

# Does Remote Work Slow Wage Growth and Promotions?

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**Allied Social Sciences Association Meetings**

January 5, 2026

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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

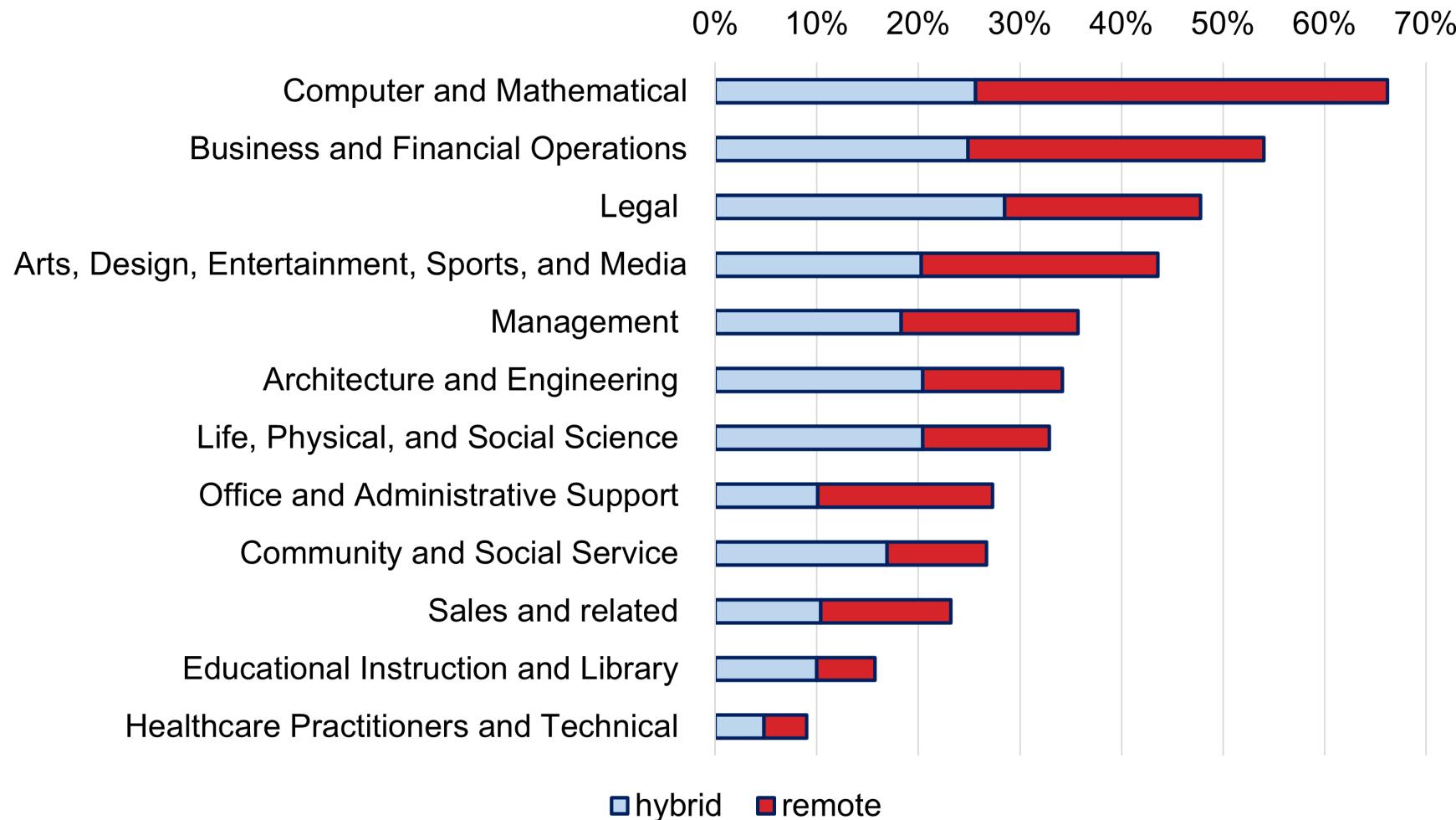
We define three mutually-exclusive categories:

- 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

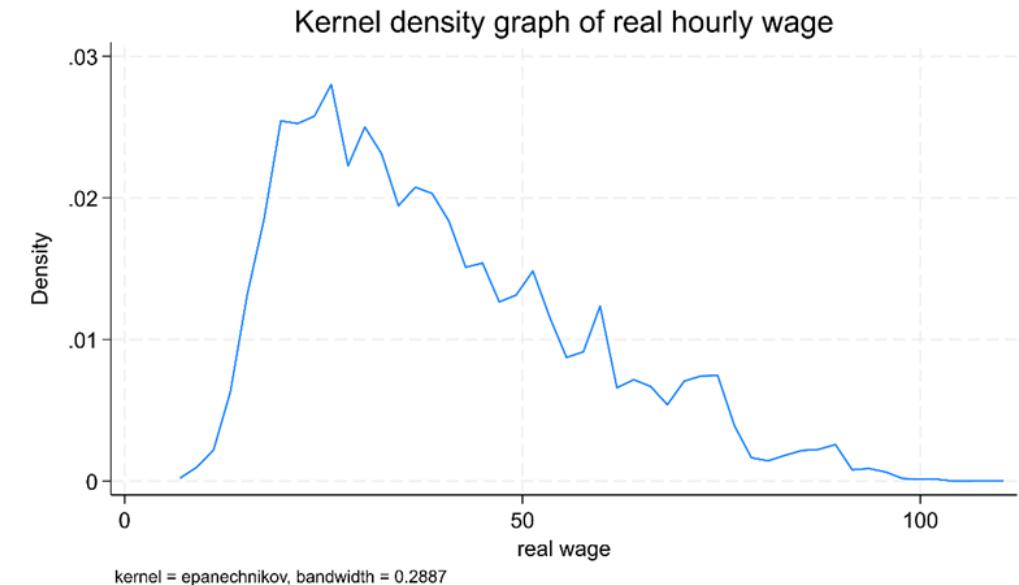
# % of each major occupation groups working hybrid or remote



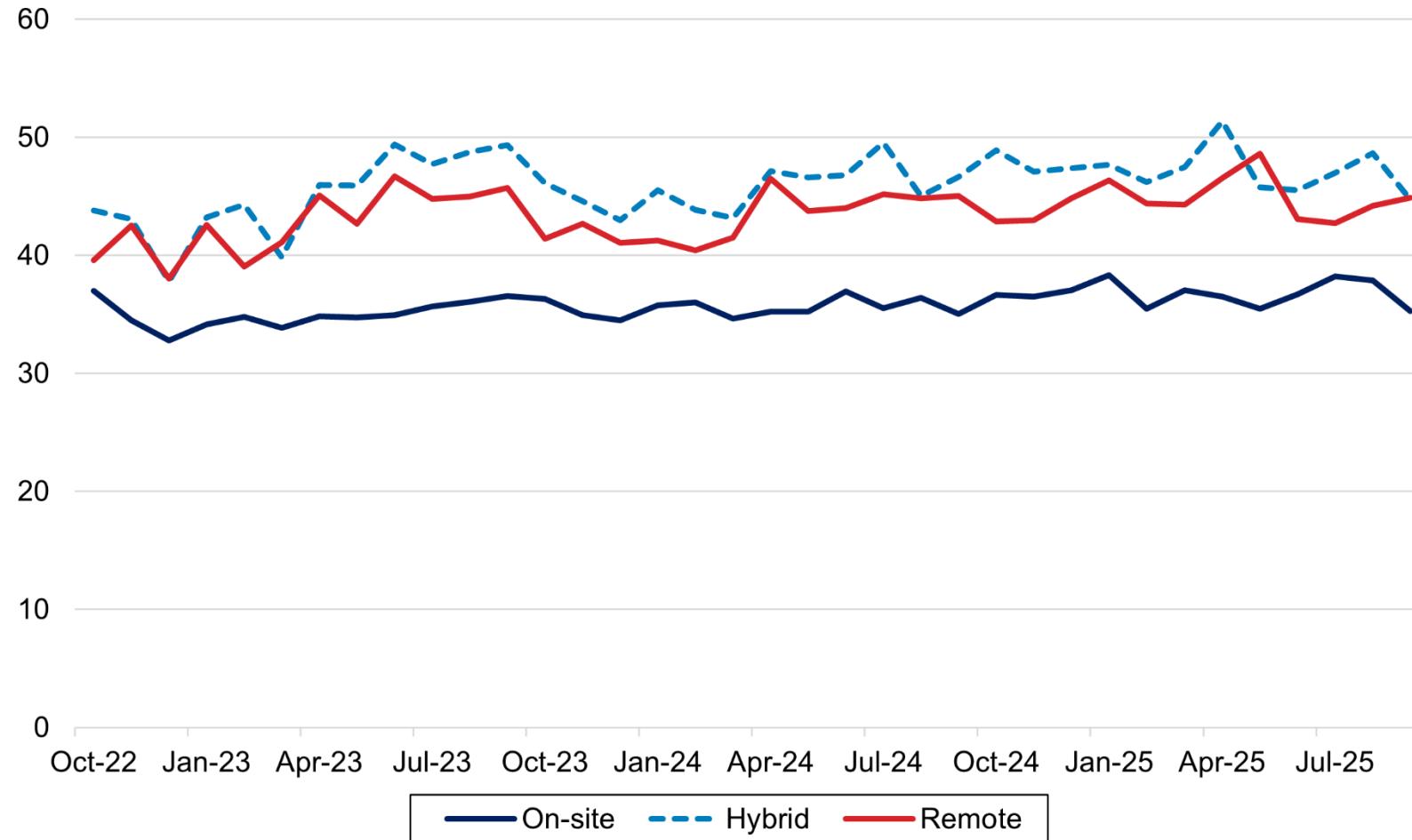
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, [www.ipums.org](http://www.ipums.org))

