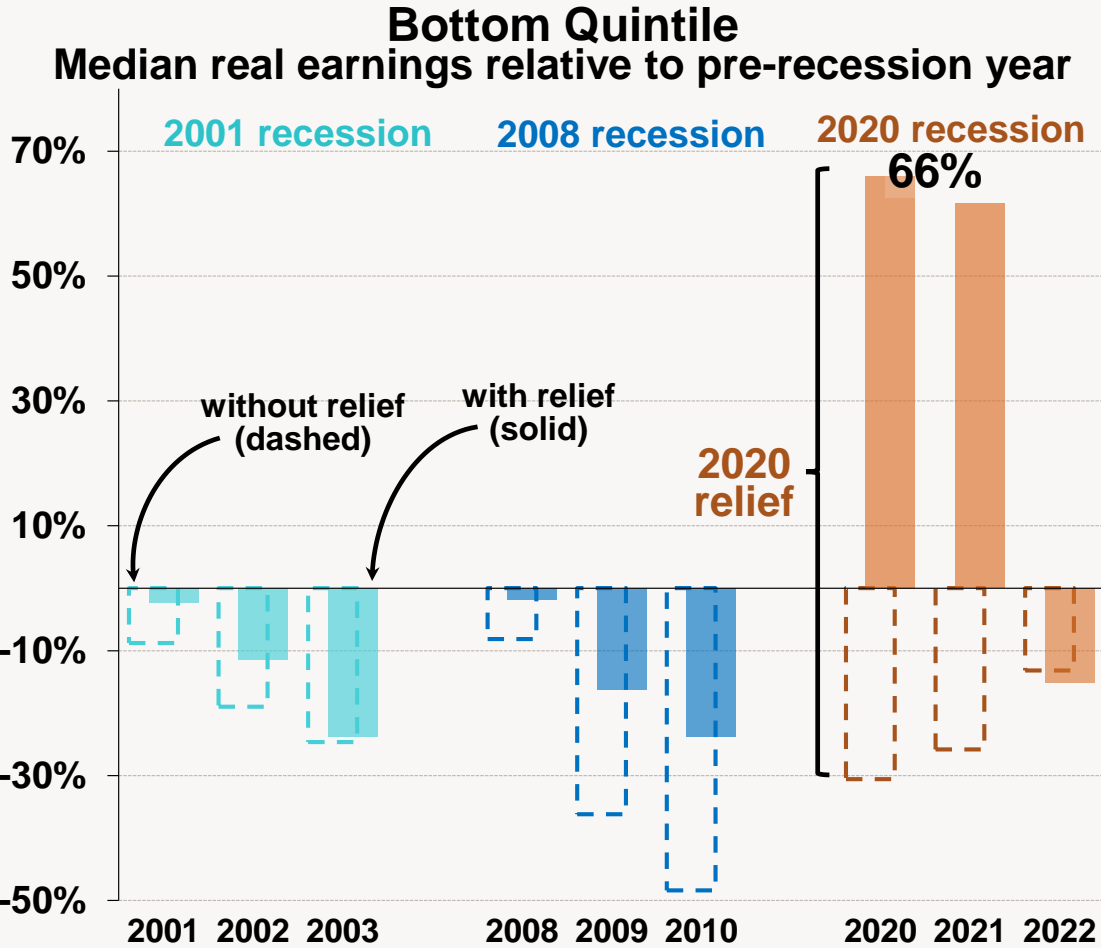
...While Top-Quintile Workers Had a Small Increase in 2020 and a Small Decline by 2022



Unlike Previous Recessions, After Fiscal Relief the Bottom Quintile Earned More in 2020 & 2021

