

Does Remote Work Slow Wage Growth and Promotions?

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Questions

- Do remote or hybrid workers experience slower annual wage growth than on-site workers?
- Are remote or hybrid workers less likely to be promoted to management?
- Are remote or hybrid workers less likely to be promoted to a supervisory role in sales and office/administrative support occupations?

Theory: Wage penalty or premium for WFH?

■ Penalty

- ▶ Compensating differential story: Workers are willing to pay for WFH because WFH = job amenity, especially mothers (He et al. 2021; Maestas et al. 2023; Mas and Pallais 2017; Nagler et al. 2022; Barrero et al. 2023).
- ▶ Less productive workers may select into WFH (Emanuel and Harrington 2024).
- ▶ Workers are less productive WFH with children present, especially mothers (Adams et al. 2025; Pabilonia and Vernon 2023).

■ Premium

- ▶ WFH increased worker productivity via reduced commute/better work environment or better employee-employer matches with relaxed locational constraints (Bloom et al. 2015; Davis 2024).
- ▶ WFH reduces office space costs for employers (Pabilonia and Redmond 2024).
- ▶ WFH is socially isolating, and thus a job disamenity (Frazis 2023).

Evidence on wage differentials and growth: Part 1

- Oettinger (2011), White (2019), Pabilonia & Vernon (2025)
 - ▶ American Community Survey (ACS)
 - ▶ “Home-based workers” paid a wage penalty, which shifted to a small wage premium by 2014, and further increased during the COVID-19 pandemic.
 - ▶ During the pandemic, an occupation’s wage growth was positively correlated with the rise in the share of home-based workers in it.

Evidence on wage differentials and growth: Part 2

- U.S. employers report remote work restrains wage growth (Barrero et al. 2022).
- During the COVID-19 pandemic, there was unexpected compression of wages, and some of this may come from remote work being valued as a job amenity (Autor et al. 2024).
- Wages in teleworkable jobs grew slower than those in other jobs 2019–23 compared with other recoveries (Bagga et al. 2025).



Theory and evidence on promotions

- Proximity bias: Those who are visible on-site increase their chance of a promotion.
 - ▶ Leaders make assumptions about workers' productivity and commitment based on their work location (Matysiak et al. 2025)

DATA AND DESCRIPTIVE STATISTICS



Current Population Survey (IPUMS-CPS)

- October 2022–September 2025 data on WFH intensity
 - ▶ “At any time LAST WEEK, did you telework or work at home for pay?”
 - ▶ “Last week, you worked (# hours worked last week at all jobs) hours (total/at all jobs). How many of these hours did you telework or work at home for pay?”

Work Location Arrangements

We define three mutually-exclusive categories:

- Remote worker

- ▶ 100% of hours worked last week from home

- Hybrid worker

- ▶ 20–99% of hours worked last week from home

- On-site worker

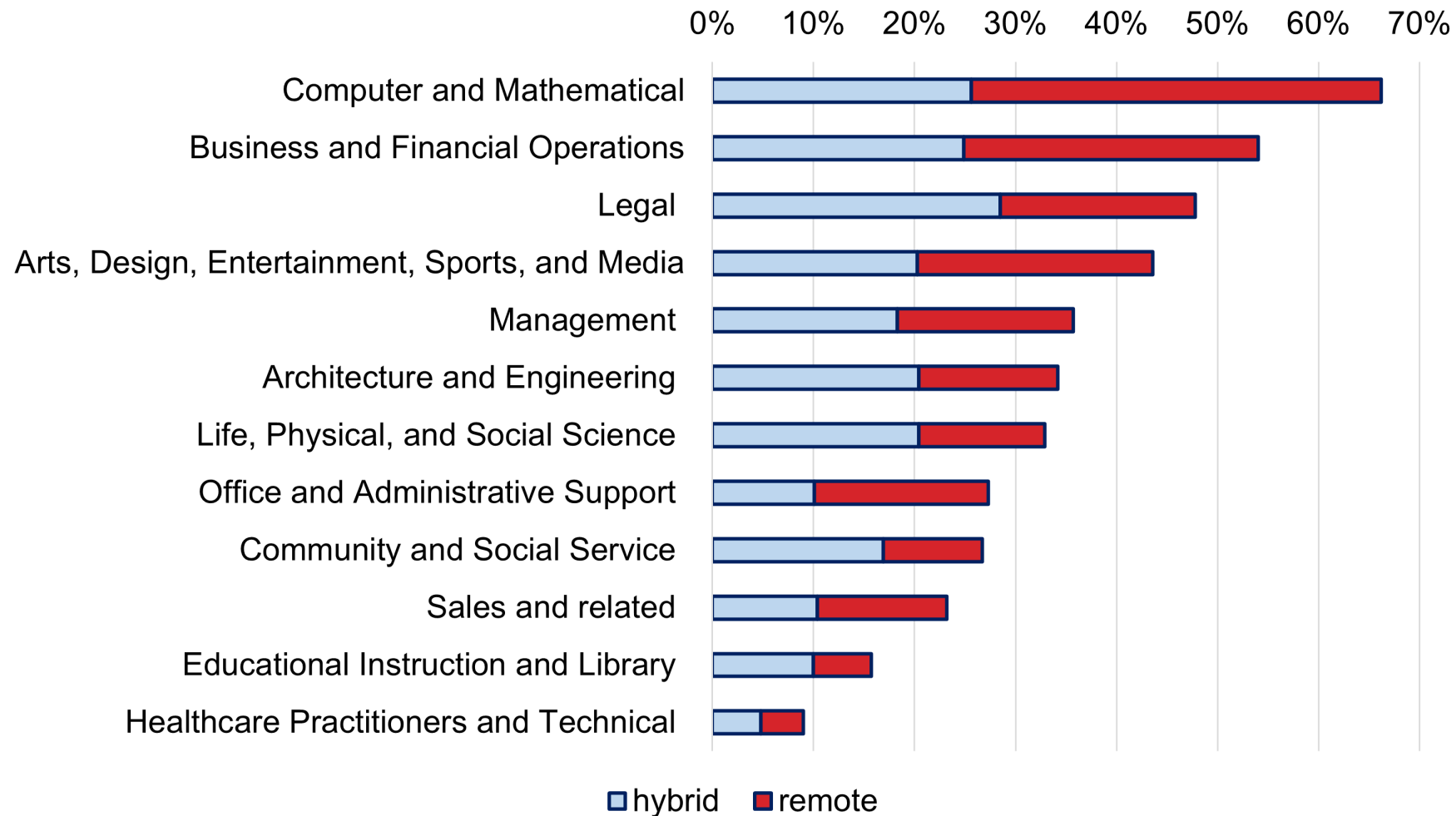
- ▶ Less than 20% of hours worked last week from home

Main Analysis Sample

- Full-time, white-collar employees aged 25–64 working in the private nonfarm sector
 - ▶ Employed and at work
- Use CPS longitudinal component CPS households are in sample for 4 months, out for 8 months, and back in for 4 months.
 - ▶ Outgoing rotation groups (ORG) include month-in-sample 4 and 8.
 - ▶ Drop singleton observations



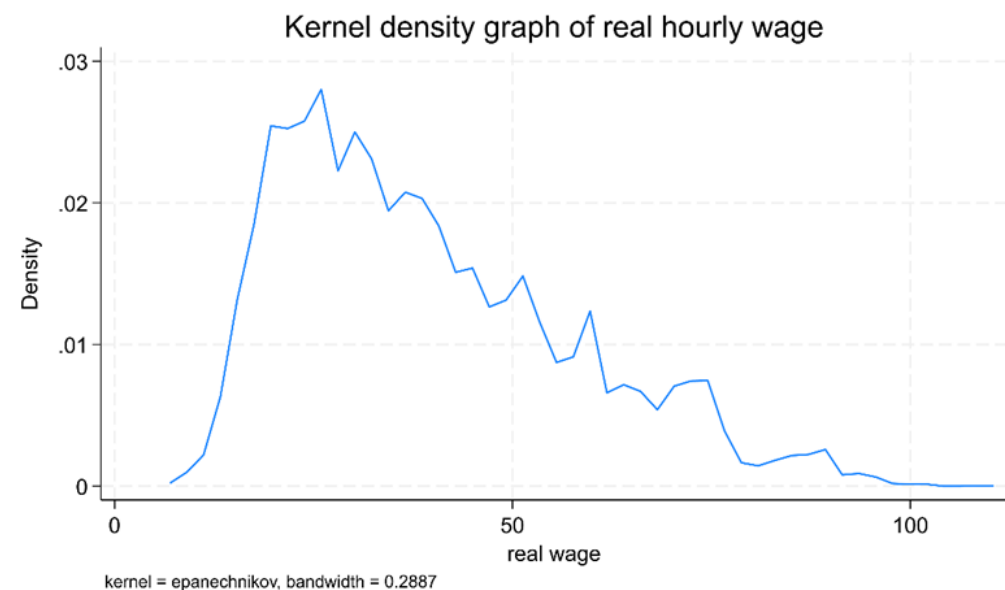
% of each major occupation groups working hybrid or remote