# 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.

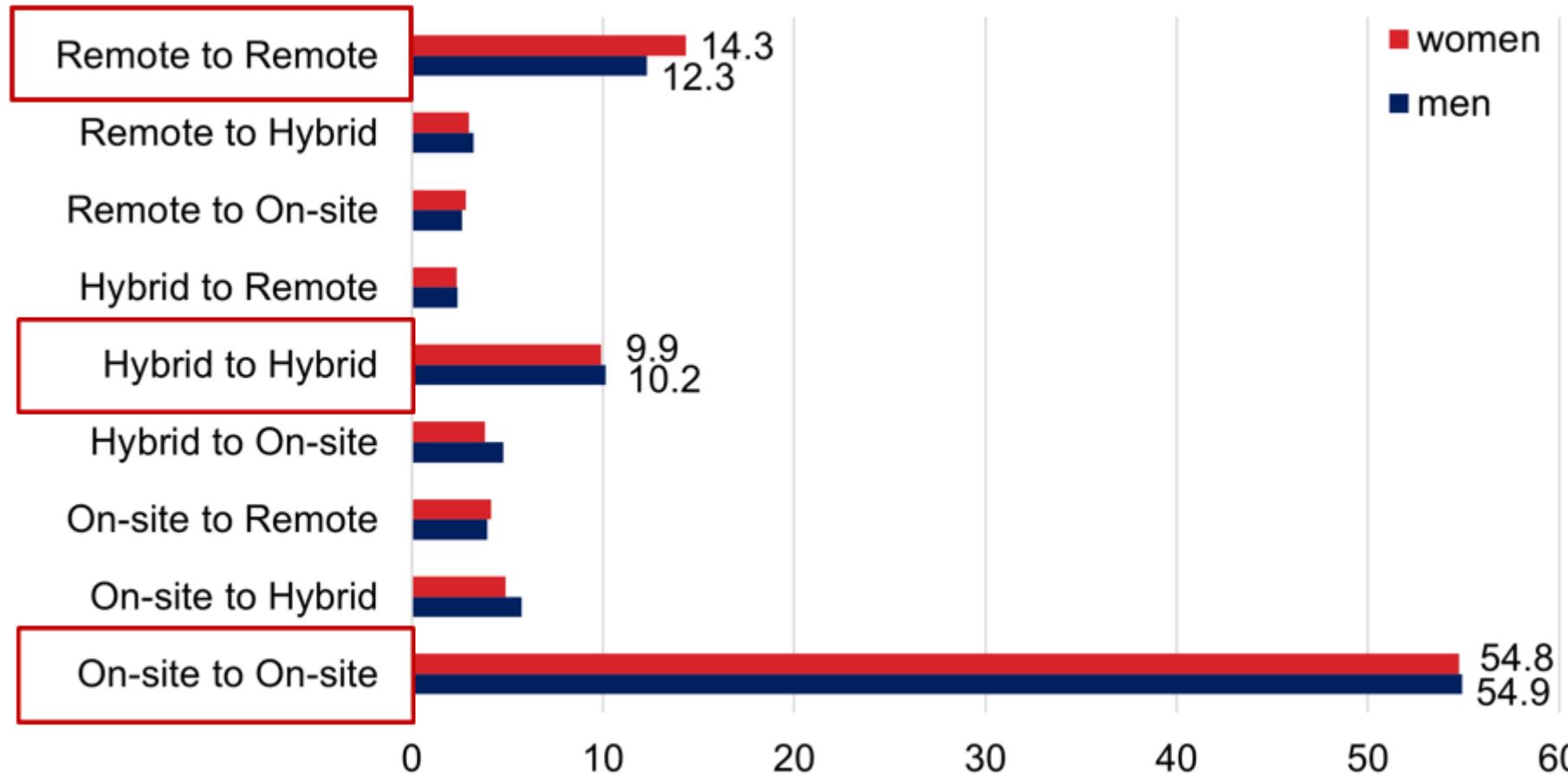
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, [www.ipums.org](http://www.ipums.org))

# 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

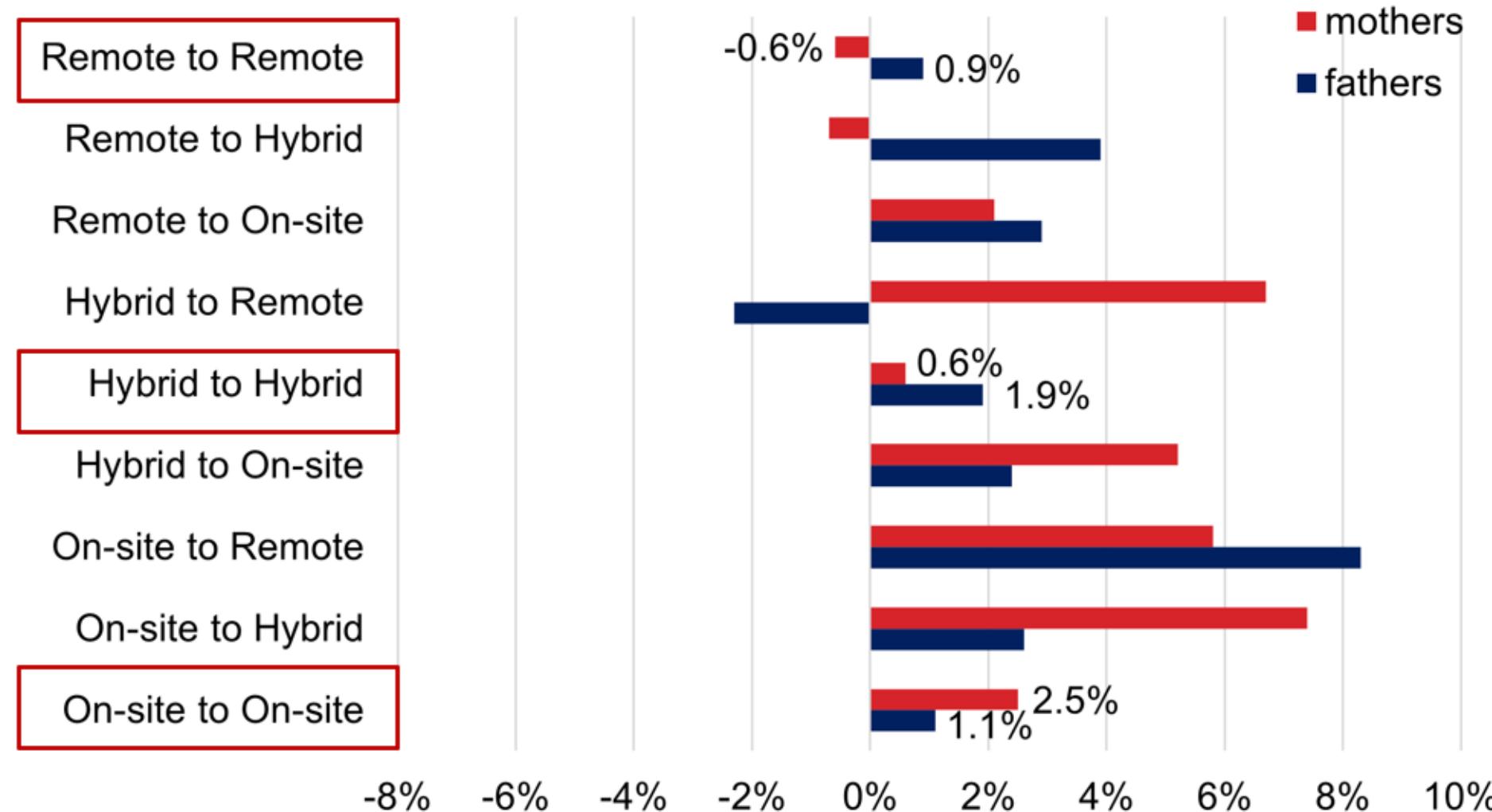
# Year-over-year work location persistence