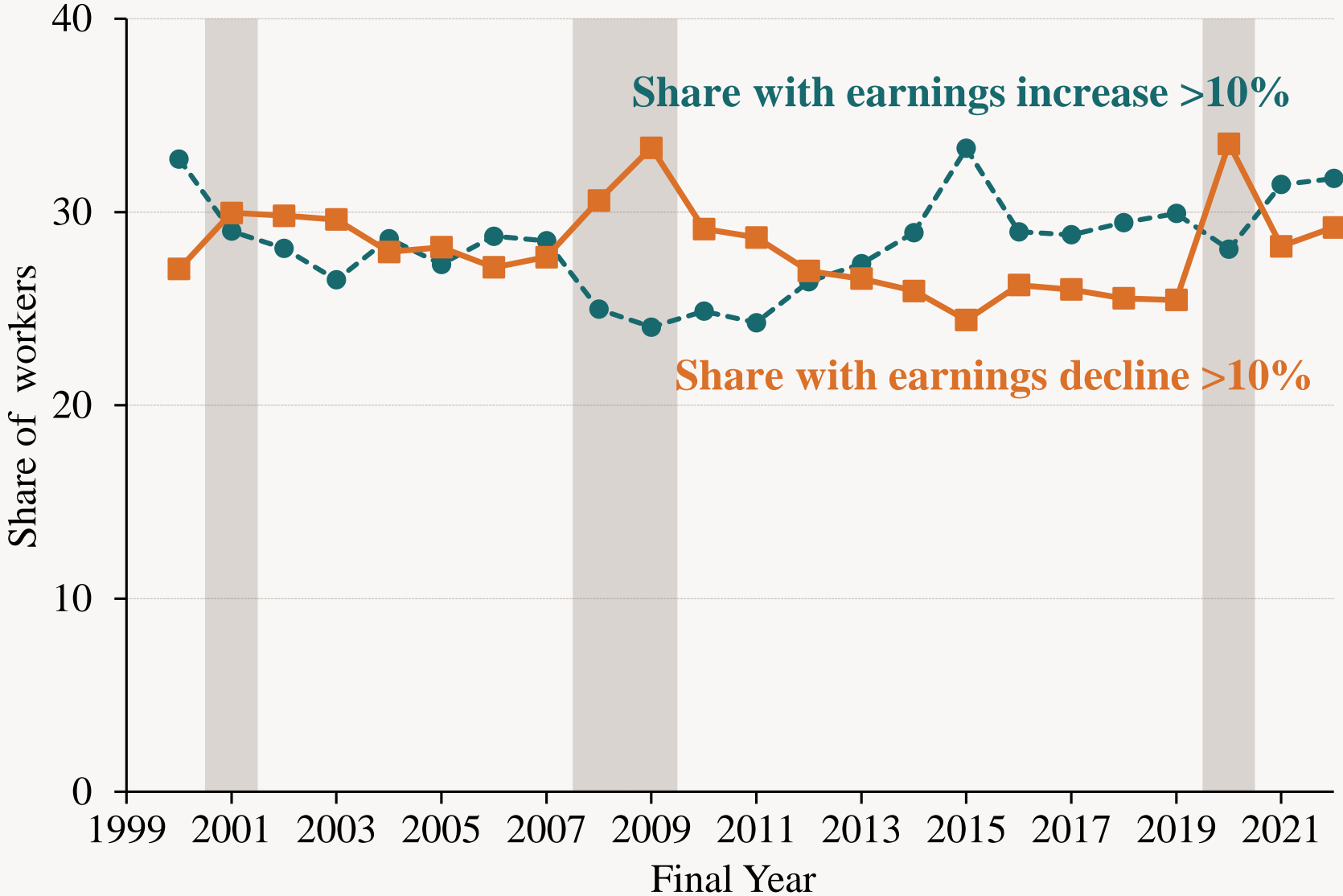


Top Quintile Had Much Less Relief

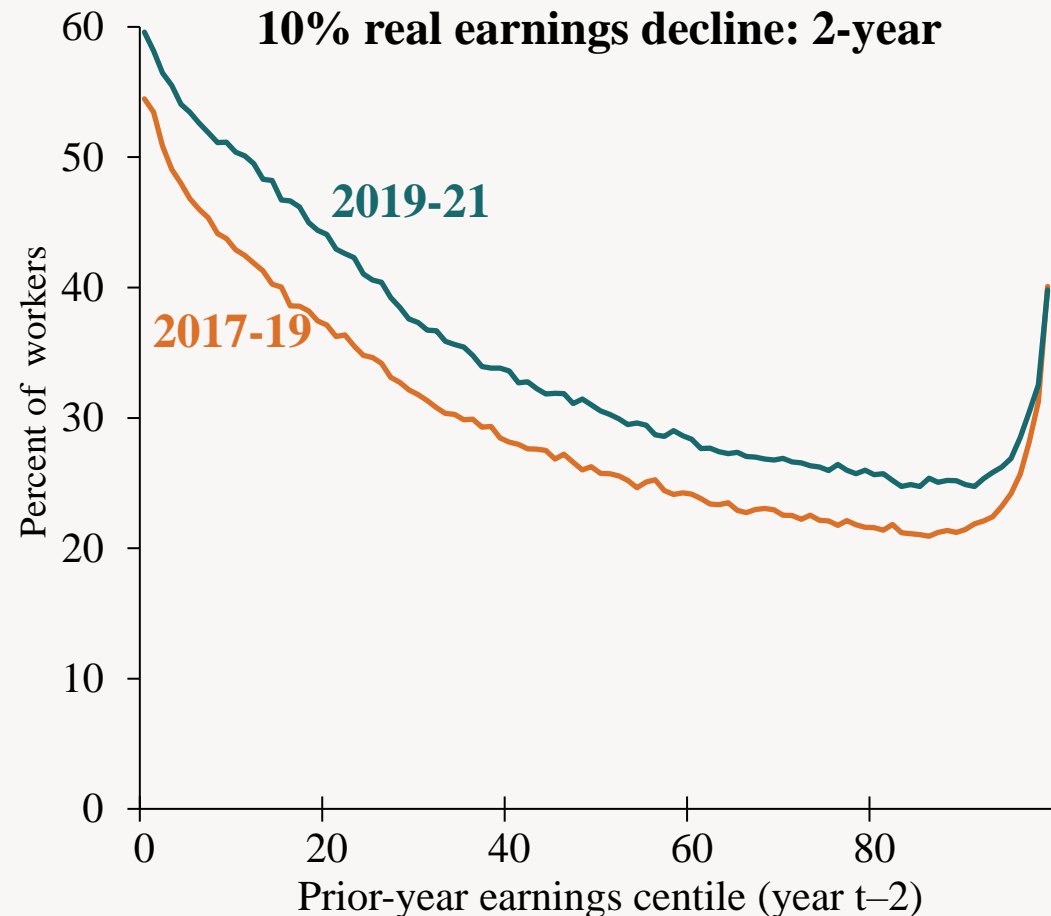


3. Share with Large Real