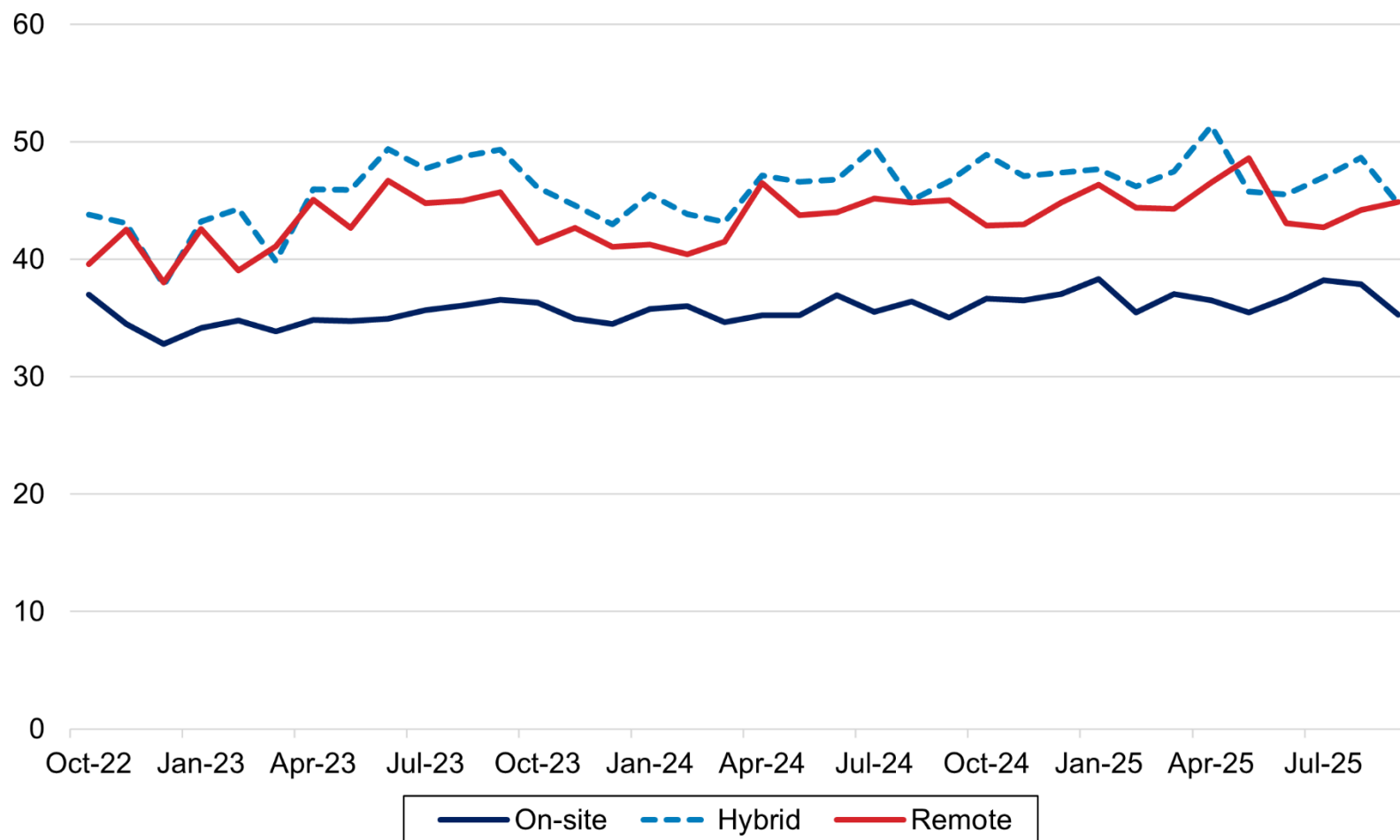
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

Real hourly wage

- Use outgoing rotations to study earnings (year-over-year).
- We compute hourly wages for those reporting only weekly earnings using usual hours worked.
- Drop observations with topcoded values or wages below \$7.25/hour.
- Wage range: \$7.25–\$110.16.
- Adjusted for inflation using the CPI-U-RS through 2024 and then CPI-U in 2025. Wages are measured in September 2025\$.



Average real hourly wages by work location (September 2025\$)



Note: Topcoded values removed; singleton observations included.

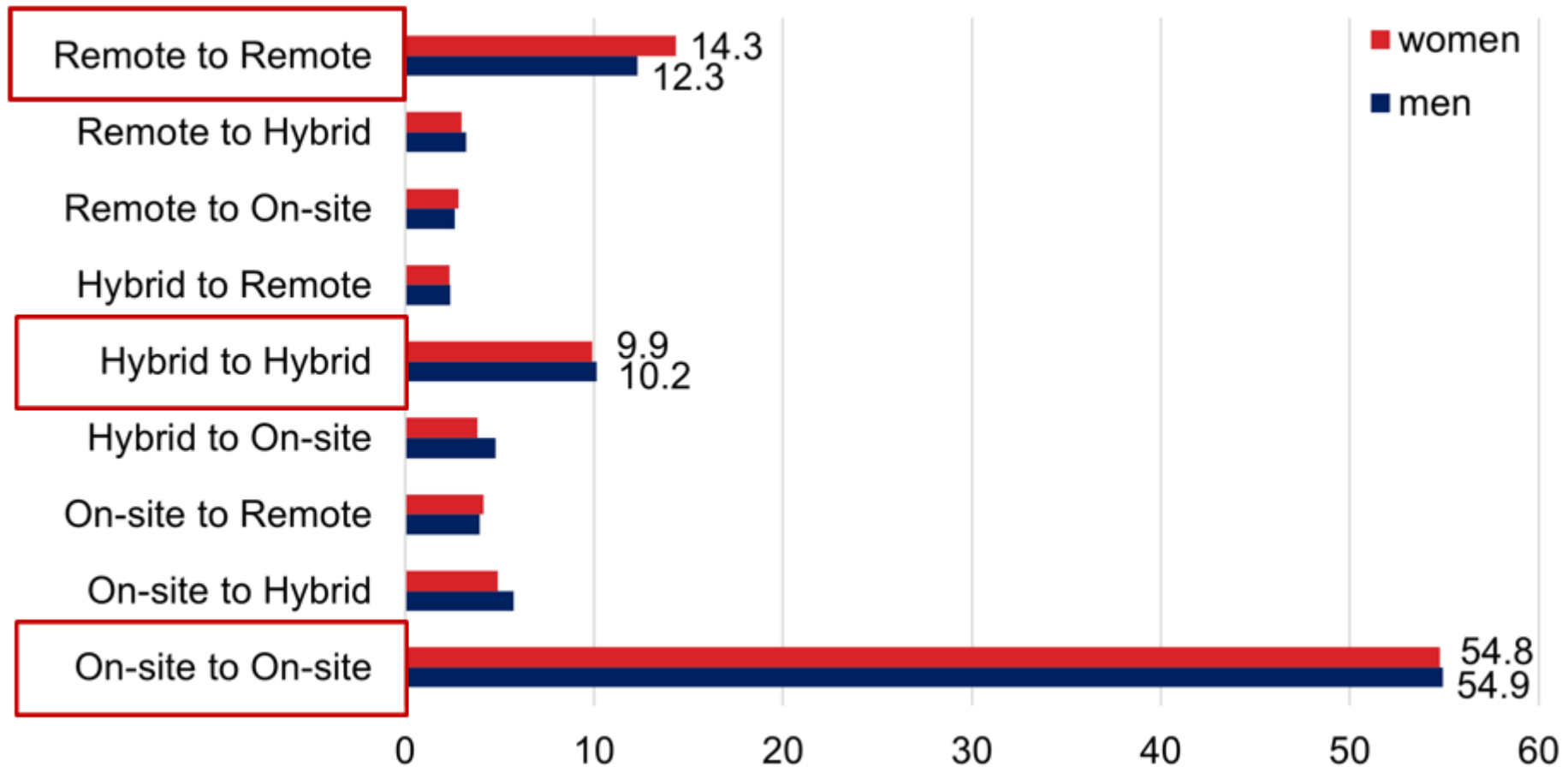
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

Promotion

- The probability of transitioning from non-management to management occupation
 - ▶ Conditional on not being in a management occupation in the first month
- The probability of transitioning to first-line supervisor within sales, office, and administrative support occupations.
 - ▶ Conditional on not being in a first-line supervisor or manager in the first month
- Use consecutive month-to-month (year-to-year) observations to study promotions
 - ▶ Month-in-samples 1–4, Month-in-samples 5–8