(Weighted % of sample)



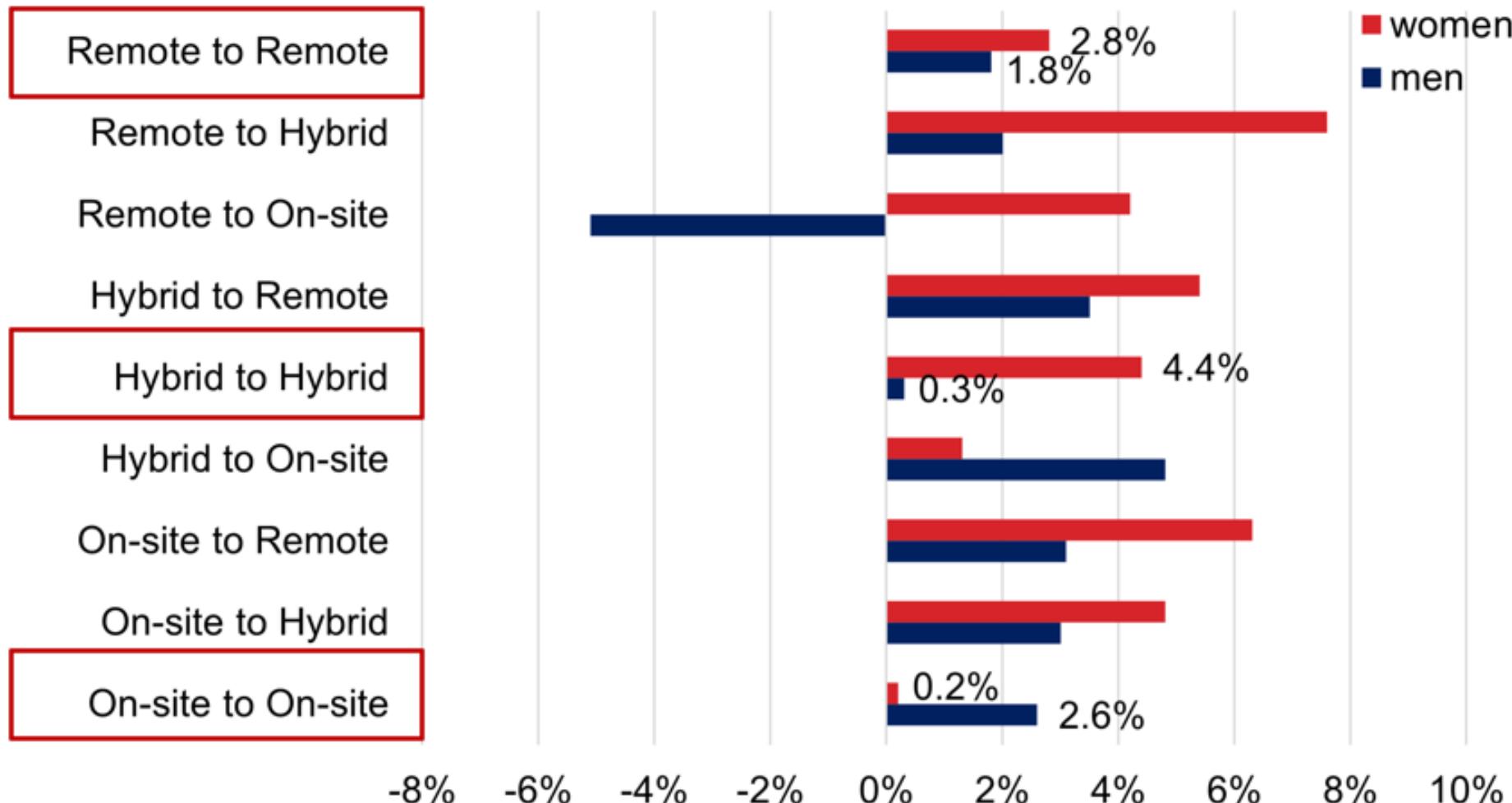
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, [www.ipums.org](http://www.ipums.org))

# Annual wage growth by work location (Parents)



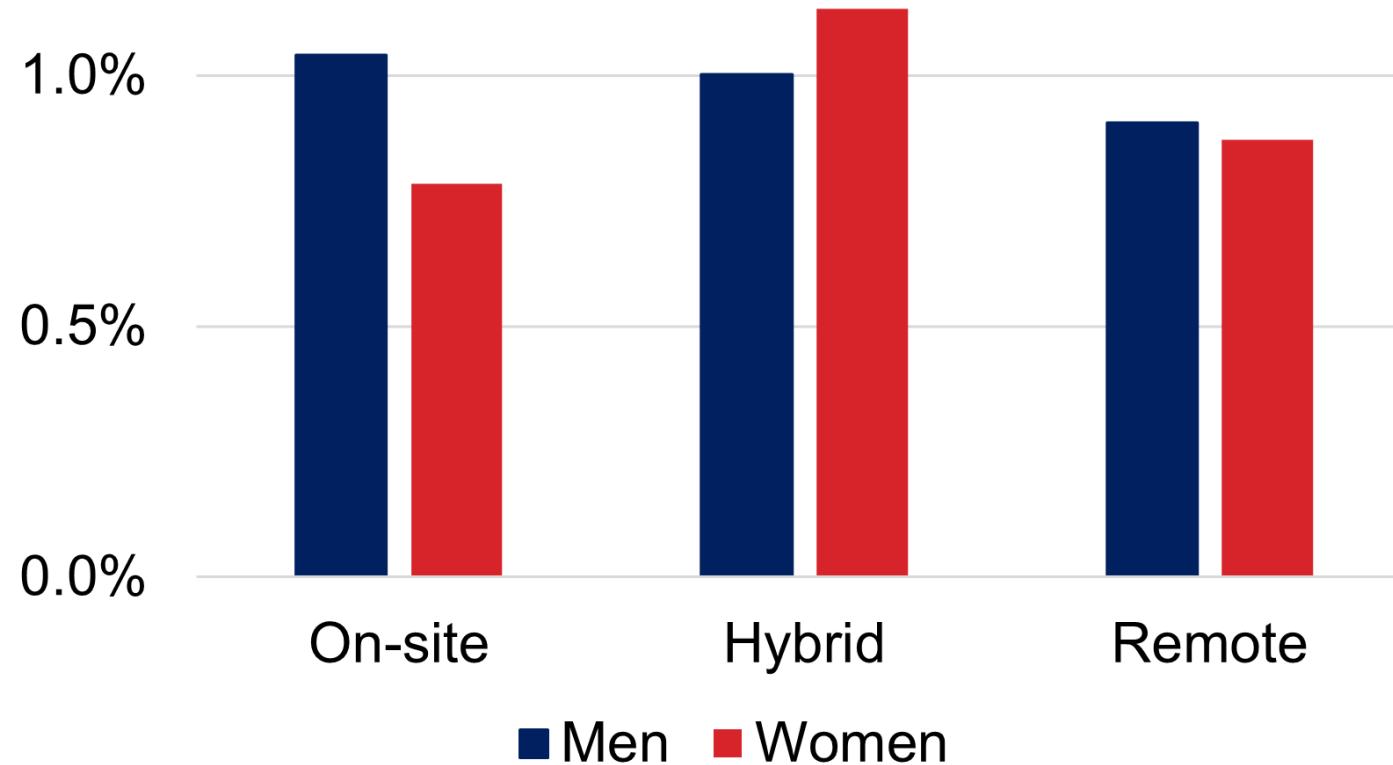
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, [www.ipums.org](http://www.ipums.org))