Earnings Increases and Decreases (10% or more)

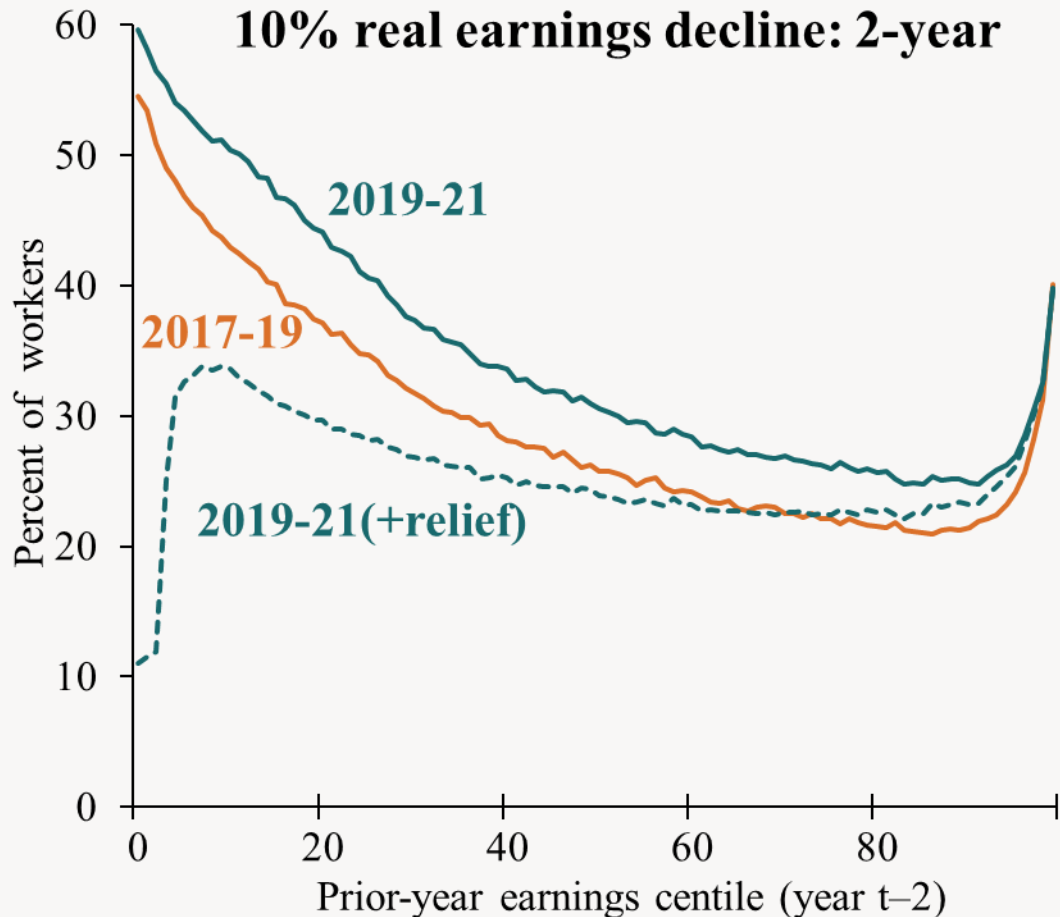
Shares with Large Annual Real Earnings Declines/Increases



