The Effects of Colorado's Pay Transparency Law on Older Workers

Haoran Wang[1]

[1]Department of Economics, Ohio State University

October 27, 2026

Abstract

This paper studies how cross-firm pay transparency affects labor market outcomes of mid- to late-career workers. Using Colorado's Equal Pay for Equal Work Act (EPEWA) and a difference-in-differences design, I find that pay transparency increases weekly earnings and hourly wages. The gains are larger for women, more-educated workers, and workers closer to retirement; the law also narrows the gender wage gap. Wage gains among both job changers and stayers, together with larger effects where occupational wage dispersion and employer concentration are greater, are potentially consistent with pay transparency improving mid- to late-career workers' bargaining position in wage setting. The policy also increases employment and hours worked. By contrast, its effects among younger workers are limited. Survey evidence on workers' beliefs further shows that pay transparency leads mid- to late-career workers to revise their expectations about outside options and their reservation wages. Overall, the findings suggest that cross-firm wage information is particularly valuable for mid- to late-career workers, who may face greater search frictions and rely on outdated wage information.

1 Introduction

The United States is undergoing a generational transition as Generation X moves into the later stages of its working life. As this cohort approaches retirement, continued employment and earnings are particularly relevant given its reliance on individual retirement savings and substantial financial and caregiving responsibilities. The labor force participation rate among individuals aged 55–64 remained at 65.9% in 2024, highlighting their continued attachment to the labor market. These patterns motivate studying the labor market outcomes of mid- to late-career workers, who may face different labor market frictions and job-search incentives than younger workers. Their labor market outcomes also have broader implications for retirement preparedness, workforce productivity, tax revenues, and public spending.

Wage information may be particularly important for understanding the labor market behavior of mid- to late-career workers. Previous research shows that workers may misperceive their outside options because they anchor on their current or most recent wage and adjust their beliefs or reservation wages only gradually (Krueger and Mueller, 2016; Mueller et al., 2021; Jäger et al., 2024). Resulting information limits can contribute to longer unemployment durations, worker misallocation, and market power (Mueller et al., 2021; Jäger et al., 2024; Cullen, 2024). These frictions may be especially relevant for mid- to late-career workers, who are often farther removed from their last job search and may rely on outdated wage information. This group may also face greater labor market discrimination, particularly during hiring, and longer job-search durations after job displacement (Neumark et al., 2019; Brown et al., 2025). These considerations suggest that improving access to wage information may have particularly important effects on the labor market outcomes of mid- to late-career workers.

Despite the potential importance of wage information for mid- to late-career workers, this relationship remains understudied. The literature on older workers has largely focused on job-search frictions, reemployment barriers, and hiring discrimination (Chan and Huff Stevens, 2001; Lahey, 2008; Coile et al., 2014; Neumark et al., 2019), while the innovative recent studies of wage information have not yet isolated the effects on older workers (Mas, 2017; Feng, 2024; Arnold et al., 2025). This paper bridges these two strands of literature by studying how improved wage information affects the labor market outcomes of mid- to late-career workers.

To address this question, I examine how Colorado's pay transparency law affects the labor market outcomes of workers aged 45–64. Specifically, I estimate the effects of pay transparency on earnings, wages, the gender wage gap, and labor supply among this group. On January 1, 2021, Colorado implemented the Equal Pay for Equal Work Act (EPEWA), which requires employers to disclose compensation information in job postings, including wage or salary ranges, benefits, and other forms of compensation. By making pay information publicly available across firms, the policy expands workers' access to wage information about outside employment opportunities. Following Cullen (2024), I refer to this feature of the policy as cross-firm pay transparency, in which workers have access to compensation information from both their current employer and other employers, providing

information about the wages associated with outside job opportunities.[1]

Economic theory provides ambiguous predictions about the effects of wage information. On the worker side, wage information may reduce information frictions by helping job seekers update their beliefs about outside opportunities and adjust their reservation wages, potentially shortening job-search duration, improving worker–firm matching, and strengthening workers' bargaining positions (Krueger and Mueller, 2016; Mueller et al., 2021). For employed workers whose beliefs are anchored to their current wages, information about outside opportunities may similarly affect wage bargaining and incentives to change jobs (Jäger et al., 2024).

On the firm side, wage information may limit employers' ability to offer low wages and induce firms to adjust their wage-setting and hiring strategies, potentially increasing labor market competition (Jäger et al., 2024; Arnold et al., 2025). However, greater transparency may also facilitate coordination among firms, similar to the effects of price transparency in product markets, potentially increasing market power and making the overall effect of cross-firm pay transparency theoretically ambiguous (Albæk et al., 1997; Arnold et al., 2025).

To estimate the effect of Colorado's cross-firm pay transparency policy, I use a difference-in-differences design that leverages variation across states and over time. Following Feng (2024), I use states with salary history bans but without cross-firm pay transparency requirements as the primary control group.[2] The main results show that the policy increases weekly earnings among mid- to late-career workers by 4.6% and hourly wages by 3.7%, with both estimates statistically significant.[3] Event-study estimates show that these effects strengthen over time and become statistically significant in the later post-policy periods. These results provide evidence that cross-firm pay transparency improves the wage outcomes of mid- to late-career workers.

Heterogeneity analyses show that the gains are concentrated among women, more-educated workers, and workers closer to retirement age. The policy increases women's earnings and wages while having limited effects among men, reducing the gender earnings and wage gaps by 6.7% and 3.7%, respectively. Event-study estimates indicate that these reductions are concentrated in the short-term. Earnings and wage gains are also significant among more-educated workers but limited among less-educated workers, suggesting that the ability to benefit from disclosed wage information varies across worker groups.workers.

I next examine how the wage effects of pay transparency vary with workers' job mobility and occupational labor-market characteristics. These analyses also provide suggestive evidence that an improvement in workers' bargaining position may be one mechanism underlying the wage gains.

Previous research identifies job mobility as an important source of wage growth (Topel and

[1] Following Cullen (2024), cross-firm pay transparency refers to settings in which pay information is made more visible across employers, for example through posted wage ranges or external salary information; vertical pay transparency refers to settings in which employees have access to pay information about workers at different levels of seniority within the same organization; horizontal pay transparency refers to settings in which coworkers within the same organization have access to information about one another's pay.

[2] These states provide a more comparable policy environment because they had already adopted salary history bans, reflecting similar restrictions on employers' use of wage information, labor market conditions, and willingness to enact worker-protection policies.

[3] Both of these estimates are significant at the five percent level.

Ward, 1992; Moscarini and Postel-Vinay, 2016, 2018). I therefore examine whether workers benefit differently from disclosed wage information when changing jobs or remaining with their current employers. Pay transparency increases hourly wages and reduces the gender wage gap among both job changers and job stayers, with larger effects among changers. However, there is little evidence that the policy increases overall job mobility, although the estimates suggest modest increases among men. The wage gains among stayers are consistent with disclosed information improving workers' bargaining position with their current employers, while the larger gains among changers suggest that such information is especially valuable during job transitions.