# Annual wage growth by work location (Nonparents)



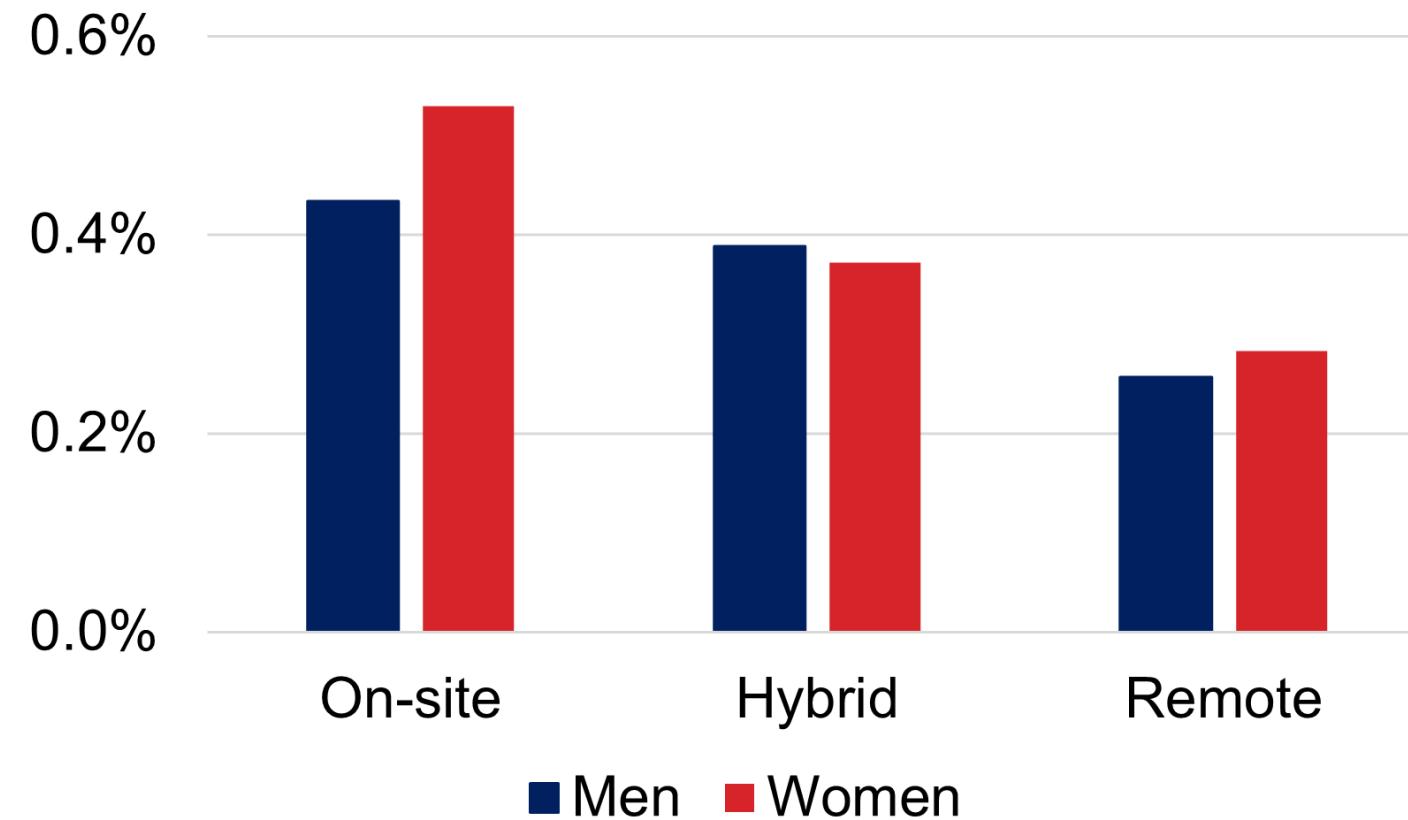
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, [www.ipums.org](http://www.ipums.org))

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



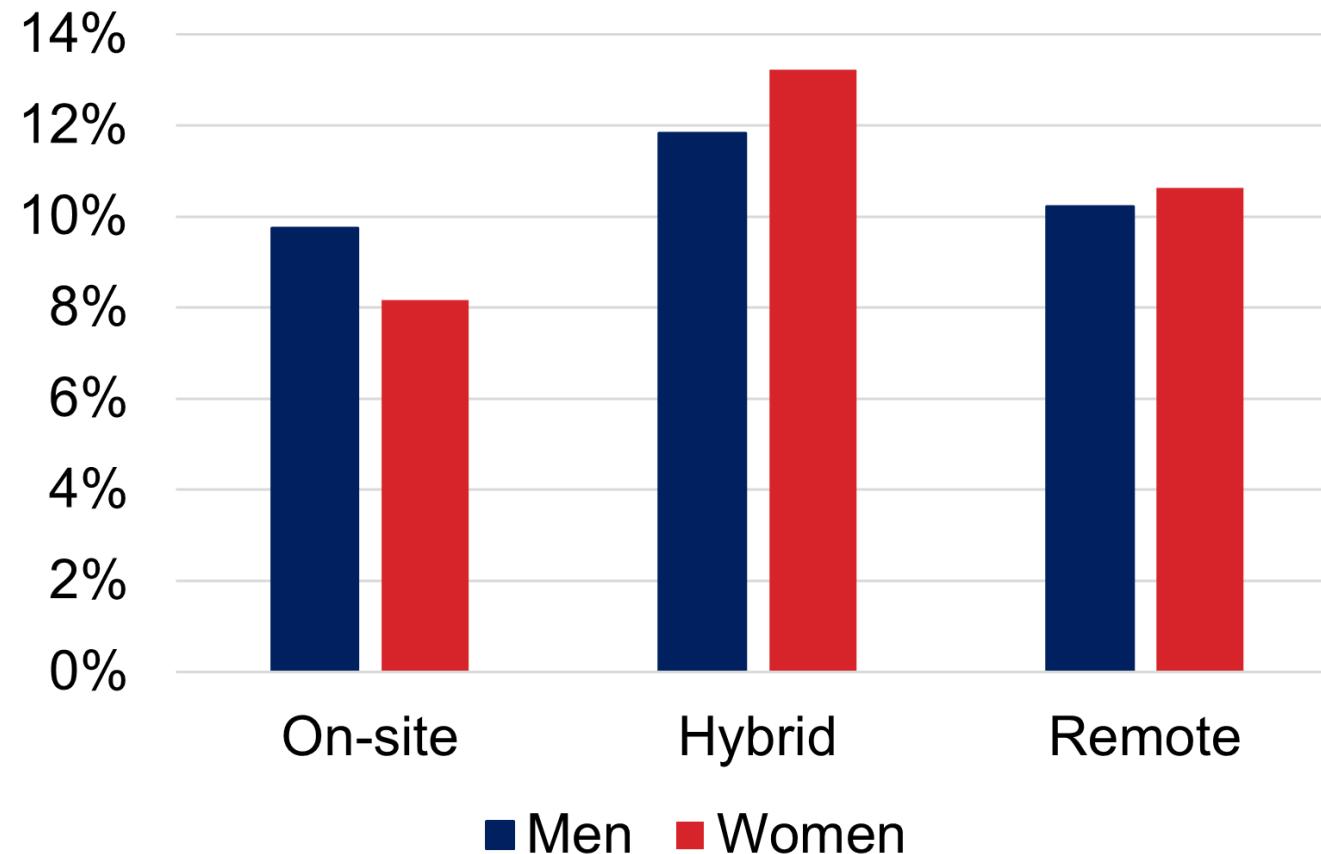
Source: Oct. 2022–Sept. 2025 Basic monthly CPS (IPUMS CPS,  
University of Minnesota, [www.ipums.org](http://www.ipums.org))