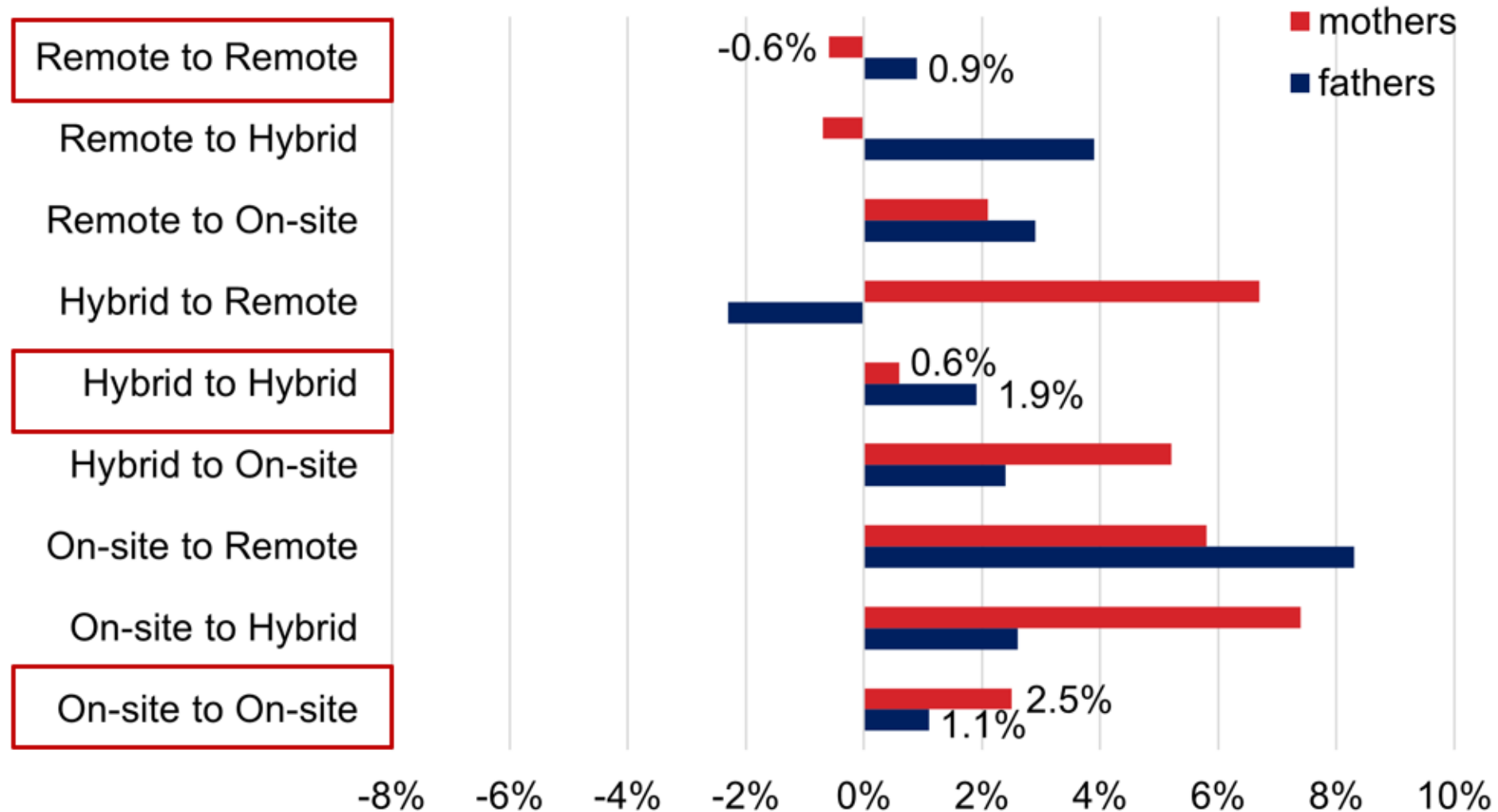


Year-over-year work location persistence (Weighted % of sample)



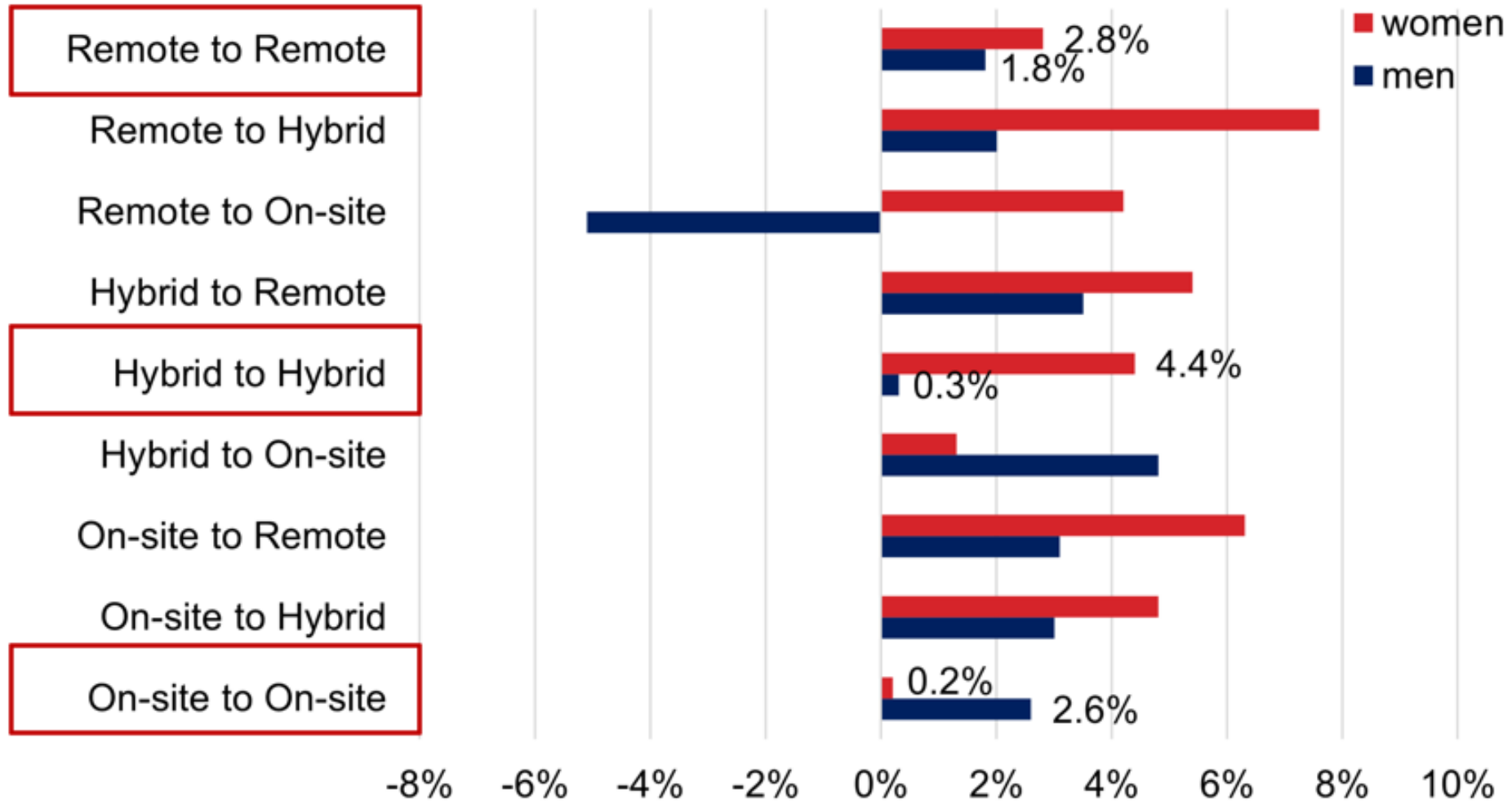
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

Annual wage growth by work location (Parents)



Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

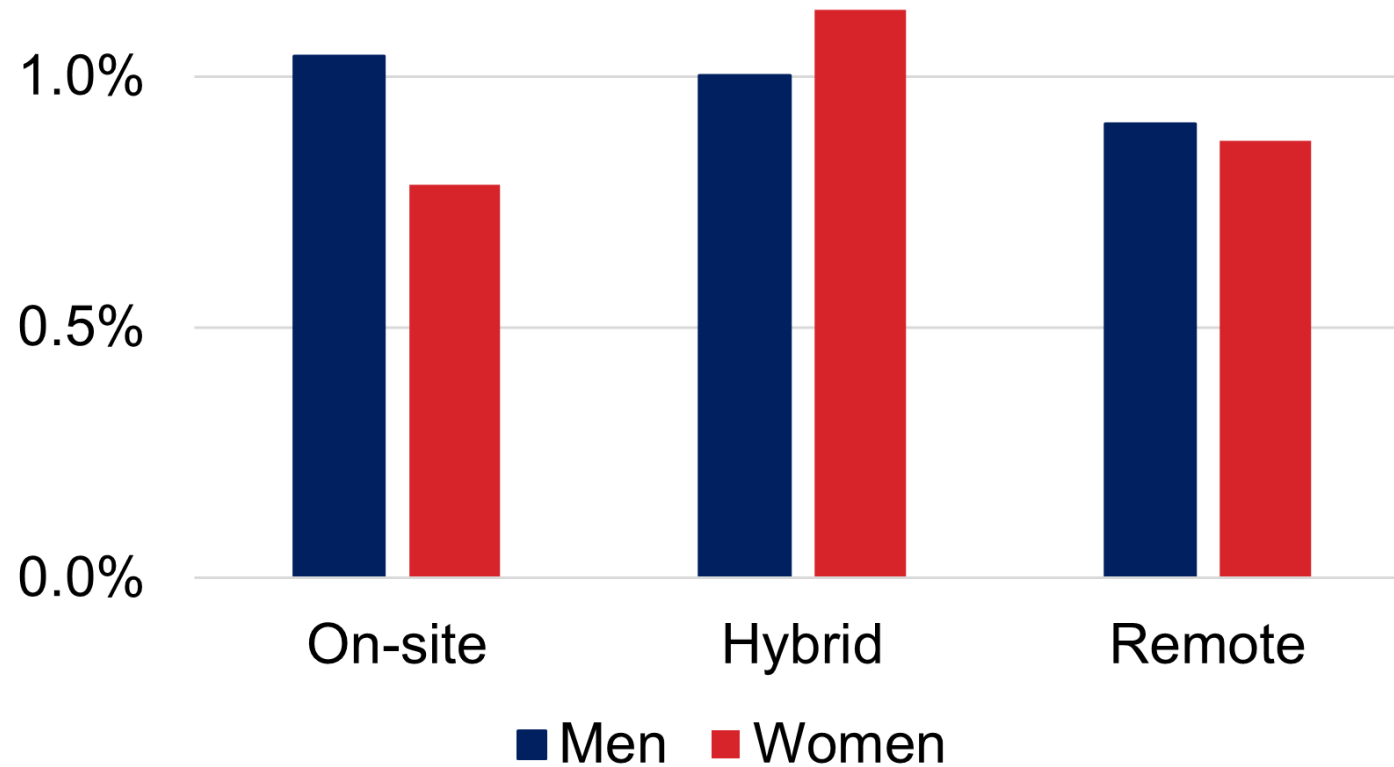
Annual wage growth by work location (Nonparents)



Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

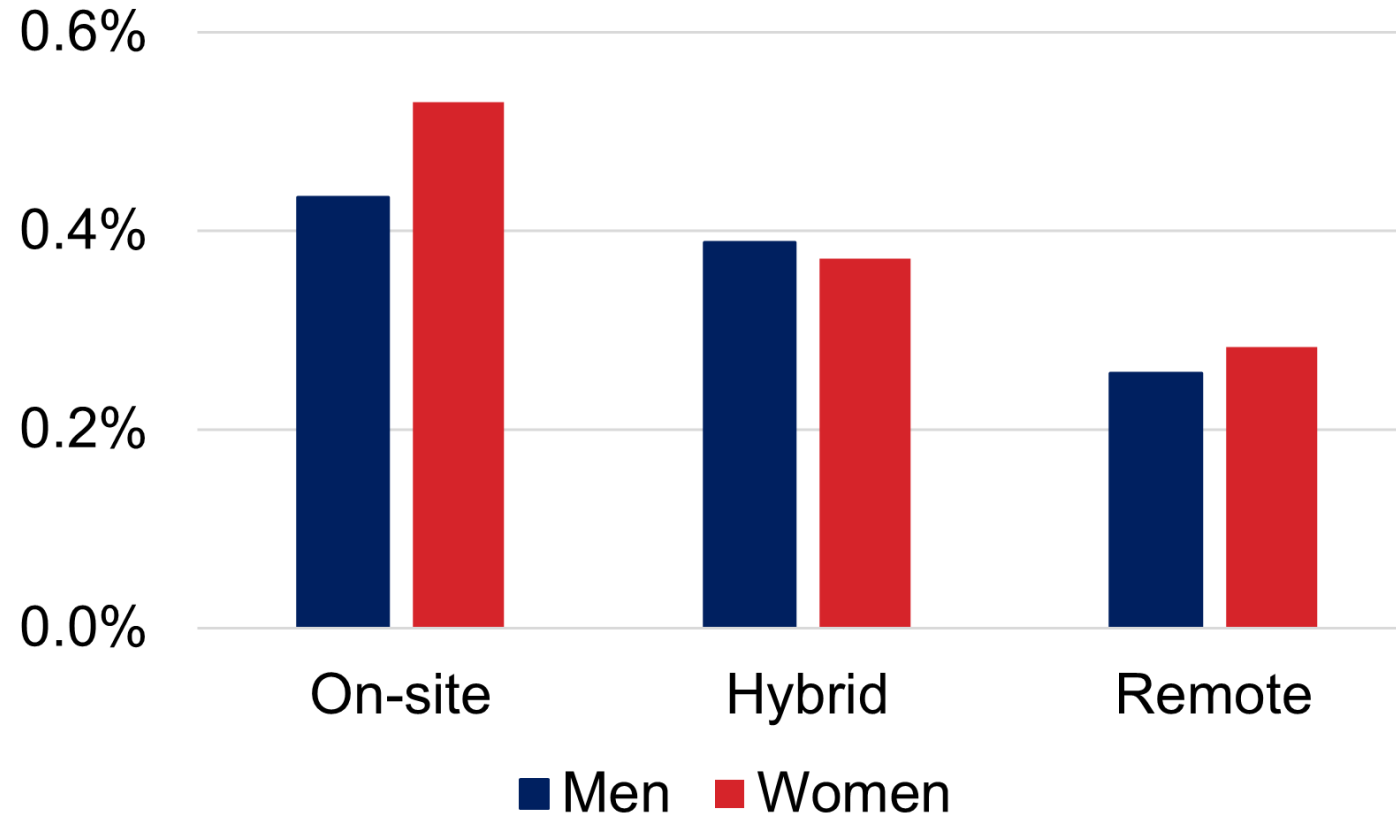


Month-to-month promotion rates by work location: Non-management to management occupations



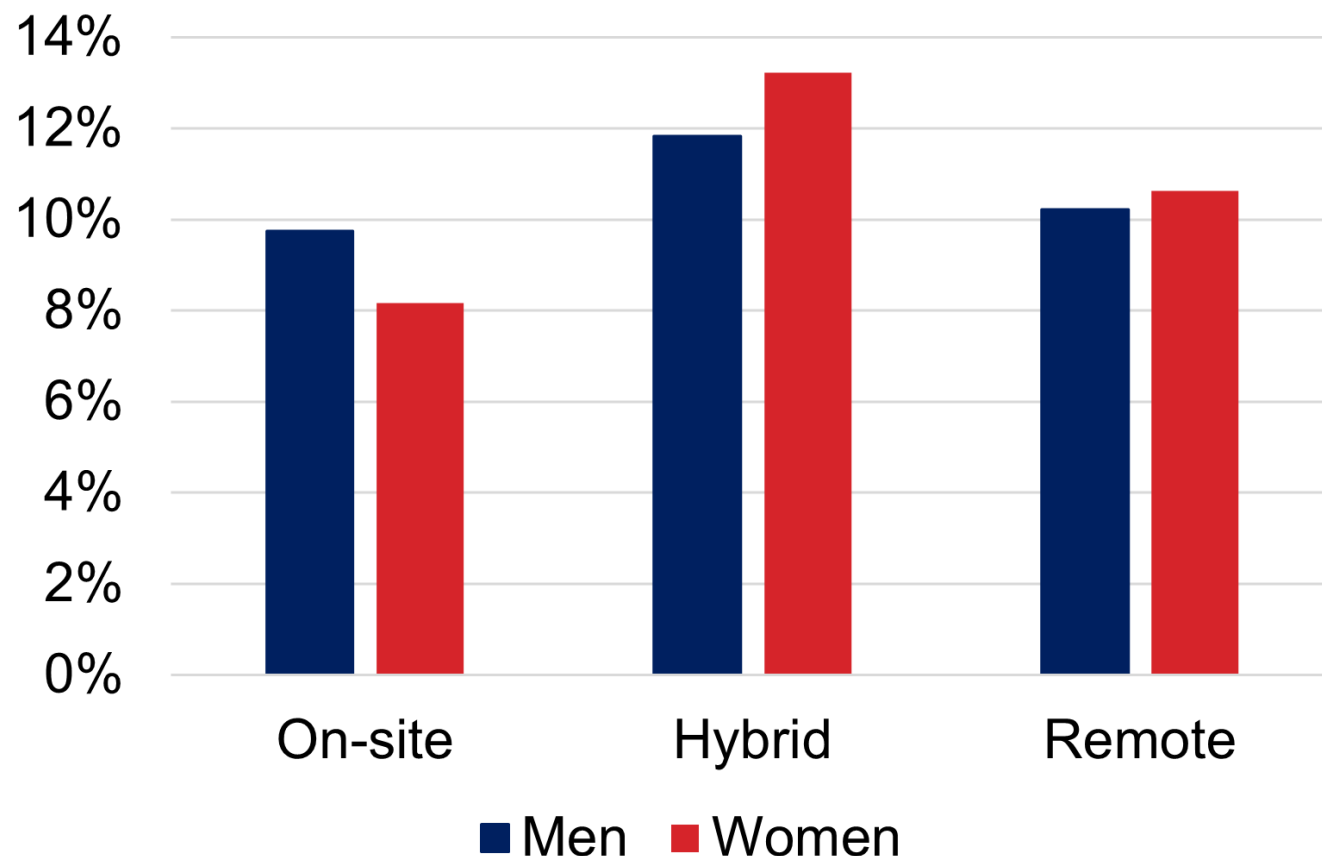
Source: Oct. 2022–Sept. 2025 Basic monthly CPS (IPUMS CPS,
University of Minnesota, www.ipums.org)