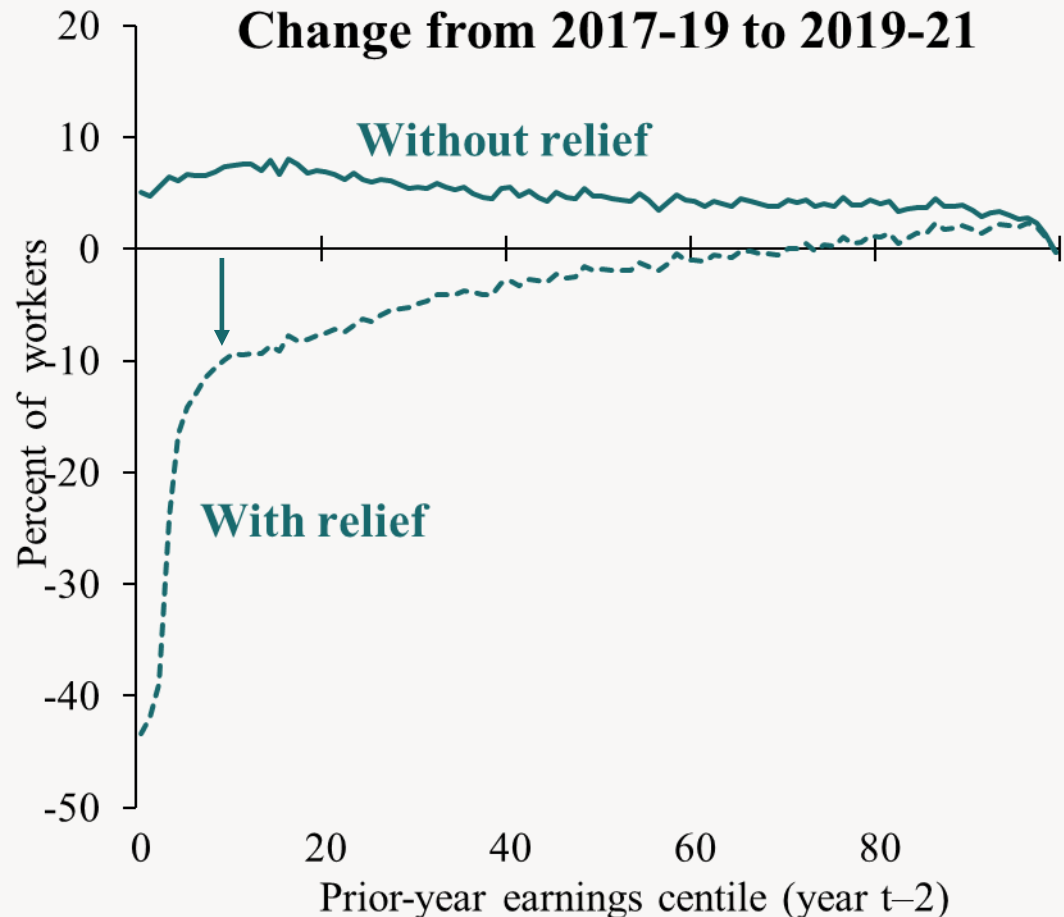
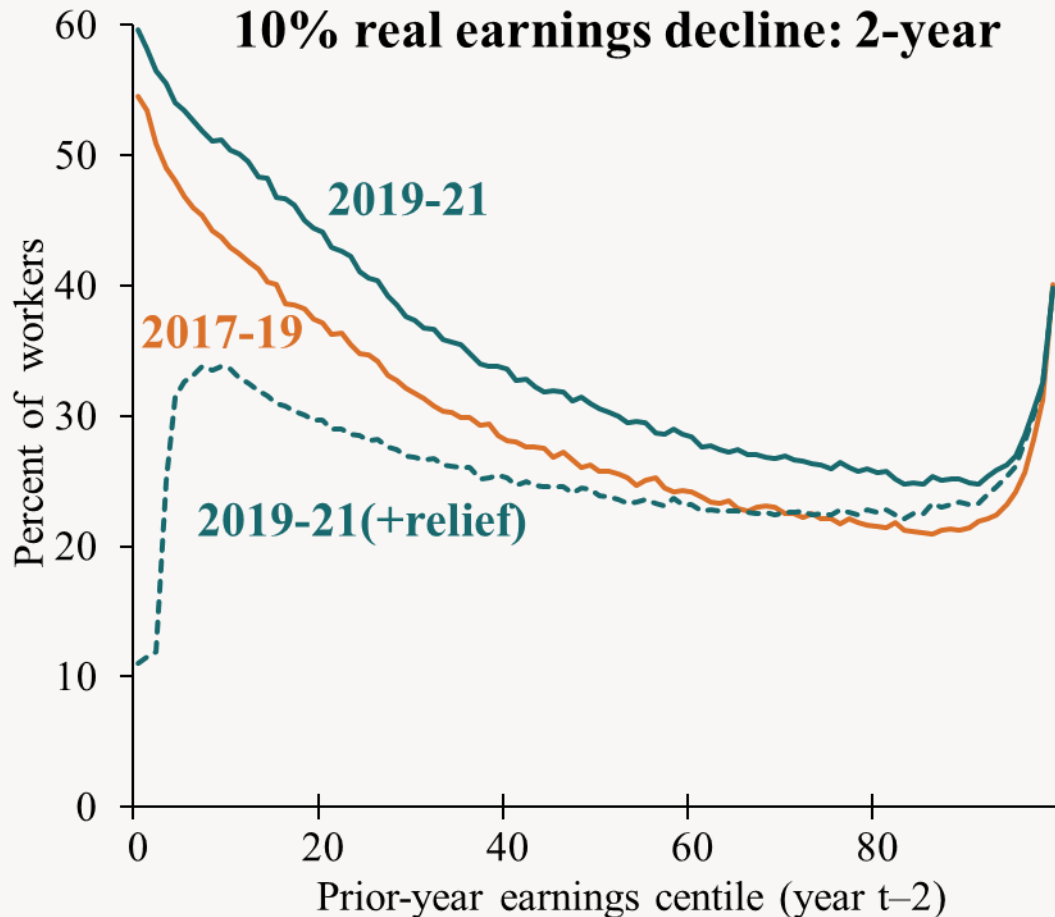
Before Fiscal Relief, Low-Earners Were More Likely to See Large Earnings Declines