Occupation is a key source of wage differences and the gender wage gap (Groshen, 1991; Blau and Kahn, 2000; Autor and Handel, 2013; Faberman et al., 2026). I examine how the wage effects vary with occupations' average wage levels, wage dispersion, and age-wage profiles. Wage effects are larger in occupations with greater wage dispersion, consistent with disclosed wages providing more valuable information where compensation opportunities vary more widely. The gains are also largest in medium-wage occupations and occupations with moderate age-wage profiles. Reductions in the gender wage gap are largest in occupations with steep age-wage profiles.

I also examine heterogeneity by baseline employer concentration using payroll- and employment-based Herfindahl–Hirschman Index (HHI) measures. Wage effects are larger in more concentrated local occupational labor markets, where constrained employment choices may give employers greater wage-setting discretion and make information about alternative opportunities particularly valuable.

Taken together, the wage gains among job stayers and the larger effects in occupations with greater wage dispersion and employer concentration are potentially consistent with pay transparency improving workers' bargaining position. The reductions in the gender wage gap further suggest that these improvements may be particularly consequential for women.

I also examine the effects of pay transparency on labor supply outcomes among mid- to late-career workers. Pay transparency increases the employment rate by 0.6 percentage points and main-job working hours by 0.603 hours per week, corresponding to approximately 0.9% and 1.5% of their respective control-group means. Event-study estimates indicate that these labor supply responses are concentrated in the short run. Further evidence that pay transparency increases labor-force participation and shortens unemployment spells suggests that the policy both strengthens labor-force attachment and facilitates more efficient job search.

While pay transparency laws meaningfully improve the circumstances of older workers, they have very limited effects on young workers. When focusing on younger workers aged 25–44, the results indicate that Colorado's pay transparency law has limited effects on weekly earnings, hourly wages, employment, and main-job working hours. The policy also provides little evidence of increasing job mobility among younger workers. The only clear wage effect appears among younger job changers, whose hourly wages increase substantially following the policy's implementation. These findings suggest that older workers, with their less frequent job transitions, potentially stale market knowledge, and greater search frictions, appear to be the primary beneficiaries of enhanced wage transparency.

To understand the mechanisms and decision processes by which wage transparency laws affect

older workers, I turn to data from the SCE Labor Market Survey to examine how pay transparency is associated with mid- to late-career workers' beliefs about outside opportunities, including expected outside-option wages, reservation wages, and the perceived probability of receiving a job offer. The descriptive evidence shows that workers do, in fact, increase their expectations regarding outside-option wages and raise their reservation wages following the introduction of pay transparency laws. The expectations about outside-option wages and reservation wages rise gradually following the introduction of pay transparency. By contrast, workers' expectations regarding the probability of receiving an offer rise briefly and then return to baseline following the law change. These patterns suggest that pay transparency primarily changes how workers assess the value of outside opportunities rather than persistently altering their beliefs about the likelihood of obtaining them. This interpretation also helps reconcile the dynamic results: the persistent updating of wage beliefs is consistent with wage gains that grow over time, whereas the temporary increase in perceived offer probabilities parallels the short-run effects on employment and working hours.

My study contributes to several strands of the literature on labor markets. First a large body of research shows that older workers face greater labor market difficulties and discrimination, particularly during the job search process. Chan and Huff Stevens (2001) finds that workers aged 50 and above have greater difficulty finding employment after involuntary job loss and face a higher risk of subsequent labor market exit. Other studies provide evidence of age discrimination in hiring. Lahey (2008) finds that older workers are less likely to receive interview callbacks, while Neumark et al. (2019) documents particularly strong age discrimination against older women. Coile et al. (2014) further shows that the labor market challenges faced by older workers become more severe during recessions. This paper contributes to this literature by examining whether cross-firm pay transparency improves the labor market outcomes of mid- to late-career workers. The analysis is particularly relevant for older women, who may face disadvantages associated with both age and gender in the labor market.

Second, it contributes to the growing literature on pay transparency. Most previous research focuses on horizontal pay transparency, under which workers observe the pay of their coworkers or peers within the same organization. Previous studies provide evidence that horizontal pay transparency can reduce average wages and wage dispersion, increase job search, and lower job satisfaction (Card et al., 2012; Mas, 2017; Cullen and Pakzad-Hurson, 2023). A related literature examines the effects of horizontal pay transparency on gender wage inequality. These studies find that pay transparency narrows the gender wage gap primarily by reducing wage growth among men, with more limited increases in wage growth among women (Baker et al., 2023; Bennedsen et al., 2022).

My study instead focuses on cross-firm pay transparency, which provides workers with information not only about pay within their current workplace but also about compensation at other firms and, therefore, their outside opportunities. A relatively small literature examines this form of pay transparency. Skoda (2022) studies Slovakia's cross-firm pay transparency law and finds that requiring wage information in job advertisements increases the wages of newly hired workers and

redirects job search toward better-paying opportunities. Two recent studies examine Colorado's pay transparency law. Arnold et al. (2025) shows that the law increased the share of firms posting wage information while having little effect on the width of posted wage ranges. The authors also find that the policy increased average wages, partly through greater competition among firms. Feng (2024) finds that Colorado's policy reduced the gender wage gap primarily among job changers but had no significant effect on employment. More recently, He and Upmanyu (2026) examines cross-firm pay transparency laws in Colorado, Washington, and California and finds that the effects on annual earnings are concentrated among more highly educated workers and workers over age 40. Building on this evidence, my study focuses specifically on workers aged 45–64 and examines how cross-firm pay transparency affects different dimensions of their labor market outcomes, distinguishing changes in weekly earnings and hourly wages from changes in labor supply. This analysis provides a more comprehensive understanding of how mid- to late-career workers respond to improved information about outside opportunities.

Finally, this study contributes to the literature on workers' beliefs about outside options and the role of wage information in shaping labor market outcomes. Existing research shows that workers often have imperfect beliefs about outside opportunities and may anchor their expectations and reservation wages to previous or current wages (Krueger and Mueller, 2016; Mueller et al., 2021; Jäger et al., 2024). Providing information about outside opportunities can update these beliefs and affect job search, mobility, and wage outcomes (Caldwell and Harmon, 2019; Roussille, 2021), while restrictions on employers' access to workers' wage histories can also affect hiring and wages (Barach and Horton, 2021). This paper contributes to our understanding of workers' beliefs by examining how a policy that expands access to outside wage information affects the labor market outcomes of mid- to late-career workers and whether it changes their beliefs about outside labor market opportunities.

The remainder of the paper is organized as follows. Section 2 describes the policy background, Section 3 presents the empirical strategy, and Section 4 describes the data. Section 5 presents the main wage results and heterogeneity by gender and education. Section 6 examines heterogeneity by job mobility and occupation, and Section 7 presents the labor supply results. Section 8 examines workers' labor market beliefs using the SCE, Section 9 presents robustness checks, and Section 10 concludes.

2 Pay Transparency Background

2.1 Colorado Equal Pay for Equal Work Act

This study focuses on Colorado's cross-firm pay transparency policy, the Equal Pay for Equal Work Act (EPEWA), which took effect on January 1, 2021. This Act is the earliest state-level cross-firm pay transparency law in the United States. To reduce pay disparities in Colorado and ensure that employees performing substantially similar work receive equal compensation, the EPEWA requires all employers, regardless of firm size, to disclose compensation and benefits information in job postings, notify employees of promotion opportunities, maintain records of job descriptions

and compensation, and refrain from asking about or relying on applicants' pay history. Since the law applies to employers with at least one employee, it creates a statewide change in the wage information posting faced by all workers, job seekers, and firms.