Month-to-month promotion rates by work location: First-line supervisors in sales and office/administrative support occupations



Source: Oct. 2022–Sept. 2025 Basic monthly CPS (IPUMS CPS, University of Minnesota, www.ipums.org)

Annual promotion rates by work location: Non-management to management occupations



Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

EMPIRICAL STRATEGY



Wage growth model

$$\ln\left(\frac{\text{wage}_{i,t}}{\text{wage}_{i,t-1}}\right) = \beta_0 + \beta'_1 \text{Work_location_transition}_{i,t} + \beta'_2 X_{i,t-1} + \beta'_3 \text{proxy_transitions}_{i,t} + \varepsilon_i$$

$\text{Work_location_transition}_{i,t}$: vector of 8 indicators for work location transitions from t-1 to t

$X_{i,t-1}$: quartic in age and indicators for educational attainment, race, Hispanic ethnicity, disability, marital status, #children under age 5, #children age 5–17, hourly, union member, foreign born, year, month, state, metropolitan area, major occupation, and major industry

$\text{proxy_transitions}_{i,t}$: vector of 3 indicators for proxy-self switches from t-1 to t

We use ORG weights adjusted for attrition between MIS 4 and MIS 8 and report robust standard errors.

Promotions model (Probit model)

$$P(Y_{i,t} = 1 \mid X) \\ = \Phi(\gamma_0 + \gamma_1 Hybrid_{i,t-1} + \gamma_2 Remote_{i,t-1} + \gamma_3' X_{i,t-1} + \gamma_4' proxy_transitions_{i,t})$$

$Y_{i,t}$ = Management Occupation (or First-line Supervisor for Sales/Office and Admin)

We cluster standard errors at the household level.

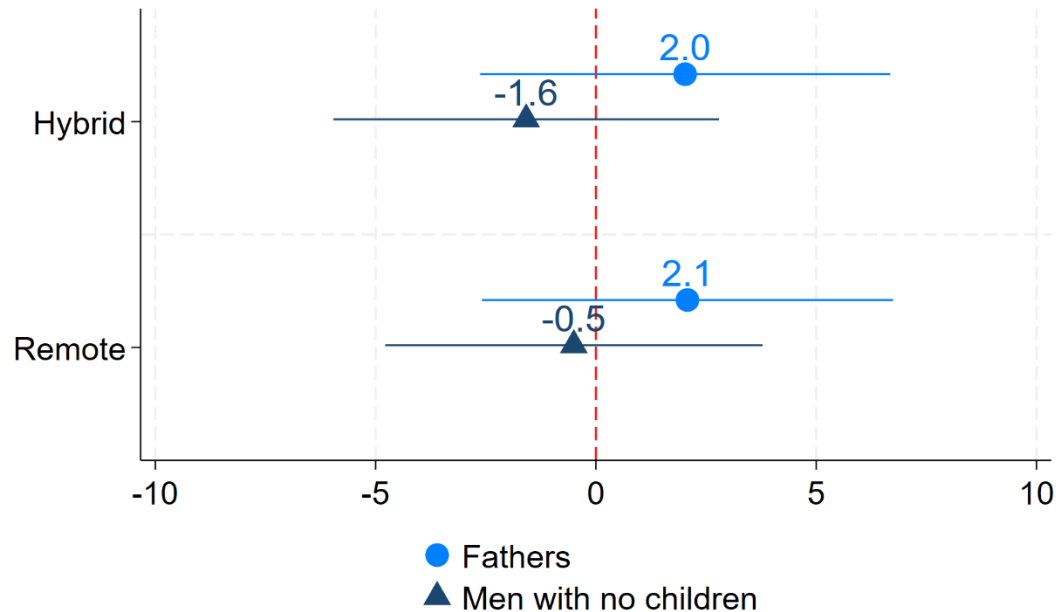
Two different weights used:

- IPUMS generated longitudinal weights to account for month-to-month attrition.
- Earner weights adjusted to account for annual attrition (authors' calculations).

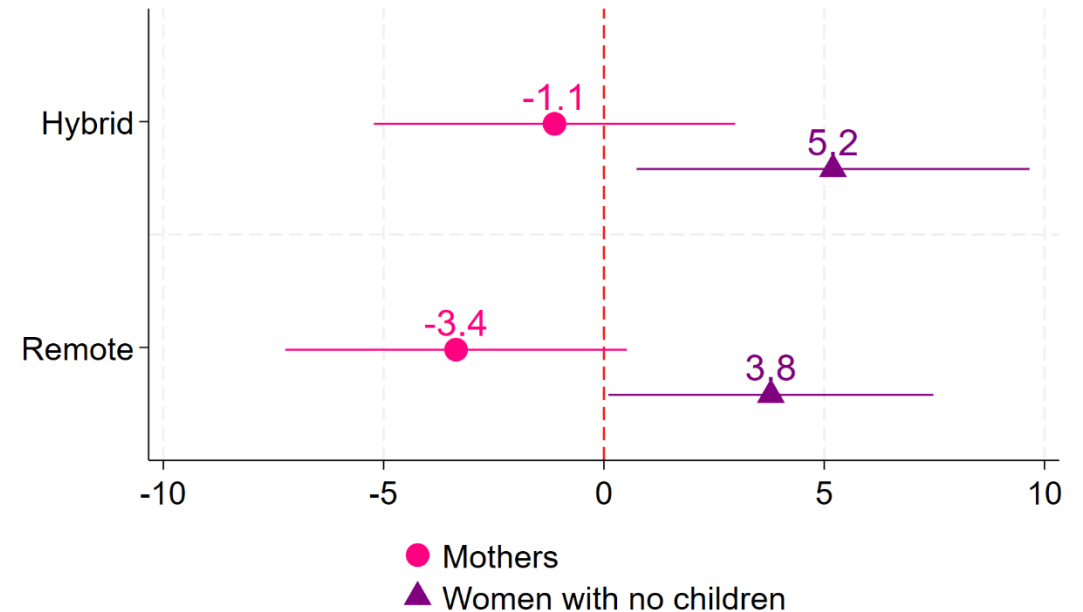
Main results: Wage growth

(percentage-point differences from on-site and 95% CI)

Men (N = 9,344)



Women (N = 11,196)



Remote work is associated with **slower** wage growth for mothers.