After Fiscal Relief, Low-Earners Similarly Likely to Have Large Earnings Declines as High-Earners



After Fiscal Relief, Low-Earners Less Likely to Have Large Earnings Declines than in 2017-19 Expansion

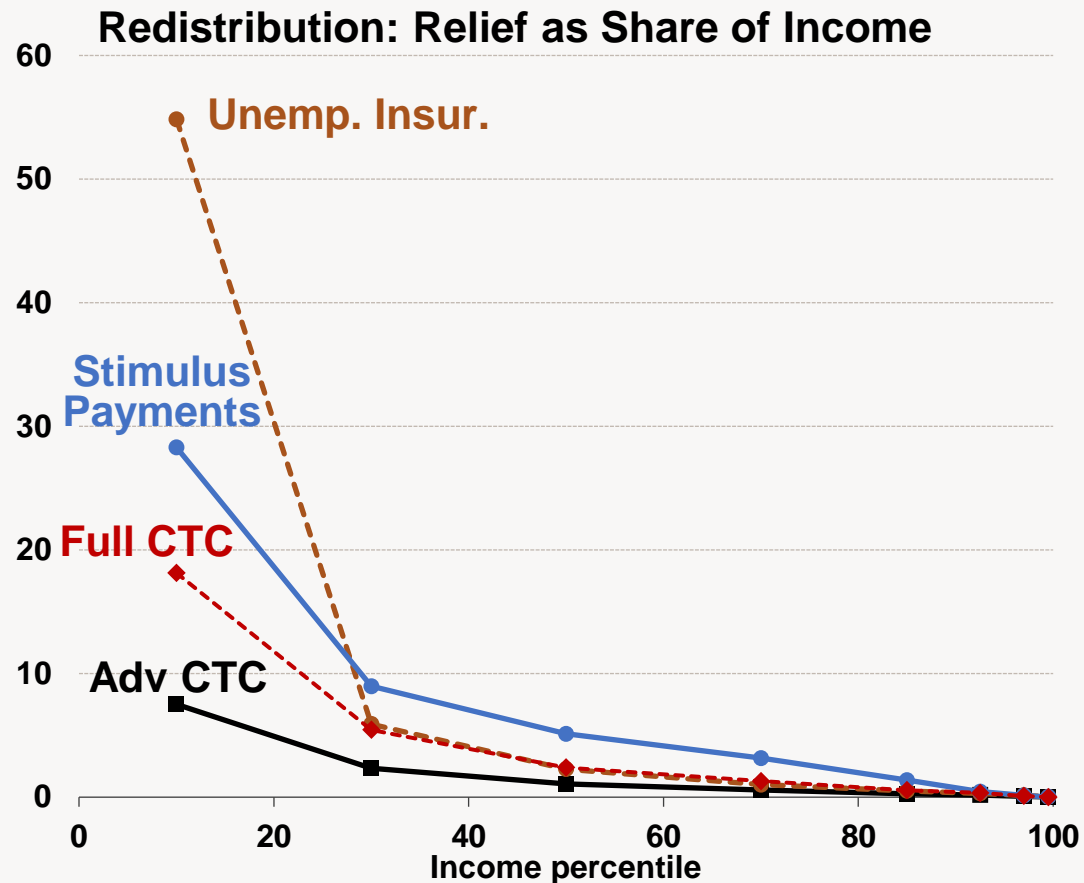


UI and Stimulus Checks Both Had Large Progressive Contributions to Preventing Large Earnings Declines

Decomposition of relief effects on share of workers with a 10% real earnings decline