With respect to the disclosure of compensation and benefits information, EPEWA requires covered employers to provide information on the rate of pay, or a range of possible pay, that the hired applicant may receive, along with a general description of other forms of compensation, such as bonuses, commissions, or tips (Colorado Department of Labor and Employment, 2024). Employers are expected to post a range that reflects a good-faith assessment of what they may pay for the position, taking into account factors such as the applicant's qualifications, the nature of the job, and the employer's compensation practices. The range therefore cannot be so broad that it fails to describe the compensation actually associated with the advertised position. Similarly, employers cannot rely on pay levels for different or more senior positions to justify an inflated range for the job being posted. The law also requires the posted range to include both a lower and an upper bound, rather than open-ended statements. Although the final wage offer may differ from the posted range, the disclosure must reflect the employer's genuine expectations at the time the job is advertised.

In addition, EPEWA requires job postings to include a general description of the benefits associated with the position, including health care, retirement benefits, paid time off, and other tax-reportable benefits (Colorado Department of Labor and Employment, 2024). Employers are not required to provide detailed plan information or specific dollar values for these benefits. However, the posting must describe the nature of the benefits offered, rather than using open-ended phrases such as "etc." or "and more" (Colorado Department of Labor and Employment, 2024).

Enforcement of EPEWA's pay transparency provisions is administered by the Colorado Department of Labor and Employment (CDLE) and follows an education-first approach. Individuals may report potentially noncompliant postings, after which the Department may investigate and provide compliance assistance to employers. Employers are generally given an opportunity to correct violations before monetary penalties ranging from $500 to $10,000 per posting are imposed. Although monetary penalties are legally available, enforcement has primarily relied on compliance assistance. As of October 2024, the CDLE had received 1,747 complaints and collected $238,000 in fines (Arnold et al., 2025). Moreover, The CDLE regulates employers' activities in other ways, including enforcing labor standards and determining firms' unemployment insurance tax rates. Therefore the cost of noncompliance may reach beyond monetary fines to reputation costs with the employer's regulator and community.

The geographic scope of the law is also important for understanding firms' potential responses. Because the pay disclosure requirement applies to covered employers with employees in Colorado, it may also affect postings for remote jobs that could be performed by Colorado workers (Arnold et al., 2025). After the law took effect, some firms reportedly attempted to avoid disclosure requirements by excluding Colorado applicants from remote positions (Rubino, 2021). In response, CDLE clarified that covered employers could not avoid the law simply by stating that a remote position could not be performed in Colorado if the employer otherwise fell under Colorado's jurisdiction. At the same

time, positions tied entirely to locations outside Colorado, or postings by firms with no employees in Colorado, may fall outside the scope of the law. These rules are relevant for the empirical analysis because firms could respond to pay transparency requirements not only by changing posted wages, but also by adjusting their recruiting strategies, job locations, or willingness to hire workers in Colorado.

2.2 Salary History Ban and the Selection of Control States

In addition to the pay transparency provisions, EPEWA also introduced a salary history ban (SHB), which prohibits employers from asking about or relying on applicants' salary histories when determining compensation. Following Feng (2024), I use states that had already implemented SHBs before 2021 but did not adopt pay transparency laws through 2025 as the main control group. These control states include Alabama, Connecticut, Delaware, Maine, and Oregon. These states provide a policy environment that is more comparable to Colorado than states without salary history bans because they had already adopted similar restrictions on employers' use of wage information. Using these states as the primary comparison group helps improve the comparability of the policy environment across treated and control states.

Although using SHB states improves the comparability of the policy environment, it may not fully account for the effects of Colorado's simultaneously implemented SHB policy. To examine the sensitivity of the results, Section 9.2 presents robustness checks using alternative control groups and a triple-differences specification that explicitly accounts for salary history ban policies. The results suggest that SHBs have limited effects on the outcomes examined in this study, including hourly wages, weekly earnings, the gender wage gap, employment, and conditional working hours. Moreover, I use all states without a cross-firm pay transparency policy through 2025, rather than only SHB states, as an alternative control group, as shown in Section 9.1. The resulting estimates are consistent with the main findings across all outcomes.

2.3 Pay Transparency Policies in Other States

Several states and local jurisdictions adopted pay transparency policies following Colorado's Equal Pay for Equal Work Act (EPEWA). In 2022, local jurisdictions including New York City and Jersey City implemented pay transparency requirements for job postings. In January 2023, California and Washington became the next two states to adopt statewide pay transparency laws. Both laws apply to employers with at least 15 employees, although their disclosure requirements differ from Colorado's. Figure 1 summarizes the implementation timeline of statewide pay transparency laws and identifies the control states used in the main analysis. Table A1 in Appendix A provides additional details on the implementation of pay transparency laws and salary history bans.

This study focuses primarily on Colorado's pay transparency policy for three reasons. First, Colorado became the first state to implement a statewide pay transparency law in 2021, two years before similar laws took effect in California and Washington in 2023, providing a substantially longer post-treatment period. Because the available data cover only the period from 2014 to 2025, the

pay transparency laws adopted in other states and municipalities provide too few post-treatment periods for a meaningful analysis.[4] Second, Colorado's law applies to employers regardless of firm size, whereas the California and Washington laws apply only to employers with at least 15 employees. Third, Colorado requires employers to disclose both compensation information and a general description of benefits and other forms of compensation, while California requires employers to disclose only the expected pay scale. These features make Colorado's policy the broadest statewide pay transparency reform during the sample period and provide the primary source of identification in this paper.

California and Washington are examined as supplementary evidence rather than the primary source of identification. In addition, Washington implemented several other labor market policies in 2023 that may independently affect labor market outcomes. The state minimum wage increased from \$14.49 to \$15.74 per hour (approximately 8.6%), substantially larger than Colorado's 2.7% (increased by 3.2 cents per hour) increase in 2021. Washington also introduced the WA Cares Fund payroll contribution, requiring workers to contribute 0.58% of gross wages beginning in July 2023. These contemporaneous policy changes may affect wages, employment, and labor supply independently of pay transparency, making it more difficult to isolate the effects of the disclosure requirement. For these reasons, Colorado serves as the primary policy shock, while the later reforms in California and Washington are used mainly as supplementary evidence.

Therefore, these later policies are not the primary focus of this study.

3 Empirical Strategy

The objective of this study is to identify the causal effect of Colorado's pay transparency policy on labor market outcomes among mid- to late-career workers. To isolate the aggregate causal effect of pay transparency, I employ a difference-in-differences regression by comparing workers in Colorado with those in other control states:

$$Y_{igt} = \beta \, \mathrm{CO}_{ig} \times Post_t + X'_{igt}\gamma + \lambda M_{st} + \omega_{oy(t)} + \mu_{jy(t)} + \delta_t + \theta_g + \varepsilon_{igt}, \tag{3.1}$$

where i indexes individuals, s indexes states, g indexes metropolitan areas, $y(t)$ is calendar year, and t is calendar month (defined as year-by-month cells). Y_{igt} denotes the outcome variable for individual i in metropolitan area g in calendar month t. The outcomes include weekly earnings, hourly wage, employment, and hours worked. The variable CO_{ig} is an indicator equal to one for whether individuals reside in metropolitan area g in Colorado, and $Post_t$ is an indicator equal to one for the post-policy period, defined as January 2021 and later. The coefficient of interest is β that measures the DiD estimate of the effect of pay transparency.