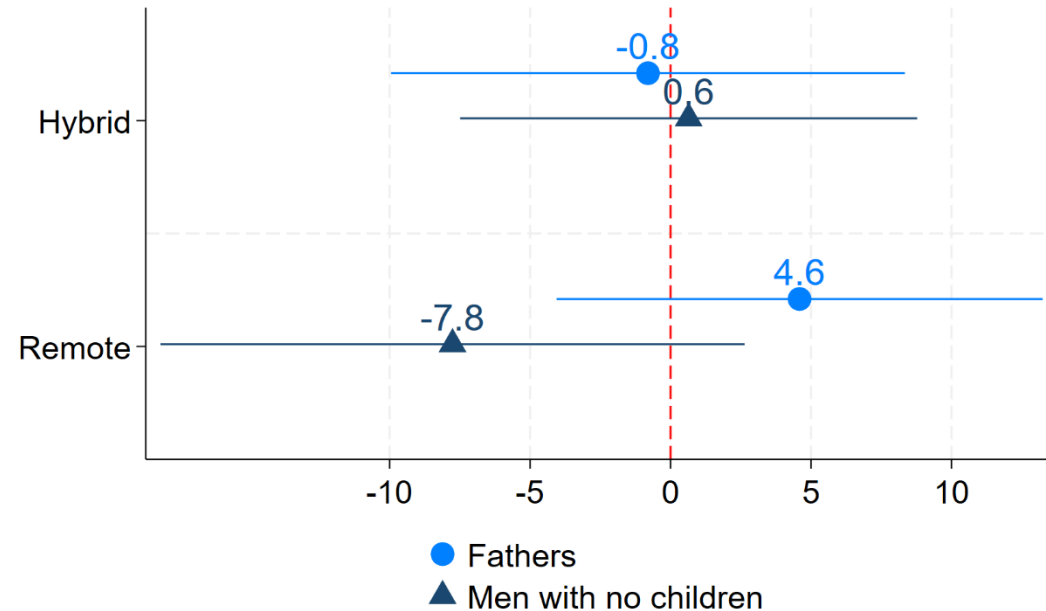
Hybrid/remote work are associated with **faster** wage growth for **women without children**.

Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

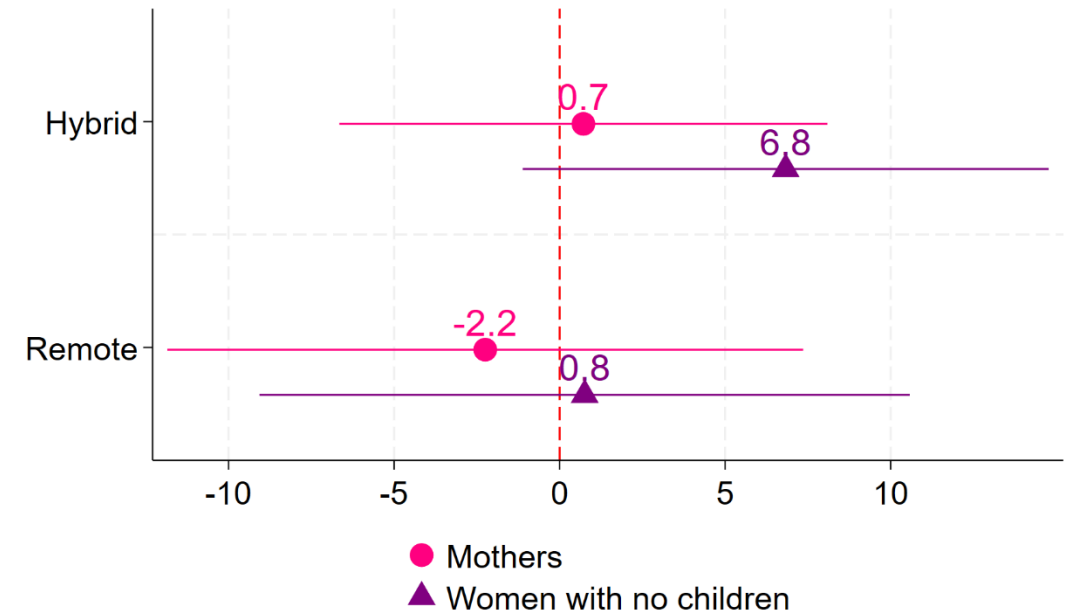
Wage growth among **Management**

(percentage-point differences from on-site and 95% CI)

Men (N = 2,361)



Women (N = 2,264)

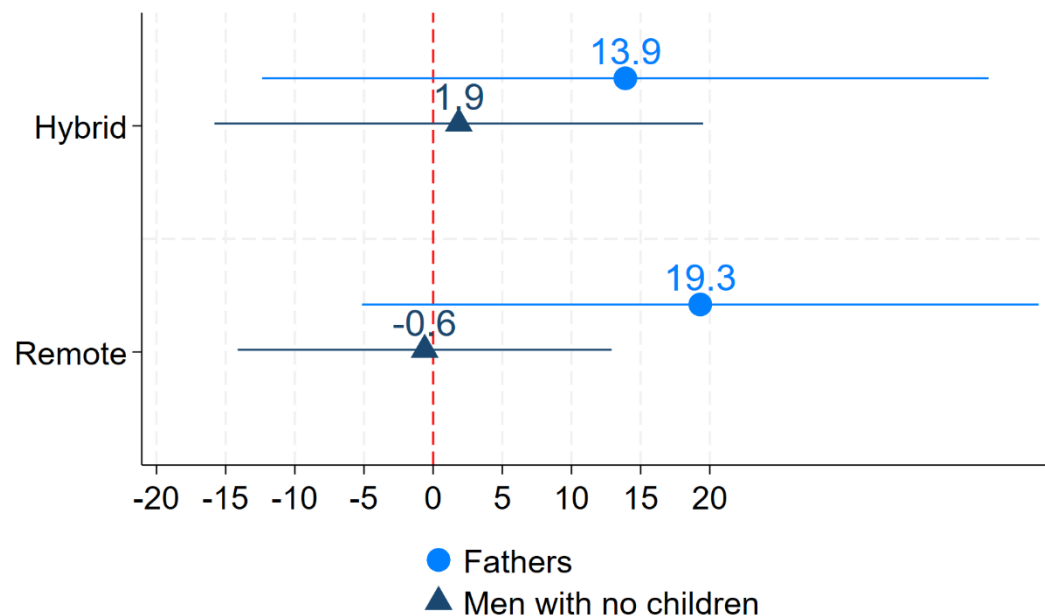


Remote work is also associated with **slower** wage growth for **men without children**.
Hybrid work is associated with **faster** wage growth for **women without children**.

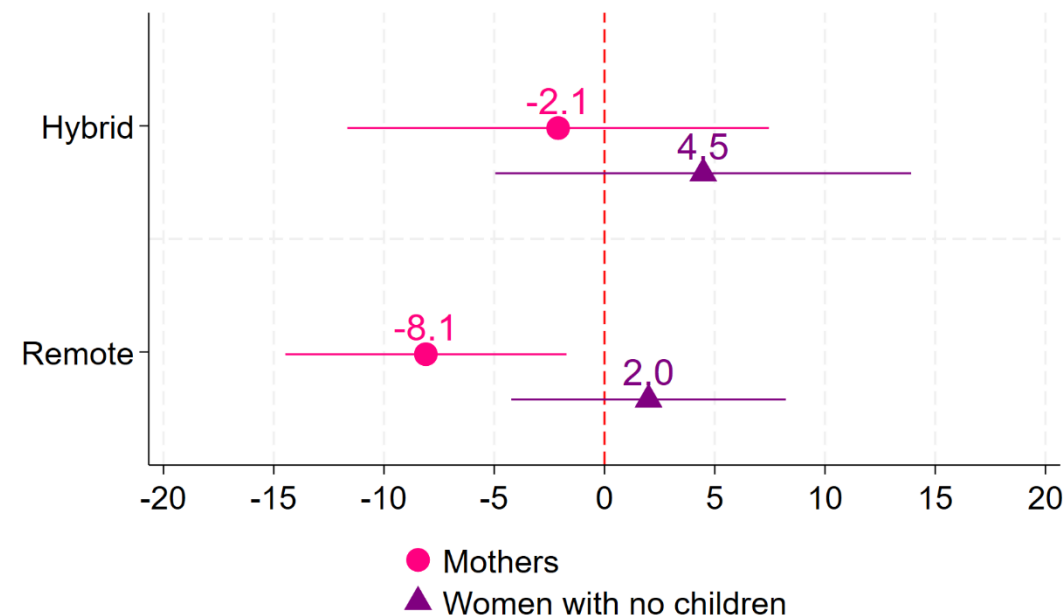
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

Wage growth among **Office and Administrative Support Occupations** (percentage-point differences from onsite and 95% CI)

Men (N = 847)



Women (N = 2,708)



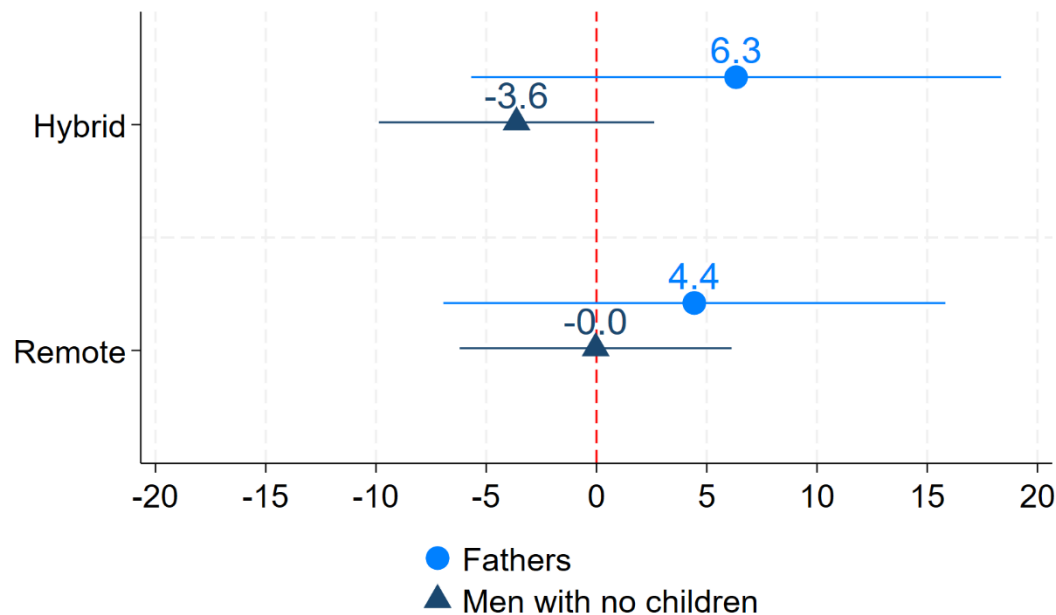
Remote work is associated with **slower** wage growth for **mothers**, but **faster** wage growth for **fathers**.

Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

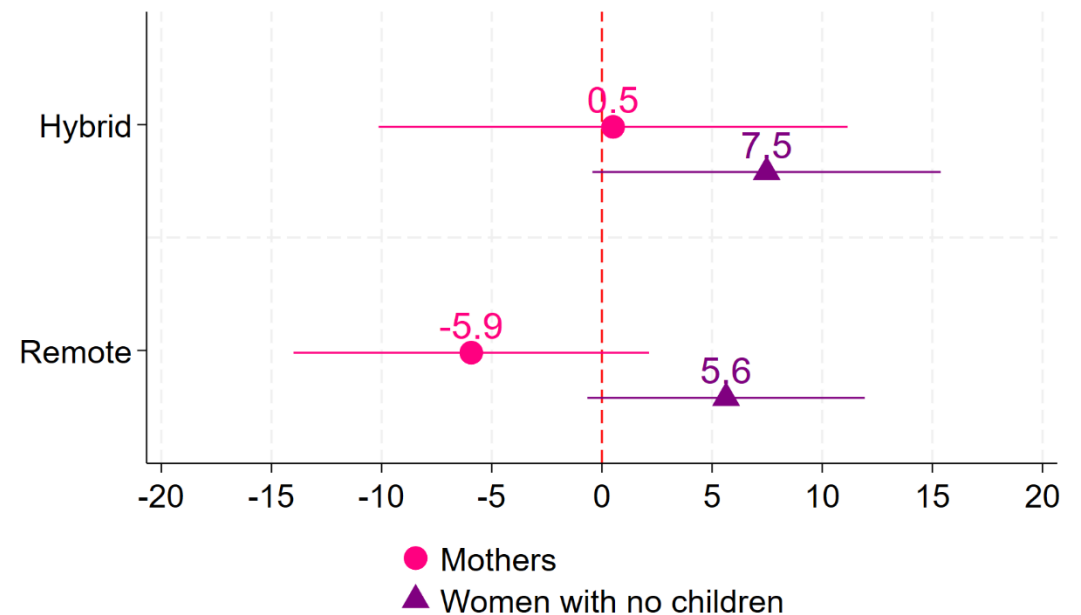
Wage growth among **workers aged 25–34**

(percentage-point differences from onsite and 95% CI)

Men (N = 7,684)



Women (N = 8,902)



Remote work is associated with **slower** wage growth for young **mothers**.

Remote/hybrid work are associated with **faster** wage growth for **women without children**.

Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

Subsample Analyses: Wage growth

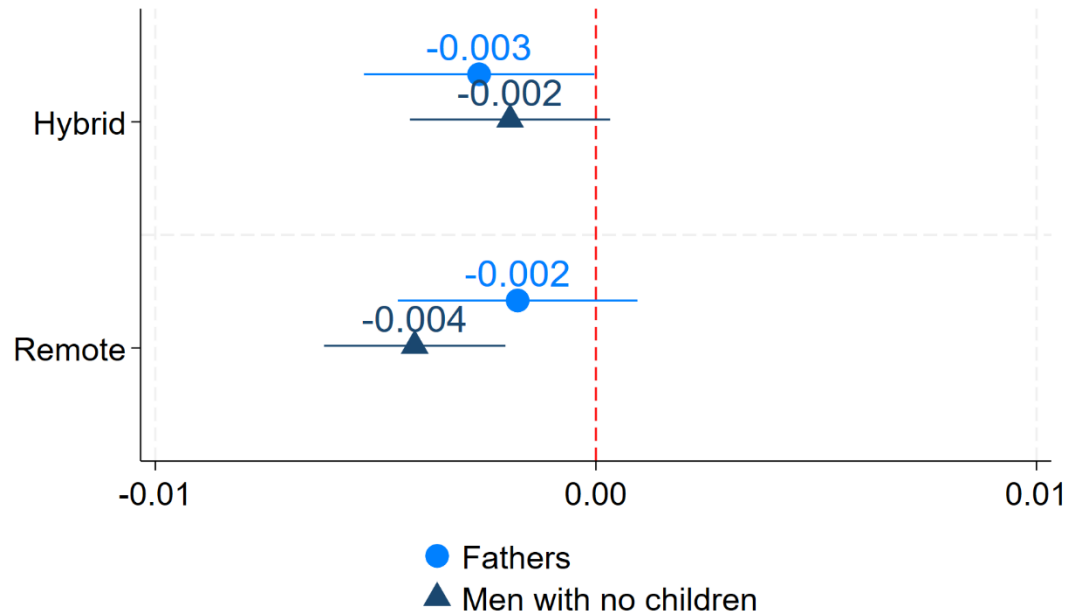
- Similar results for people with one job only
- For women, some results change if we restrict to prime-age workers (25–54-year-olds).
 - ▶ Stronger associations of wage growth with:
 - Remote work for mothers
 - Hybrid work for women without children
 - ▶ No relationship with remote work for women without children

Robustness check

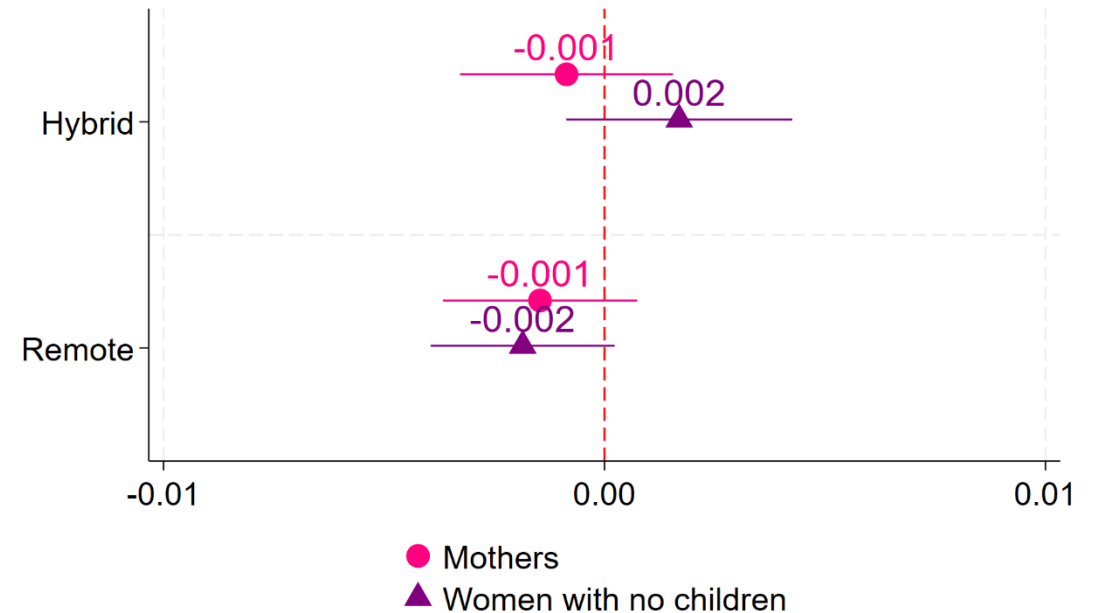
- Similar results if hybrid is defined as 10–90% of hour worked from home.