# 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](http://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](http://www.ipums.org))

# EMPIRICAL STRATEGY

# Wage growth model

$$\ln\left(\frac{\text{wage}_{i,t}}{\text{wage}_{i,t-1}}\right) = \beta_0 + \beta_1' \text{Work\_location\_transition}_{i,t} + \beta_2' X_{i,t-1} + \beta_3' \text{proxy\_transitions}_{i,t} + \varepsilon_i$$

*Work\_location\_transition<sub>i,t</sub>*: vector of 8 indicators for work location transitions from t-1 to t

*X<sub>i,t-1</sub>*: 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

*proxy\_transitions<sub>i,t</sub>*: 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)

$$\begin{aligned}P(Y_{i,t} = 1 | X) \\= \Phi(\gamma_0 + \gamma_1 Hybrid_{i,t-1} + \gamma_2 Remote_{i,t-1} + \gamma_3' X_{i,t-1} + \gamma_4' proxy\_transitions_{i,t})\end{aligned}$$

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

We cluster standard errors at the household level.

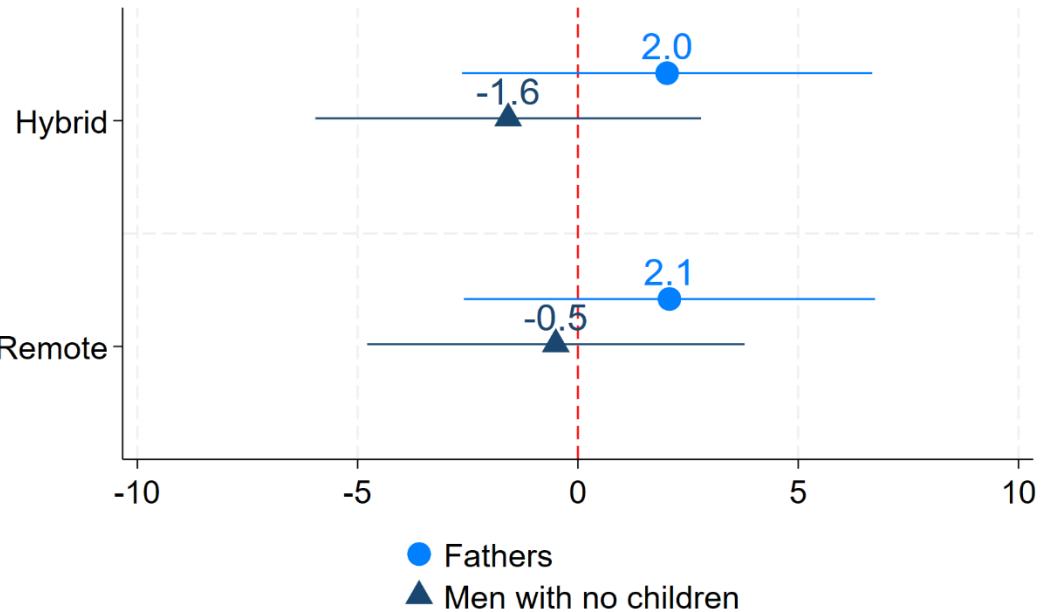
Two different weights used:

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

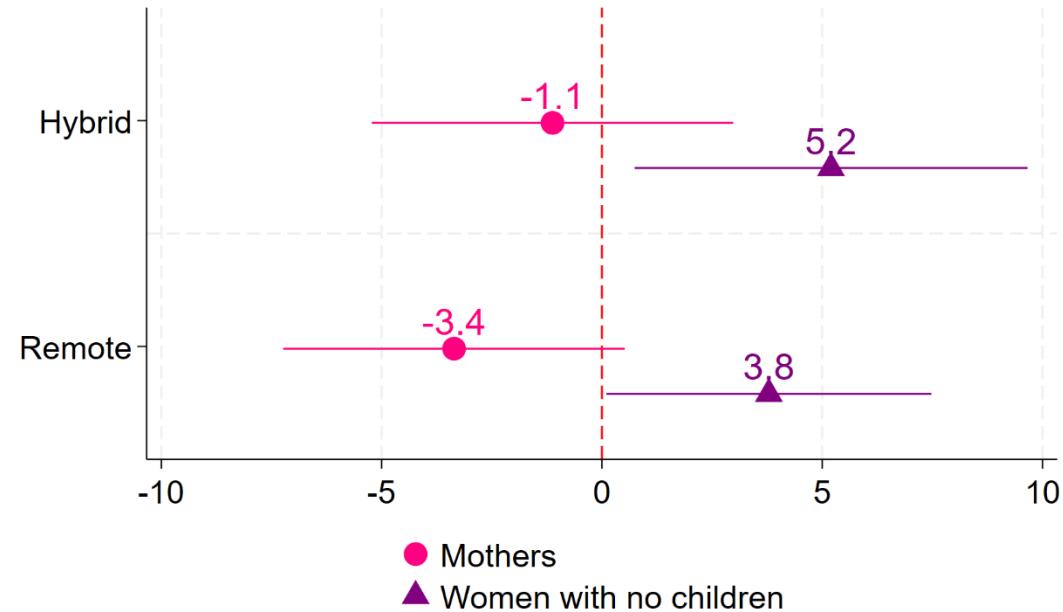
# Main results: Wage growth

(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.

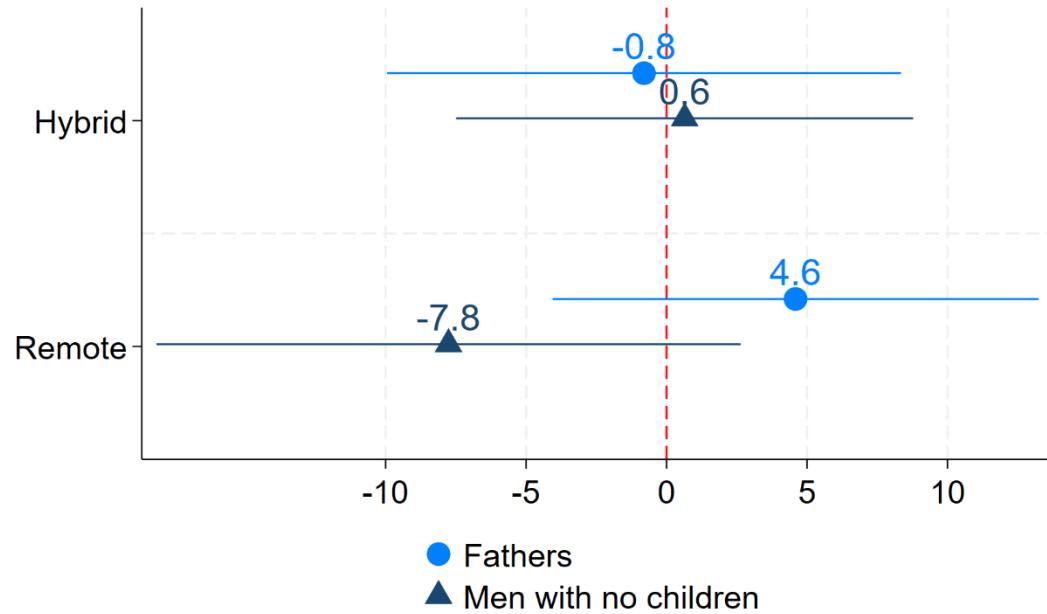
Hybrid/remote work are associated with **faster** wage growth for **women without children**.