X_{igt} is a vector of individual-level controls, including sex, age, marital status, education level,

[4] Later state-wide pay transparency states: New York, September 2023; Hawaii, January 2024; Washington D.C., July 2024; Maryland, October 2024; Illinois, January 2025; Minnesota, January 2025; New Jersey, June 2025; Massachusetts, July 2025; Vermont, July 2025.

family size, race, the number of children in the household, the number of own children in the household, whether the worker is paid hourly, and whether the worker is employed in the public sector. M_{st} denotes the state-month unemployment rate. I also include occupation-by-year fixed effects, $\omega_{oy(t)}$, and industry-by-year fixed effects, $\mu_{jy(t)}$, to control for occupation- and industry-specific annual shocks. In addition, δ_t denotes year-month fixed effects, and θ_g denotes metropolitan area fixed effects.

I estimate an alternative specification to identify the overall effect of pay transparency on the gender wage gap, I use a triple-differences specification. This approach measures the marginal effect of pay transparency on women's hourly wages relative to its effect on men's hourly wages.

$$\begin{aligned} Y_{igt} = {} & \beta_1^G \, \mathrm{CO}_{ig} \times Post_t + \beta_2^G \, \mathrm{CO}_{ig} \times Post_t \times Female_i + \phi \, Post_t \times Female_i \\ & + X'_{igt}\gamma + \lambda M_{st} + \omega_{oy(t)} + \mu_{jy(t)} + \delta_t + \eta_{fg} + \varepsilon_{igt}, \end{aligned} \tag{3.2}$$

where Y_{igt} denotes the hourly wage of individual i in metropolitan area g in calendar month t. $Female_i$ is an indicator equal to one if individual i is female. η_{fg} denotes female-by-metropolitan-area fixed effects. The coefficient β_1^G measures the effect of Colorado's pay transparency policy on men's hourly wages, and the coefficient of interest β_2^G measures the marginal effect of pay transparency on women's hourly wages relative to men's hourly wages. Therefore, β_2^G captures the effect of pay transparency on the gender wage gap. A positive value of β_2^G indicates that the policy increases women's wages relative to men's wages, thereby reducing the gender wage gap.

I also use a difference-in-differences event-study design to examine how the effects of pay transparency evolve over event time and to test for pre-trends.

$$Y_{igt} = \sum_{e=-7}^{4} \alpha_e \left(\mathrm{CO}_{ig} \times D_t^e \right) + X'_{igt}\gamma + \lambda M_{st} + \omega_{oy(t)} + \mu_{jy(t)} + \delta_t + \theta_g + \varepsilon_{igt}. \tag{3.3}$$

where Y_{igt} denotes the hourly wage. The term $D_t^e \equiv \mathbf{1}\left\{ \mathrm{y}(t) - 2021 = e \right\}$ is an event-time indicator equal to one if calendar time $y(t)$ is e periods from the implementation of Colorado's pay transparency policy, and zero otherwise. The coefficient of interest is α_e measuring the dynamic effect of the policy relative to the pre-policy baseline period. Because the sample size is relatively small within each year-month cell, I define event time at the annual level. Therefore, the coefficients α_e capture the average effect in each event year relative to the omitted pre-policy baseline period.

To identify the effects of pay transparency on the gender wage gap, I use the triple differences event-study method to identify the increment to the pay transparency effect on hourly wage for women compared to that for men:

$$\begin{aligned} Y_{igt} = {} & \sum_{e=-7}^{4} \alpha_{1e}^G \left(\mathrm{CO}_{ig} \times D_t^e \right) + \sum_{e=-7}^{4} \alpha_{2e}^G \left(\mathrm{CO}_{ig} \times D_t^e \times Female_i \right) + \phi (Post_t \times Female_i) \\ & + X'_{igt}\gamma + \lambda M_{st} + \omega_{oy(t)} + \mu_{jy(t)} + \delta_t + \eta_{fg} + \varepsilon_{igt}. \end{aligned} \tag{3.4}$$

where Y_{igt} denotes the hourly wage. The coefficients α_{1e}^{G} measure the dynamic effects of pay transparency on men's hourly wages relative to the pre-policy baseline period. The coefficients α_{2e}^{G} measure the dynamic effects of pay transparency on women's hourly wages relative to men's hourly wages. A positive value of α_{2e}^{G} indicates that pay transparency increases women's wages relative to men's wages, thereby reducing the gender wage gap.[5]

The identification relies on the conditional parallel-trends assumption, which means, in the absence of pay transparency policy, labor-market outcomes in Colorado would have followed the same trends as those in the control states, conditional on the controls and fixed effects. Although this counterfactual assumption cannot be tested directly, the event-study estimates should provide supporting evidence that the pre-policy coefficients are generally close to zero and do not exhibit a systematic differential trend between Colorado and the control states. The identification strategy also assumes that workers and employers did not substantially adjust their behavior in anticipation of the law. As an additional check, the event-study specifications are in Appendix C.

4 Data and Descriptive Statistics

4.1 CPS Data and Sample

The main data source used in this study is the IPUMS-CPS version of the Monthly Current Population Survey (CPS) from 2014 to 2025 (Flood et al., 2023). The CPS is a nationally representative monthly household survey conducted by the U.S. Census Bureau for the Bureau of Labor Statistics. It follows a 4-8-4 rotation design, under which households are interviewed for four consecutive months, leave the sample for eight months, and then return for another four months. This design allows individuals to be linked across survey months to examine employer changes and other labor market transitions.

The Monthly CPS contains detailed information on employment, labor force participation, hours worked, occupation, industry, and demographic characteristics. It also records whether employed respondents worked for the same employer as in the previous survey month, which I use to construct measures of employer changes. Because this measure contains substantial missing values, I also use changes in industry as a complementary measure of job mobility.

Because the basic Monthly CPS does not contain detailed earnings and wage information for all respondents, this study also uses the CPS Outgoing Rotation Group (ORG) supplement. The ORG supplement collects earnings information from employed respondents in the final month of each CPS rotation, specifically in the 4th and 8th survey months. It provides information on weekly earnings for employed workers and hourly wages for workers who are paid by the hour. For workers who are not paid hourly, I construct an hourly wage measure by dividing weekly earnings by usual weekly

[5]Because the main event-study specification exploits a single treatment cohort (Colorado) and a common treatment date (January 2021), it is not subject to the heterogeneous treatment effect concerns that arise in staggered-adoption difference-in-differences designs, where already-treated units may serve as controls for later-treated units (Goodman-Bacon, 2021; Sun and Abraham, 2021; Callaway and Sant'Anna, 2021).

hours worked on the main job. This approach allows me to obtain a consistent hourly wage measure for both hourly and non-hourly workers in the ORG sample.