Main results: **Month-to-month** probability of transitioning to management (Probit marginal effects and 95% CI)

Men (N = 111,150)



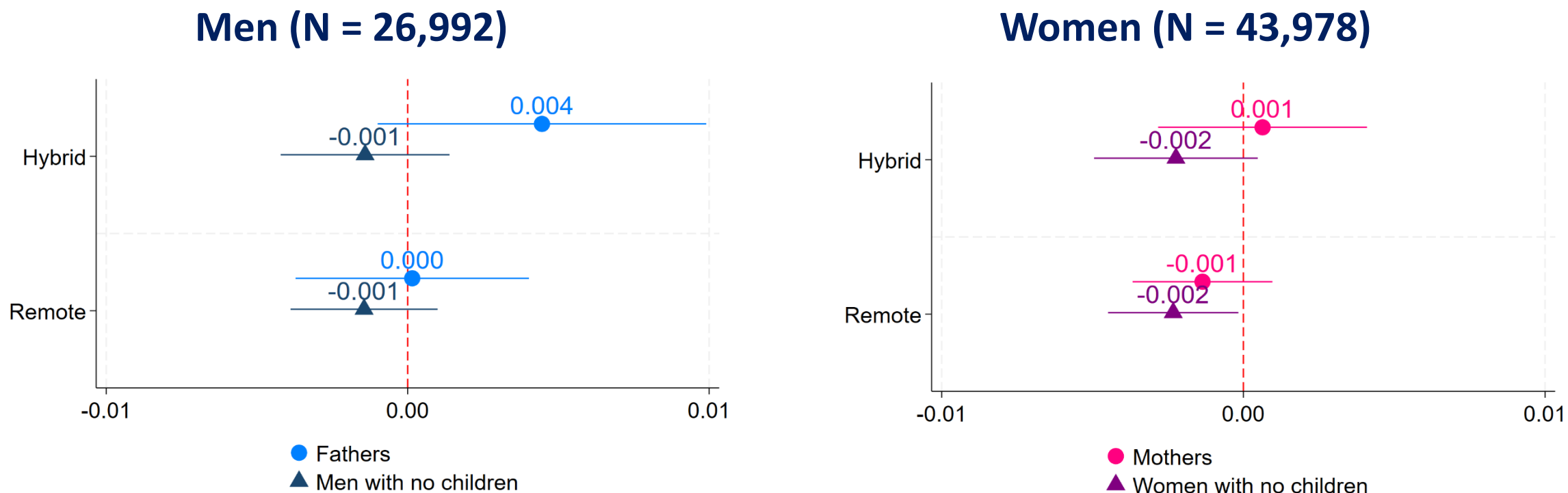
Women (N = 126,480)



Hybrid work is associated with a **lower** probability of promotion to manager for **all men**.
Remote work is associated with a **lower** probability of promotion to manager for **men and women without children**.

Source: Oct. 2022–Sept. 2025 Basic monthly CPS (IPUMS-USA, University of Minnesota, www.ipums.org)

Month-to-month probability of transitioning to first-line supervisor in **sales and office/administration** (Probit marginal effects and 95% CI)



Remote work is associated with a **lower** probability of a promotion for **women without children**.

Source: Oct. 2022–Sept. 2025 Basic monthly CPS (IPUMS-USA, University of Minnesota, www.ipums.org)

Subsamples: Probability of transitioning to management

- Similar results for people with one job only
- Same employer from month-to-month
 - ▶ No associations for hybrid men.
 - ▶ Remote work is associated with a lower probability of promotion for all men (0.1 pp).
 - ▶ Remote work is associated with a lower probability of promotion for women without children (0.2 pp, same result).

Different sample: Year-over-year promotions (ORG sample)

- Remote work is associated with a lower probability of promotion for fathers (2.1 pp)—not statistically significant. No other statistically significant findings.
- Promotion to first-line supervisor in sales and office/administration
 - ▶ Hybrid work is associated with a lower probability of promotion for all women (3.0 pp) and for fathers (4.6 pp).
 - ▶ Remote work is associated with a lower probability for men without children (3.4 pp) and for mothers (2.2 pp).

Key takeaways

- Remote work is associated with:
 - ▶ **slower** wage growth for mothers.
 - ▶ a **lower** probability of promotion to management for those without children.
- Remote/hybrid work is associated with:
 - ▶ **faster** wage growth for women without household children.
 - ▶ a **lower** probability of promotion to first-line supervisor for women without children in sales and office and administrative support occupations.
- Hybrid work is associated with a **lower** probability of promotion to management month-over-month for **men**.



Contact Information

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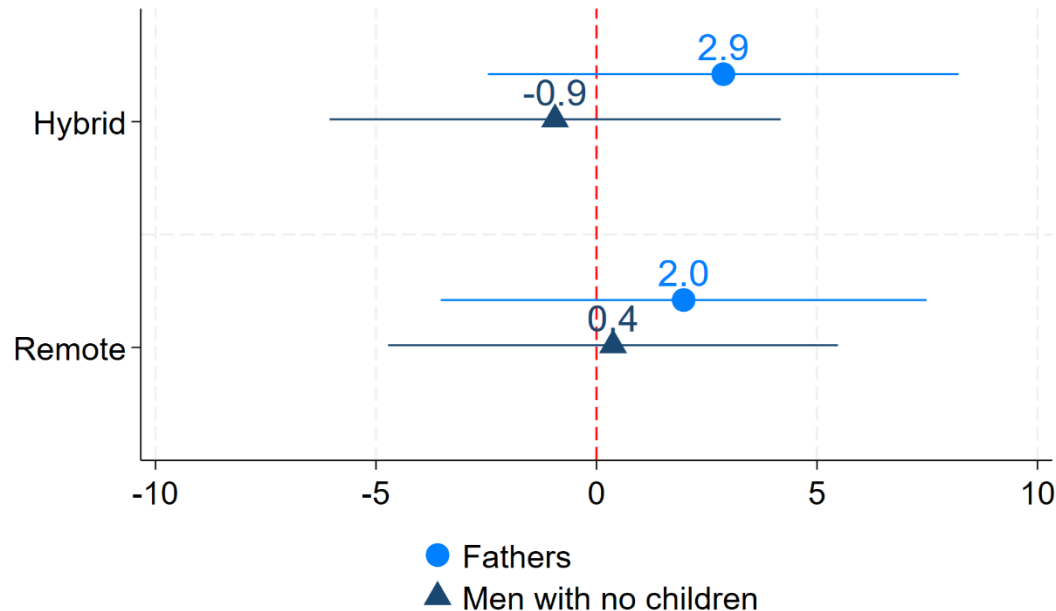
BONUS SLIDES



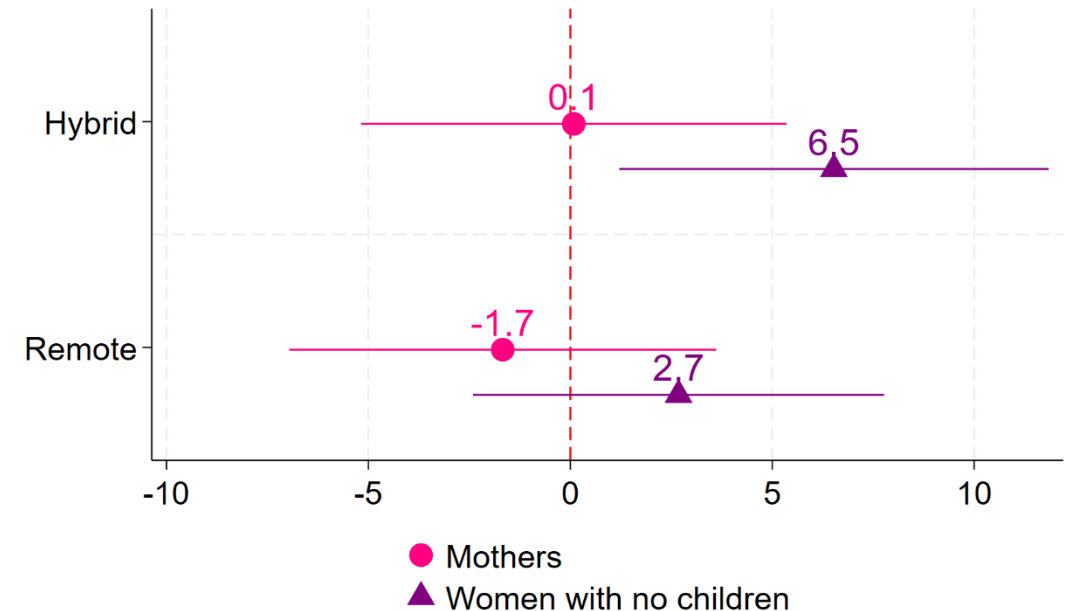
Wage growth among college-educated workers

(percentage-point differences from onsite and 95% CI)

Men (N = 7,684)



Women (N = 8,902)



Remote work has no association with wage growth for mothers.

Stronger positive association between hybrid and wage growth for women without children.

Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)

Year-over-year work location transition frequencies

Work location	On-site	Hybrid	Remote
On-site	84.70	9.09	6.21
Hybrid	26.15	59.58	14.27
Remote	14.24	16.55	69.21

Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, www.ipums.org)