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

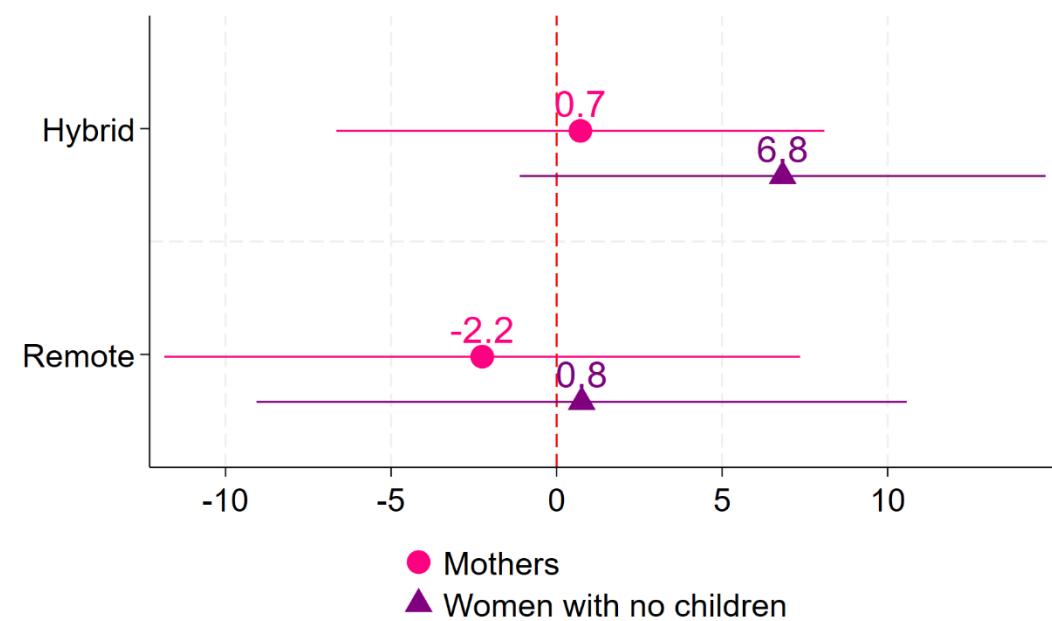
# Wage growth among Management

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

**Men (N = 2,361)**



**Women (N = 2,264)**

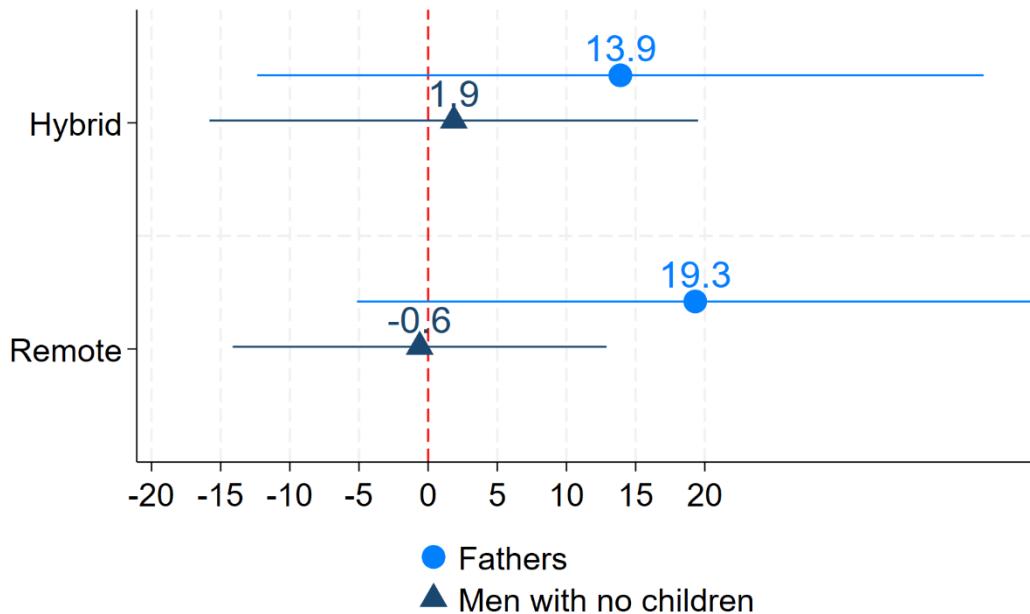


Remote work is also associated with **slower wage growth for men without children**.  
Hybrid work is associated with **faster wage growth for women without children**.

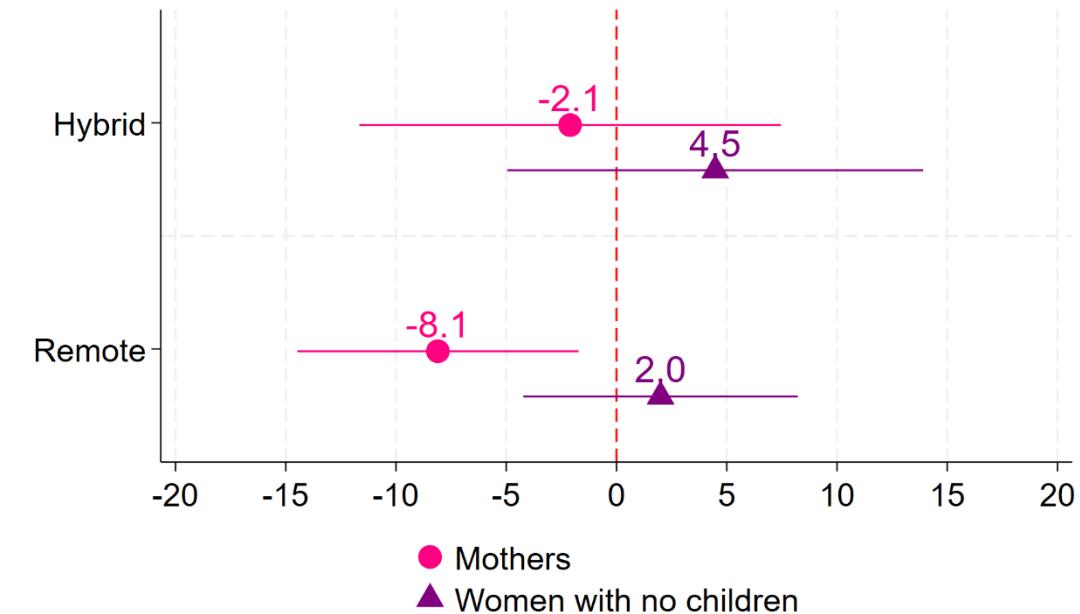
Source: Oct. 2022–Sept. 2025 CPS ORG (IPUMS CPS, University of Minnesota, [www.ipums.org](http://www.ipums.org))

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

**Men (N = 847)**



**Women (N = 2,708)**



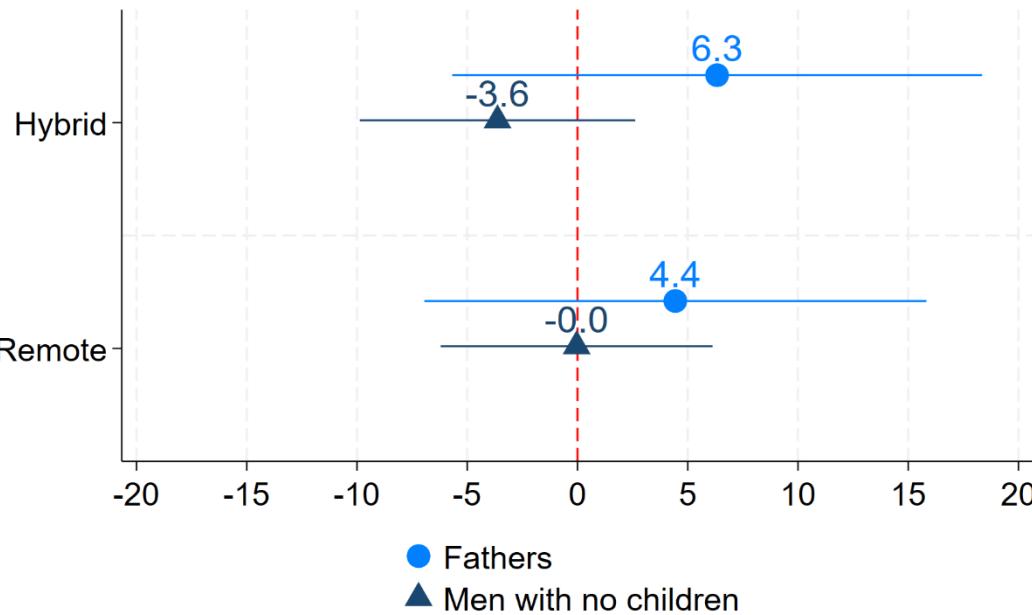
Remote work is associated with **slower wage growth for mothers**, but **faster wage growth for fathers**.