This study focuses on mid- to late-career individuals, so I restrict the main sample to individuals aged 45 to 64. I exclude individuals aged 65 and above to avoid confounding the analysis with labor supply changes related to Medicare eligibility and retirement decisions. I restrict the estimation sample to US citizens who reside in metropolitan areas. I drop those who are self-employed. I focus on metropolitan areas because pay transparency is more likely to affect workers in thicker labor markets where job postings, employer competition, and outside options are more salient. I exclude self-employed workers because the policy primarily affects employer-employee wage setting through wage information disclosed in job postings, whereas self-employed workers do not face the same posted-wage-setting process.

In addition, I choose control states that had already implemented salary history bans before 2021 but did not have similar cross-firm pay transparency requirements during the study period. After applying this restriction, the control group includes Alabama, Connecticut, Delaware, Maine, and Oregon. Based on the sample selection criteria, the final sample contains 219,360 observations, including 33,366 observations from Colorado and 185,994 observations from the SHB control states. Among the ORG sample, the final sample size is 38,411 observations, of which 6,164 are from Colorado and 32,247 are from the other SHB control states.

4.2 Descriptive Statistics

Table 1 reports summary statistics for the analysis sample by treatment status. Overall, individuals in Colorado and the comparison states have broadly similar demographic and labor market characteristics. Age, sex, and marital status are similar across the two groups. The largest demographic differences are in educational attainment, where Colorado has a higher share of individuals with bachelor's or graduate degrees and a lower share with only a high school education. Racial composition also differs, with Colorado having a lower share of Black individuals and a higher share of Hispanic individuals than the comparison states. Household characteristics, including family size and the number of children, are broadly comparable across groups.[6]

Compared with the SHB control states, Colorado has slightly higher labor force participation and employment rates, with both differences amounting to approximately 3.6 percentage points. Colorado also has a somewhat larger share of individuals who ever changed employers. Among employed individuals, workers in Colorado are less likely to be paid hourly, slightly more likely to work in the public sector, and exhibit a modestly higher rate of employer changes, but these differences are generally small in magnitude. Employed workers in Colorado also work approximately 0.8 more hours per week, both across all jobs and in their main job. The largest differences are observed for earnings, with employed workers in Colorado earning substantially higher weekly earnings and hourly wages than their counterparts in the comparison states. In addition, Figure A1 in Appendix

[6]The large sample size allows relatively small differences in means to be estimated precisely, so statistical significance should not be interpreted as evidence of economically meaningful differences.

B shows clear age-related patterns in labor market outcomes. Employment and working hours begin to decline around ages 45–50, while weekly earnings and hourly wages increase at younger ages and remain relatively stable after around age 40.

Moreover, Figure 2 shows the raw trends in labor market outcomes over time by treatment status and age group. The red solid line represents mid- to late-career individuals aged 45-64 in Colorado, while the red dashed line represents individuals aged 45-64 in the other SHB states. The blue lines represent the relatively younger group aged 25–44, with the solid line for Colorado and the dashed line for the other SHB states.

The figure shows that, among individuals aged 45–64 in Colorado, both the employment rate and main-job working hours increase sharply in the short run after the implementation of the policy, but return closer to their previous levels in the longer run. In contrast, there is no comparable post-policy increase among the other groups. Furthermore, weekly earnings and hourly wages for individuals aged 45–64 in Colorado exhibit a more pronounced upward trend after the policy implementation, while the trends for the other groups are relatively smooth.

5 Effects of Pay Transparency on Wage and the Gender Wage Gap

5.1 Effects of Pay Transparency on Weekly Earnings and Hourly Wages

In this section, I report estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among mid- to late-career workers. This analysis assesses whether reducing compensation information frictions improves wage outcomes for workers who may face greater age-related barriers in the labor market and whose beliefs about outside opportunities may be based on outdated compensation information. Pay transparency may help workers update these beliefs and better assess their current compensation relative to outside opportunities. I examine both weekly earnings and hourly wages because weekly earnings capture overall earnings from the main job, while hourly wages help distinguish changes in earnings from changes in working hours.

Table 2 reports the DiD estimates of the effect of Colorado's pay transparency policy on weekly earnings and hourly wages among mid- to late-career workers. Columns (1) and (3) present estimates from the main DiD specification, which includes industry-by-year fixed effects, occupation-by-year fixed effects, metropolitan-area fixed effects, and year-by-month fixed effects. Columns (2) and (4) replace year-by-month fixed effects with separate year and month fixed effects, thereby reducing the dimensionality of the fixed effects in order to examine the sensitivity of the results to the choice of fixed effects specification. This alternative specification still accounts for common annual shocks and recurring seasonal patterns but imposes a less saturated specification of the time fixed effects.

Column (1) shows that pay transparency increases weekly earnings among mid- to late-career workers by 4.6%, and column (2) shows that the estimated effect remains similar at 4.2 % when year-by-month fixed effects are replaced with separate year and month fixed effects. Both estimates are statistically significant, indicating that the results are robust to alternative specifications of the time fixed effects. The results suggest that reducing compensation information frictions through pay

transparency increases weekly earnings among mid- to late-career workers. These earnings gains may result from higher hourly wages, longer working hours, or both.

Additionally, these results for mid- to late-career workers are directionally consistent with the findings of Arnold et al. (2025), who use Quarterly Census of Employment and Wages (QCEW) data through the second quarter of 2024 and estimate that Colorado's pay transparency law increased weekly wages by 1.4 % for the overall workforce. The estimated effect reported here (4.6 %) is substantially larger. The event-study estimates presented below and the analysis for younger workers reported in the following subsections help explain this difference. The event-study estimates show that the effect of pay transparency emerges gradually over time, suggesting that the longer post-policy period covered in this study through 2025 captures additional wage growth. More importantly, I find that the effect of pay transparency on weekly earnings is limited among younger workers, whereas the positive effect is concentrated among mid- to late-career workers. Because the estimates in Arnold et al. (2025) reflect an average across workers of all ages, they would naturally be expected to lie below the estimates reported here for older workers. This pattern is also consistent with the idea that mid- to late-career workers are more likely to hold outdated beliefs about market wages and therefore benefit more from improved access to information about outside wage opportunities.

Columns (3) and (4) report the corresponding results for hourly wages. The estimate in column (3) indicates that Colorado's pay transparency policy increased hourly wages by 3.7%, and column (4) shows a similar effect of 3.3% under the alternative fixed-effect specification. Both estimates are statistically significant. The positive effect on hourly wages suggests that part of the increase in weekly earnings reflects higher hourly wage among mid- to late-career workers. The positive effect on hourly wages is consistent with the idea that reducing compensation information frictions allows workers to update their beliefs about outside options and strengthens their bargaining position, leading to higher hourly wages. In addition, as Arnold et al. (2025) argues, pay transparency may also increase competition among firms, which provides another possible channel through which wage rates increase. Taken together, the evidence suggests that improved access to compensation information raises hourly wages among mid- to late-career workers.