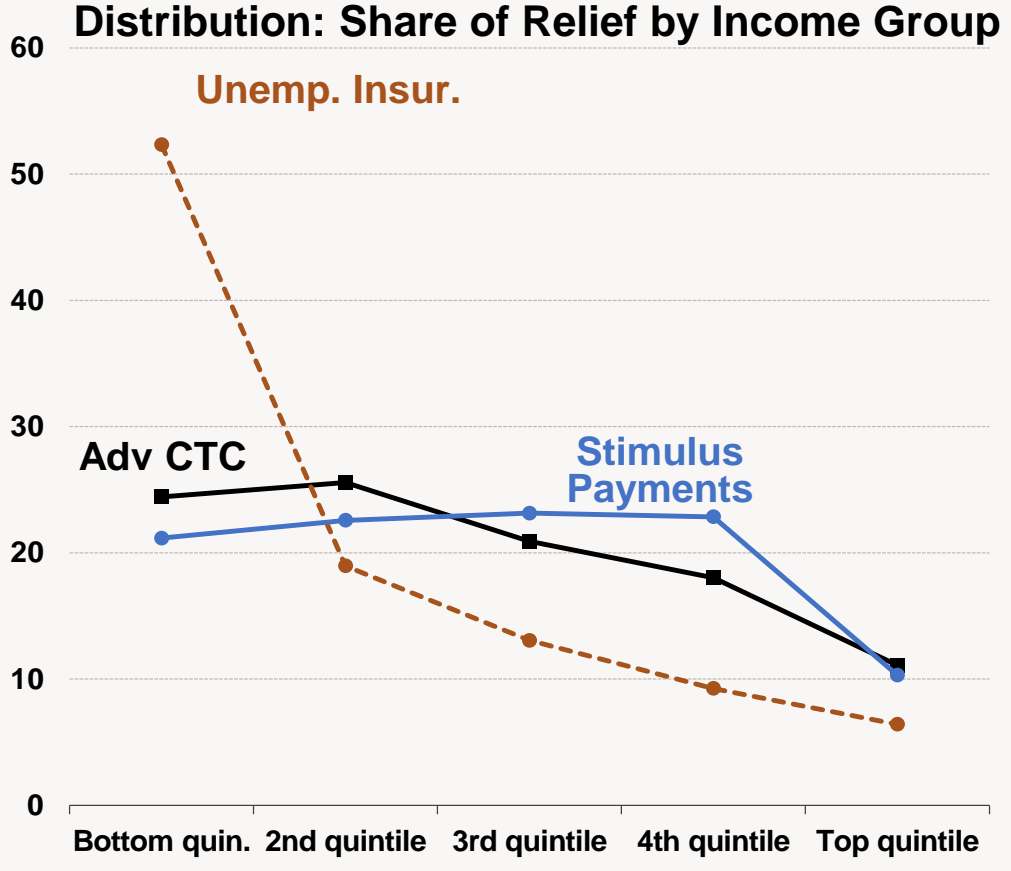
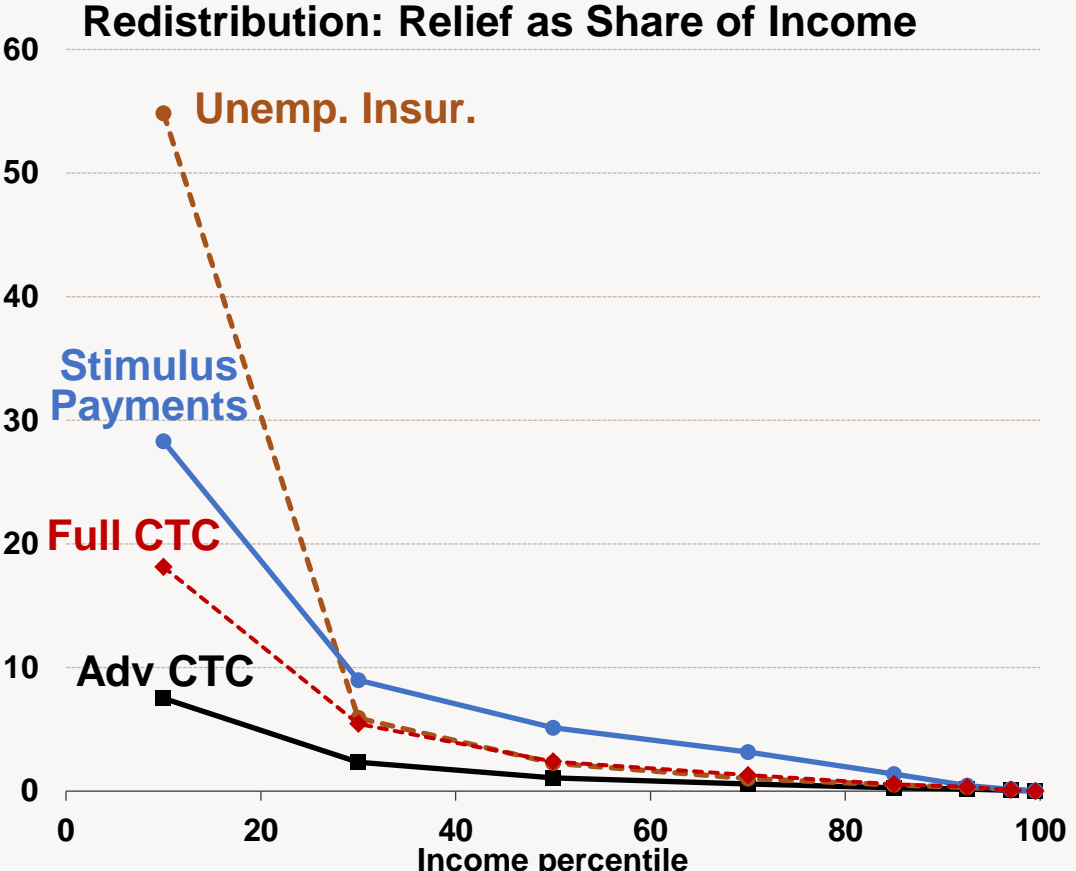
	Among the bottom quintile	
	A: 2019–2020 (1-year)	B: 2019–2021 (2-year)
Change (p.p.) in share with large declines from relief	-27.0	-21.5
Share of decline from:		
Unemployment Insur.	52%	40%
Stimulus checks	48%	54%
Advanced CTC	---	6%