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

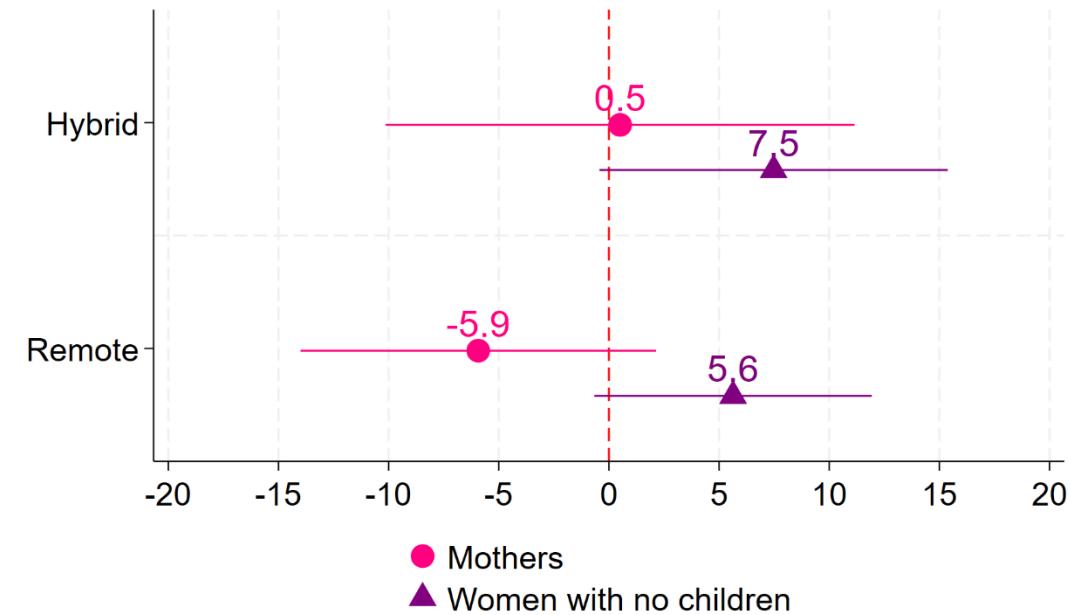
# Wage growth among workers aged 25–34

(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](http://www.ipums.org))

# Subsample Analyses: Wage growth

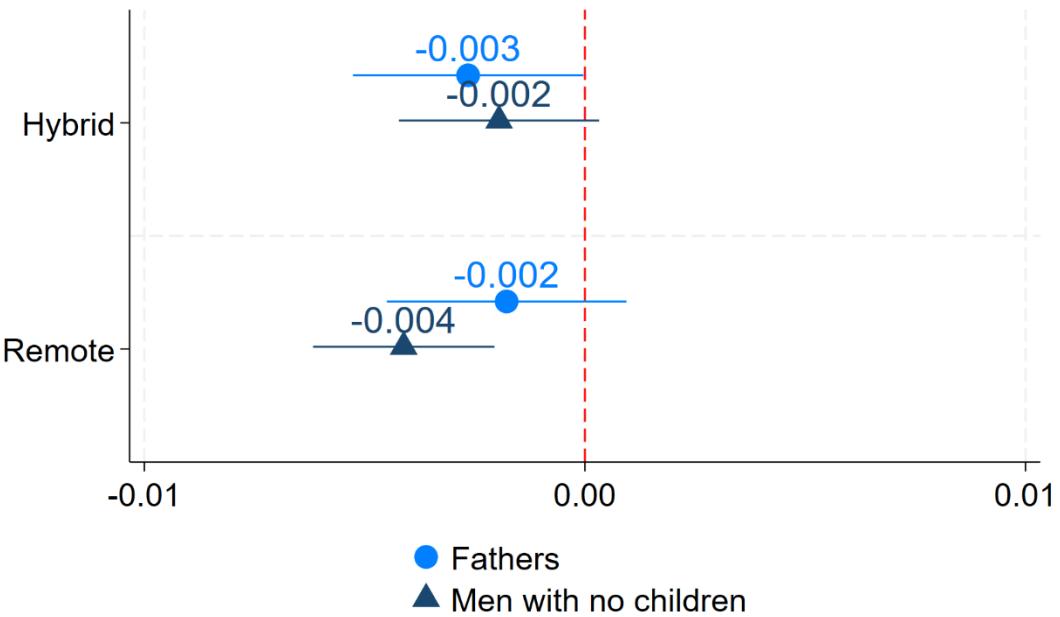
- Similar results for people with one job only
- For women, some results change if we restrict to prime-age workers (25–54-year-olds).
  - ▶ Stronger associations of wage growth with:
    - Remote work for mothers
    - Hybrid work for women without children
  - ▶ No relationship with remote work for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

# Robustness check

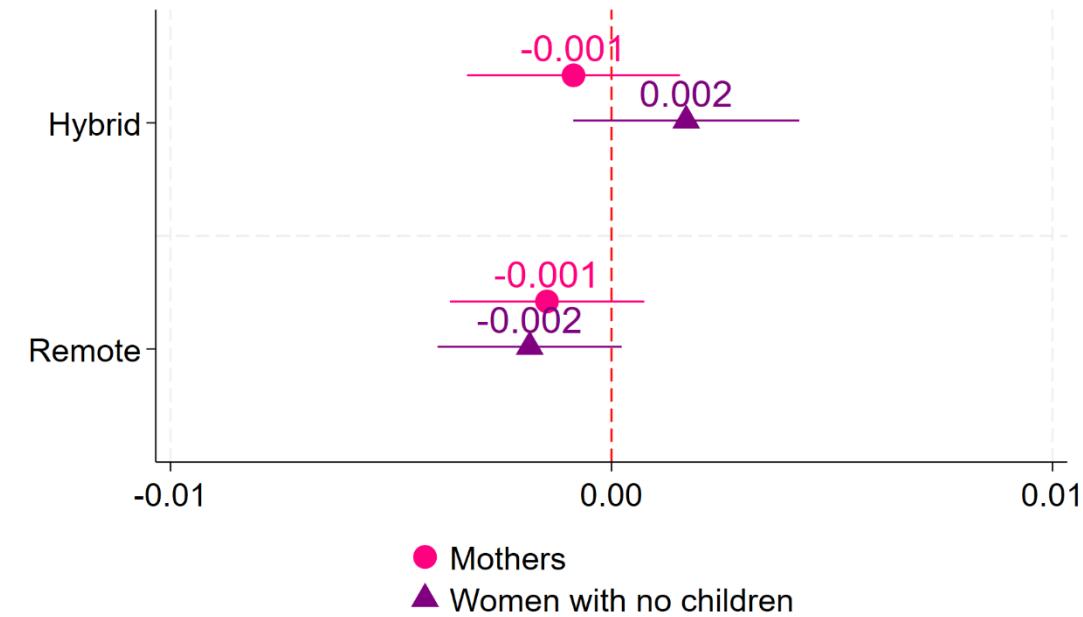
- Similar results if hybrid is defined as 10–90% of hour worked from home.