Figure 3 presents the corresponding event-study estimates for weekly earnings and hourly wages among mid- to late-career workers, showing how the effects of Colorado's pay transparency policy evolve over time. In each panel, the x-axis indicates the year relative to the implementation of the pay transparency policy in 2021, ranging from 7 years before the policy to 4 years after the policy. For each event-study specification, I use 2019, two years before the policy implementation, as the omitted base year. I choose 2019 rather than 2020 because 2020 coincides with the COVID-19 pandemic, and using it as the base year could introduce noise arising from differential pandemic-related shocks across states.

The first panel presents the event-study estimates for the effect of pay transparency on weekly earnings among mid- to late-career workers. Although the estimate for 2020 deviates somewhat from the otherwise relatively flat pre-policy pattern, the pre-policy estimates do not exhibit a systematic trend, supporting the parallel trends assumption. In the post-policy period, the coefficients are

generally positive. Starting in the second post-policy year, the estimates show an upward pattern and become statistically significant, especially in the second and fourth post-policy periods. This pattern suggests that the effect of pay transparency on weekly earnings was limited in the initial implementation period but gradually increased over time, consistent with the idea that workers gradually respond to improved information about market compensation.

The second panel presents the DiD event-study estimates for hourly wages among mid- to late-career workers. The pre-policy estimates are generally close to zero and do not exhibit a systematic trend, although the estimate for 2020 departs from the otherwise relatively flat pre-policy pattern and may reflect COVID-19-related wage shocks that differed between Colorado and the other salary-history-ban states. I examine this concern and the diagnostic analysis of the estimated policy effects in Appendix O. In the post-policy period, the estimated effects are limited at the beginning of the policy implementation period, but the coefficients are generally positive and display an upward pattern over time. Beginning in the third post-policy year, the estimated effects become statistically significant. This pattern suggests that Colorado's pay transparency policy gradually increased hourly wages among mid- to late-career workers, with the effects becoming more pronounced in later post-policy years.

Therefore, the event-study evidence suggests that Colorado's pay transparency policy led to gradual improvements in both weekly earnings and hourly wages among mid- to late-career individuals, with stronger effects emerging in later post-policy years. This pattern shows that the wage effects of pay transparency may take time to emerge as both workers and firms respond to improved information about market compensation.

To address concerns that the constructed hourly wage measure for non-hourly-paid workers may influence the results, Table A5 in Appendix F.2 reports separate estimates for hourly paid and non-hourly-paid workers using the raw CPS ORG earnings measures. The results are qualitatively similar to the main findings, suggesting that the estimated wage effects are not driven by the construction of the hourly wage measure.

Overall, these findings provide three main insights. First, the positive effect on weekly earnings indicates that pay transparency increased overall labor compensation among mid- to late-career workers. Second, the positive effect on hourly wages indicates that part of the increase in weekly earnings reflects higher wage per hour. Third, the event-study estimates suggest that these effects emerged gradually, becoming stronger in later post-policy years rather than appearing immediately after the policy implementation.

The results also highlight an important distinction between cross-firm pay transparency and the horizontal pay transparency settings emphasized in much of the existing literature. Studies of horizontal pay transparency often focus on wage information within firms and frequently find that transparency can reduce average wage growth or compress wages (Cullen and Pakzad-Hurson, 2023; Baker et al., 2023). By contrast, Colorado's law provides workers with information about compensation in outside job opportunities. As a result, the mechanisms through which cross-firm pay transparency affects wages are likely to differ from those emphasized in the horizontal

pay transparency literature. The positive wage effects documented here are consistent with the interpretation that cross-firm pay transparency improves workers' information about outside wage opportunities. One possible channel is that workers use newly available compensation information to update their beliefs about market pay and strengthen their bargaining position. Cross-firm pay transparency may also improve worker–firm matching by helping workers identify relatively poor matches and seek better outside opportunities. Another possible channel, as suggested by Arnold et al. (2025), is increased competition among firms. These channels are less likely to operate under horizontal pay transparency, which primarily reveals wage information within firms rather than information about outside labor market opportunities. Although the present analysis does not identify the relative importance of these channels, the evidence suggests that reducing compensation information frictions through cross-firm pay transparency increases both weekly earnings and hourly wages among mid- to late-career workers.

5.2 Effect of Pay Transparency on Gender Wage Gap

One of the primary objectives of pay transparency policies is to reduce gender wage disparities since wage growth among men is generally larger than wage growth among women (Bennedsen et al. (2022)). Figure A2 in Appendix B shows that the gender wage gap widens with age before the policy in both Colorado and the other SHB states. After the policy implementation, the gap appears to decrease among mid- to late-career workers in Colorado while remaining relatively stable in the other SHB states. This pattern motivates the focus of this section, which examines whether Colorado's pay transparency policy reduced the gender wage gap among mid- to late-career workers.

Table 3 reports the effects of pay transparency on both the weekly earnings gap and the hourly wage gap by gender. Columns (1) and (2) report DiD estimates of the marginal effect of Colorado's pay transparency policy on women's weekly earnings relative to men's weekly earnings, thereby identifying the policy's effect on the gender earnings gap. The policy increases men's average weekly earnings by 0.9% (1.3% under the alternative fixed-effects specification), corresponding to approximately \$9 (\$13) per week relative to the control-group mean of \$1,012. These estimates are economically modest and statistically insignificant. In contrast, women's weekly earnings increase by an additional 6.6% to 6.7% relative to men's earnings, corresponding to approximately \$67 to \$68 per week relative to the control-group mean, and the total increase in women's wage is 7.5% and 8.0% respectively. These estimates are statistically significant across both specifications, indicating that Colorado's pay transparency law significantly narrows the gender earnings gap.

Columns (3) and (4) report DiD estimates of the marginal effect of Colorado's pay transparency policy on women's hourly wages relative to men's hourly wages, thereby identifying the policy's effect on the gender wage gap. The policy increases men's hourly wages by 1.9% (1.7% under the alternative specification), corresponding to approximately \$0.28 (\$0.25) per hour relative to the control-group mean of \$14.50. However, these effects remain statistically insignificant. By contrast, women's hourly wages increase by an additional 3.7% to 3.5% relative to men's wages, and these estimates remain statistically significant across both specifications, and the total increase in women's

wage is 5.6% and 5.2% respectively. Therefore, the results suggest that reducing compensation information frictions regarding outside wage opportunities significantly narrows the gender wage gap among mid- to late-career workers, while wage gains for men remain relatively modest.

Figure 4 presents DiD event-study estimates corresponding to the gender earning and hourly wage gaps reported in Table 3. This triple-differences structure differences out state-by-year shocks that affect men and women within the same state in the same year similarly. Therefore, state-specific shocks during the COVID-19 period, or other state-year-level labor market shocks, are less likely to drive the estimated effects. For this reason, I use 2020, the period immediately before the policy implementation, as the omitted base period.

Both panels in Figure 4 show that the pre-treatment estimates do not exhibit clear systematic trends, although some coefficients fluctuate around zero. This pattern provides support for the parallel trends assumption. The first panel shows that the gender weekly earning gap narrows in the short run following the implementation of Colorado's pay transparency policy. The estimated effect of pay transparency on women's weekly earnings relative to men's becomes positive around the implementation period and is statistically significant one and two years after the policy takes effect. Although the point estimate remains positive in the third post-treatment year, it becomes imprecisely estimated, and the effect is no longer statistically distinguishable from zero thereafter.