Comparing 2021 Relief Programs: Advance CTC smaller (~half CTC) and UI more progressive



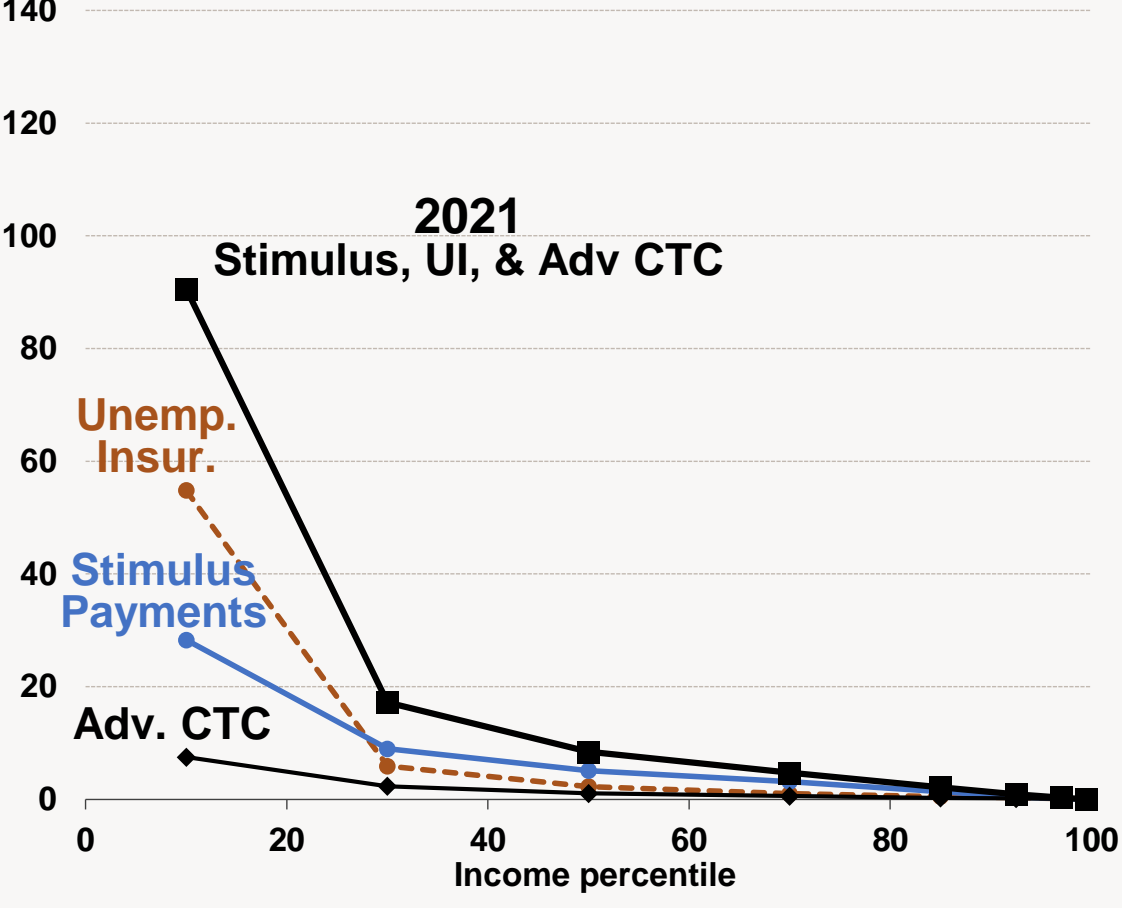
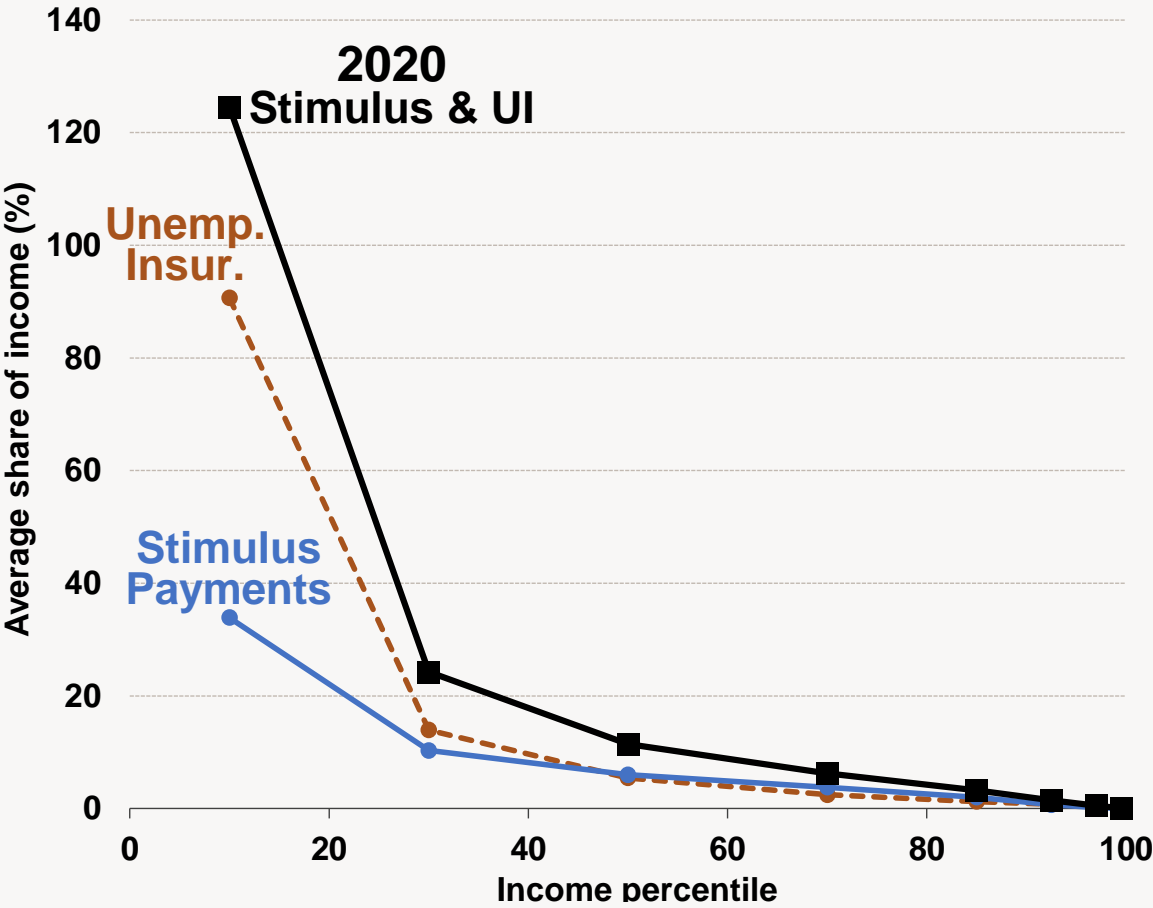
Notes: Filer income is AGI plus nontaxable interest, Social Security, and retirement income and less unemployment comp and negative other income. Non-filer income is wages, dividends, interest, partnership income, miscellaneous income, private retirement income, Social Security benefits, and unemployment. Quintiles have same number of individuals, ranked by size-adjusted income. Source: Authors' calculations using population tax data.