# 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**.

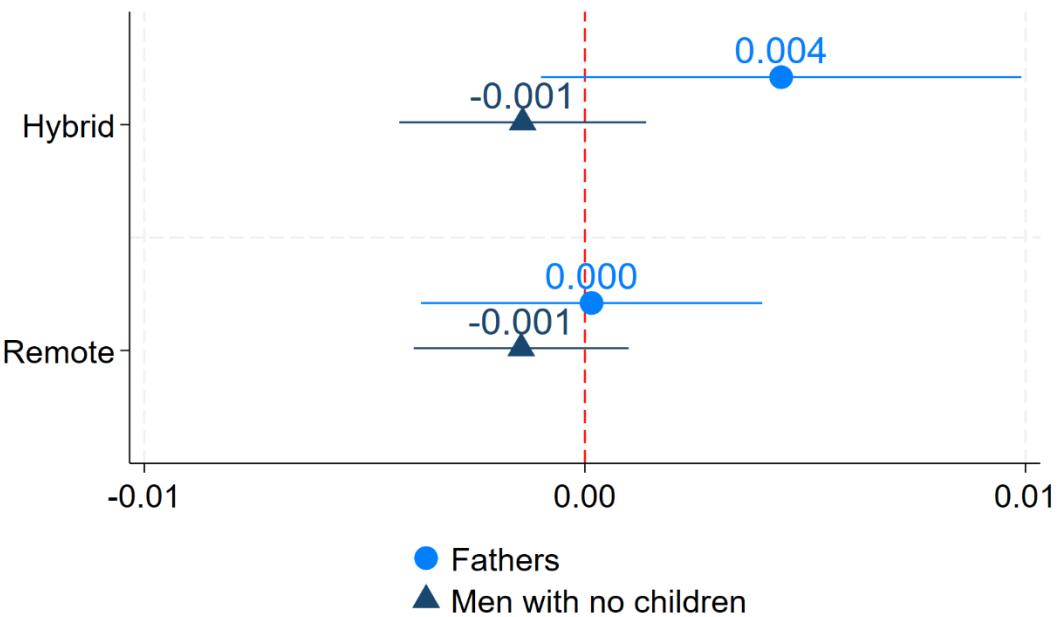
Source: Oct. 2022–Sept. 2025 Basic monthly CPS (IPUMS-USA, University of Minnesota, [www.ipums.org](http://www.ipums.org))

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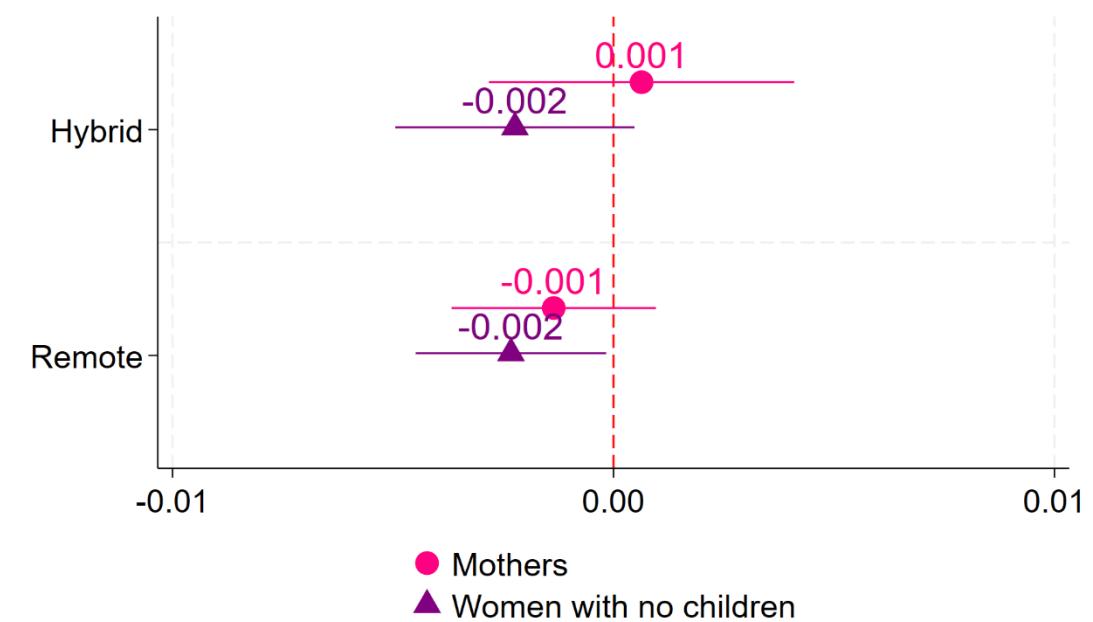


# Month-to-month probability of transitioning to first-line supervisor in sales and office/administration (Probit marginal effects and 95% CI)

Men (N = 26,992)



Women (N = 43,978)



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](http://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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# References: Part 2

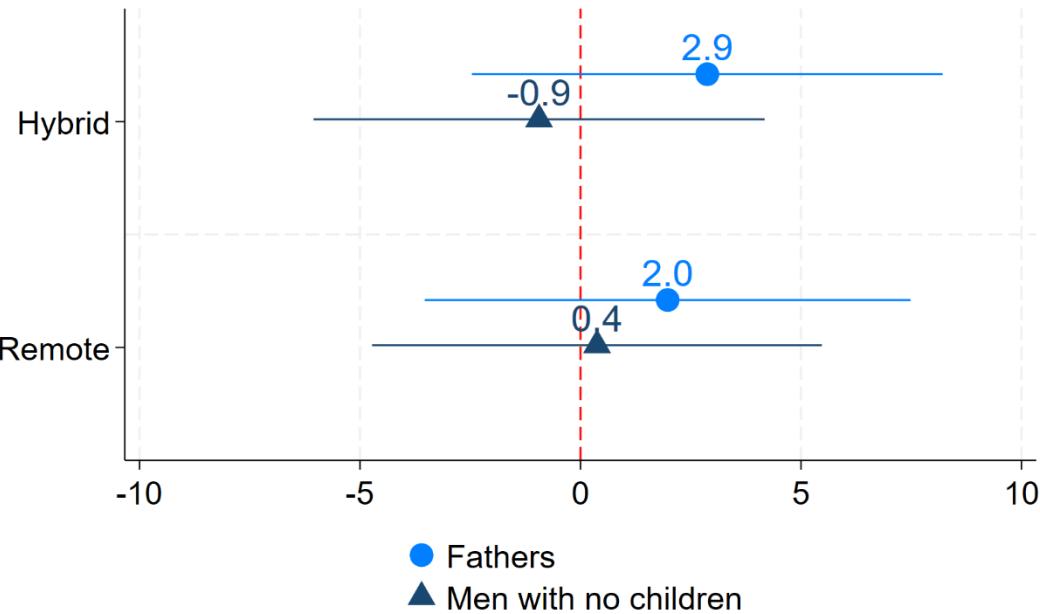
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# BONUS SLIDES

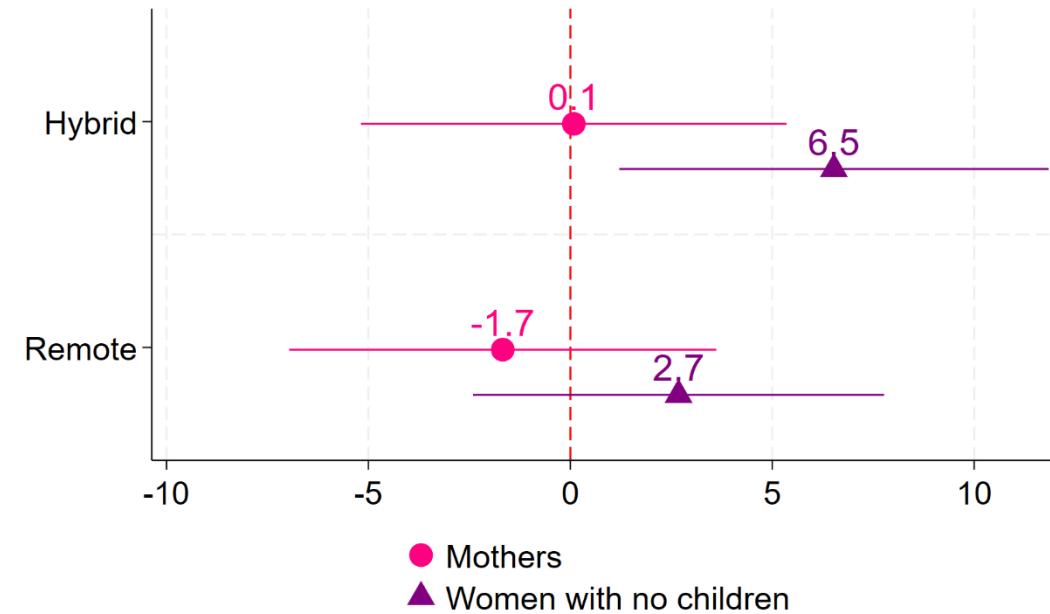
# Wage growth among college-educated workers

(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](http://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](http://www.ipums.org))