The second panel shows a similar pattern for the gender hourly wage gap. The estimated effect of pay transparency on women's weekly earnings relative to men's becomes positive around the implementation period and is statistically significant one year after the policy takes effect. However, the effect gradually declines toward zero beginning in the second post-treatment year, suggesting that the reduction in the gender hourly wage gap is primarily a short-run effect. Overall, the event-study estimates are consistent with the DiD results, suggesting that Colorado's pay transparency policy reduced both the gender earnings gap and the gender wage gap, but these effects are confined to the short run.

Overall, these findings are consistent with the interpretation that improved access to compensation information about outside opportunities helps women achieve better relative compensation outcomes. Moreover, unlike horizontal pay transparency, which may narrow gender disparities primarily by slowing men's wage growth while generating only limited gains for women, cross-firm pay transparency appears to reduce gender earnings and wage gaps by improving women's compensation without reducing men's compensation. This suggests that workers can obtain genuine compensation gains from access to information about outside opportunities, allowing the policy to achieve its intended distributional objective while avoiding wage compression driven by greater employer market power (Cullen and Pakzad-Hurson, 2023).

5.3 Effects of Pay Transparency Among Younger Workers

It is also important to examine whether Colorado's pay transparency policy affected younger workers, defined as individuals aged 25 to 44, and to compare these effects with those for mid- to late-career workers. Younger workers entered the labor market more recently and tend to experience

more frequent job turnover, which may provide them with more up-to-date information about outside wage opportunities and reduce the additional value of compensation information disclosed through pay transparency. Comparing the effects across age groups therefore provides a useful test of whether the benefits of pay transparency are concentrated among workers who are more likely to face information frictions about outside labor market opportunities.

Table 4 examines the effects of Colorado's pay transparency policy on earnings outcomes among workers aged 25–44. The first two columns show that the policy had limited effects on weekly earnings and hourly wages for this younger group. The estimated effects are 0.2% on weekly earnings and 1.1% on hourly wage, respectively, and are both statistically insignificant and economically small.

The last two columns examine the effects on the gender earnings gap and the gender wage gap, respectively. The estimated coefficient for the gender earnings gap suggests that women's weekly earnings increased by approximately 2% relative to men's following the policy. Although the estimate is not statistically significant, its magnitude indicates a modest improvement in relative earnings. In addition, the estimated effect on the gender wage gap is close to zero and statistically insignificant, providing little evidence that the policy affected gender differences in hourly wages among younger workers. This pattern is consistent with Figure A2 in Appendix B, which shows that the gender wage gap is relatively small among younger workers compared with mid- to late-career workers. As a result, there may be less scope for the policy to reduce the gender wage gap among individuals aged 25–44.

I also use the pooled sample to examine the marginal effects of pay transparency on older workers relative to younger workers, as reported in Table A3 in Appendix E. The first three columns show limited effects on weekly earnings, hourly wages, and the gender wage gap among younger workers, whereas the corresponding marginal effects among older workers are economically meaningful.

Taken together, these findings suggest that pay transparency has limited effects on earnings outcomes among younger workers. These results are consistent with the hypothesis that younger workers already possess relatively up-to-date information about outside wage opportunities and therefore benefit less from the additional compensation information disclosed through pay transparency. More broadly, the comparison across age groups suggests that the effects of pay transparency are concentrated among workers who are more likely to face information frictions about outside labor market opportunities.

5.4 Heterogeneous Effects by Gender, Education, and Age

The previous sections show that Colorado's pay transparency law increased wages and improved labor market outcomes among mid- to late-career workers. This section examines whether these gains differ across demographic and skill groups by analyzing heterogeneous effects by gender, education, and age.

Given the gender differences documented above, I further examine whether the effects of pay transparency on earnings and wages differ between men and women. Such heterogeneity may

arise from gender differences in labor market outcomes, job-search behavior, and wage bargaining (Bertrand et al., 2010; Blau and Kahn, 2017; Le Barbanchon et al., 2021; Roussille, 2024). These differences may influence how workers respond to newly available information about outside wage opportunities. If women face greater information frictions or weaker bargaining positions, pay transparency may generate larger gains for women, particularly in earnings and wages.

I also examine heterogeneity by education. Highly educated workers may benefit more from pay transparency because they face broader outside opportunities and greater wage dispersion, increasing the value of wage information for job search and bargaining. On the other hand, they may already have better access to information about salaries and outside opportunities, making detailed pay disclosures potentially more valuable for less-educated workers. The relationship between education and the effects of pay transparency is therefore theoretically ambiguous. Moreover, education is an important determinant of gender wage inequality (Faberman et al., 2026), so heterogeneity by education also provides insight into whether pay transparency affects gender wage disparities differently across skill groups.

Moreover, workers approaching retirement may make different bargaining, job-search, and job-mobility decisions than younger workers. I therefore examine whether the effects of pay transparency vary by age within the main sample. As shown in Figure A1 in Appendix B, weekly working hours and the share of workers changing employers decline sharply around age 60. This cutoff is also economically meaningful because Social Security retirement benefits become available at age 62, and retiree health insurance has a stronger effect on labor-force exit among workers aged 60–64 than among those aged 55–59 (Shoven and Slavov, 2014). Motivated by both these descriptive patterns and the retirement incentives that become more important around this age, I divide the sample into workers aged 45–59 and those aged 60–64.

Table 5 reports DiD estimates of the heterogeneous effects of Colorado's pay transparency policy on mid- to late-career individuals by gender and education level. I define the low-education group as individuals with at most a high school degree, and the high-education group as individuals with at least some college education.

The first two columns present the results by gender. Panel A shows that pay transparency has a small and statistically insignificant positive effect on weekly earnings among men, with an estimated increase of 1.1%. In contrast, the policy significantly increases weekly earnings among women by 8.2%. Panel B shows a similar pattern for hourly wages. The estimated effect on men's hourly wages is positive, at 1.9%, but statistically insignificant, while the effect on women's hourly wages is positive and statistically significant, at 5.7%. These results are consistent with the findings on the gender earnings gap and gender wage gap, indicating that pay transparency has only limited effects on men's earnings and wages, whereas the gains for women are significant. Overall, the results suggest that women benefit more from the reduction in compensation information frictions than men. These heterogeneous effects are consistent with the gender gap results presented in the previous section. In particular, they suggest that any reduction in gender disparities is driven primarily by improvements in women's earnings and wages rather than declines in men's compensation.

Figure A4 in Appendix D presents the event-study estimates of the heterogeneous effects by gender. The effects on women's weekly earnings and hourly wages become increasingly positive after the policy implementation and statistically significant in later post-policy years, while the effects for men are initially negative but gradually dissipate and become small and statistically insignificant. Thus, the initial pattern resembles wage compression under horizontal pay transparency, but the longer-run gains for women are consistent with workers gradually learning about outside options, strengthening their bargaining positions, and increased cross-firm competition for labor (Arnold et al., 2025).