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Overall 2020 and 2021 Relief was Large and Progressive



Indirect Fiscal Relief Does not Change Results

To the extent indirect relief resulted in higher wages, it's already in our pre-relief earnings measures

Aid to State and Local Governments (~\$900B)

Modest economic spillovers (Clemens, Hoxie, and Veuger 2022)

Paycheck Protection Plan (PPP, ~\$800B): Wage effects likely progressive and non-wage effects (e.g., owner portion) are a small share of income

Non-wage PPP distribution by AGI or wage quintile of business owner, 2020

Quintile	PPP share ranked by income	PPP share of income ranked by wages
1	6%	3%
2	2%	1%
3	5%	1%
4	6%	2%
5	81%	3%

Conclusions

- **Regressive wage shock in 2020**

 - Initial wage shock disproportionately hit bottom-quintile workers (-31%)

- **Progressive recovery through 2022**

 - Bottom-quintile wages improved (+25% for 2020-22)
 - Top-quintile wages declined (-3% for 2020-22)

- **Fiscal relief:** Historically large, progressive relief

 - Exceeded earnings losses for the bottom quintile (+66% with relief in 2020)

 - Results consistent across measures, bank account balances, consumption changes
Greig, Deadman, & Sonthalia (2022); Meyer, Murphy, & Sullivan (2022)

- **Earnings recovery and policy response in Covid-era were far more progressive than for prior business cycles**