The third and fourth columns of Table 5 report the heterogeneous effects of pay transparency by education among mid- to late-career workers. Panels A and B show that pay transparency significantly increased weekly earnings and hourly wages among highly educated workers by 6.7% and 5.0%, respectively. In contrast, the estimated effects on weekly earnings and hourly wages are limited among less-educated workers. These findings suggest that the benefits of pay transparency are concentrated among more educated workers. One possible explanation is that highly educated workers may be better positioned to use wage information about outside options in job search, labor supply, or wage bargaining decisions. In addition, highly educated workers may have broader outside options and face a more dispersed distribution of potential wages across firms and jobs. As a result, compensation information may be more valuable for this group. In addition, Figure A5 in Appendix D presents the corresponding DiD event-study estimates. The results are consistent with the DiD estimates.

Moreover, Panel C and D in Table 5 reports heterogeneous effects of pay transparency on the gender earnings gap and the gender wage gap by education level. Panel C presents results for the gender earnings gap. Among low-educated workers, pay transparency increases women's weekly earnings relative to men's by 3.0%, although the estimate is not statistically significant. The estimated effect is economically non-negligible but imprecisely estimated. In contrast, among high-educated workers, pay transparency significantly increases women's weekly earnings relative to men's by 8.8%. Panel D reports results for the gender wage gap. Among low-educated workers, the estimated effect is positive but statistically insignificant, implying a 4.3% increase in women's hourly wages relative to men's. By contrast, among high-educated workers, pay transparency significantly reduces the gender wage gap by 6.2%. Also, Figure A6 in Appendix D shows that pay transparency reduced the gender earnings and wage gaps among highly educated workers in the short run, consistent with the main findings.

The last two columns of Table 5 report heterogeneous effects by age. Panel A shows that pay transparency significantly increases weekly earnings among both workers aged 45–59 and those aged 60–64, with a larger estimated effect for the older group. Panel B shows a significant positive effect on hourly wages among workers aged 45–59 but a limited effect among those aged 60–64. The additional results reported in Table A17 in Appendix K suggest that the increase in weekly earnings among workers aged 60–64 partly reflects an increase in weekly working hours, particularly among women. Panels C and D further show positive estimated effects for women relative to men in both

age groups, suggesting that pay transparency narrows the gender gaps in weekly earnings and hourly wages. Among workers aged 60–64, the point estimates also imply positive overall effects on both weekly earnings and hourly wages for women.

Furthermore, I examine heterogeneity by marital status and by whether individuals have children in the household. Table A4 in Appendix F.1 suggests that the wage gains from Colorado's pay transparency policy are larger among married workers and workers with children.

6 Factors Shaping Wage Effects: Suggestive Evidence on Workers' Bargaining Position

The wage effects of pay transparency may depend on both how workers respond to improved wage information and the labor market environments in which they work. This section has two objectives: to identify the settings in which pay transparency has larger wage effects and to assess whether the resulting patterns are consistent with the policy strengthening workers' bargaining position in wage setting.

6.1 Wage Effects of Pay Transparency by Job Mobility

Based on the theoretical framework, when individuals receive information about outside options and update their beliefs about the labor market, they may have stronger incentives to change jobs (Jäger et al. (2024)). Previous studies provide evidence that job mobility and job search decisions affect the wage (Topel and Ward (1992); Moscarini and Postel-Vinay (2016, 2018)). Also, Faberman et al. (2026) demonstrate the contribution of job turnover to the gender wage gap. Hence, the effects of updated wage information may differ between job changers and job stayers. Job changers may use wage information to identify better outside opportunities, while job stayers may use the same information to adjust labor supply or improve their bargaining position within their current jobs.

Accordingly, this section examines whether Colorado's pay transparency law affects job mobility among mid- to late-career workers and whether its wage effects differ between job changers and stayers. It also assesses whether the pattern of wage effects, particularly among stayers, is consistent with pay transparency strengthening workers' bargaining position with their current employers.

6.1.1 Heterogeneous Effects on Wage by Job Mobility Status

The CPS provides information on whether respondents work for the same employer and in the same job as in the previous month. However, employer-change information contains substantial missing values in the CPS (Fujita et al., 2024). [7] Given this limitation, I combine the employer-change measure with information on industry changes during the CPS observation period. Under

[7]The increase in missing values is largely due to a 2007 revision to CPS interviewing procedures. After the revision, interviewers could no longer rely on a respondent's previous survey responses when interviewing another household member without the respondent's permission. Because employer changes are identified using dependent interviewing of occupation and industry information, this change substantially increased missing observations for the employer-change measure (Fujita et al., 2024).

this broader definition, workers are classified as job changers if they change either employers or industries during the observation period. As an alternative, following previous studies such as Feng (2024) and Faberman et al. (2026), I also report results using the CPS employer-change variable alone.

Table 6 reports heterogeneous effects of pay transparency by job mobility status. The first two columns report the main results using the broader definition of job mobility that includes both employer and industry changes, while the last two columns use the employer-change definition. In Panel A, under the broader definition, pay transparency increases hourly wages by 6.2% among job changers and 3.4% among job stayers, with both effects statistically significant. These results indicate that pay transparency increases hourly wages for both groups, with a larger estimated effect among job changers.[8]

Using the employer-change definition yields a similar pattern. Results in Panel A show that pay transparency increases hourly wages by 8.5% among job changers and 3.5% among job stayers. Although the estimated effect for job changers is not statistically significant, its magnitude is substantially larger than that for job stayers. Overall, the results consistently point to larger wage gains among job changers across alternative definitions of job mobility.

Combined with the evidence on working hours of the main job reported in Table A6 in Appendix G.1, which shows that job changers reduce their working hours while job stayers increase theirs following the introduction of pay transparency, these results suggest that the lower weekly earnings among job changers primarily reflect fewer hours worked rather than lower hourly wages.

Overall, workers' job-mobility status helps explain differences in the wage effects of cross-firm pay transparency. Although the policy has limited effects on mobility itself, it raises hourly wages among both job changers and stayers, with a larger point estimate for changers. The positive effect among stayers shows that the benefits of pay transparency do not depend solely on workers changing employers to obtain higher wages. This pattern potentially is consist with the suggestive evidence that pay transparency improves workers' bargaining position with their current employers. Greater wage competition across firms may provide an additional firm-side explanation (Arnold et al., 2025).

6.1.2 Heterogeneous Effects on the Gender Wage Gap by Job Mobility Status

The heterogeneous wage effects documented in the previous section raise the question of whether pay transparency also affects the gender wage gap differently for job changers and job stayers. Panel B in Table 6 examines the effect of pay transparency on the gender wage gap among job changers and job stayers.

The results show that, based on both job-change definitions, the reduction in the gender wage gap is substantially larger among job changers than among job stayers. Among job changers, the policy reduces the gender wage gap by more than 10%, whereas the corresponding reduction among job

[8] One potential concern is that these heterogeneous effects reflect differences in worker composition rather than job mobility itself. Appendix G.2 Table A7 compares the characteristics of job changers and job stayers and shows that the two groups are broadly similar in observed demographic characteristics, suggesting that compositional differences are unlikely to explain the heterogeneous wage effects.

stayers is much smaller, at around 3%. Combined with the earlier evidence that women experience larger wage gains from pay transparency, these findings suggest that the overall narrowing of the gender wage gap largely reflects greater wage gains for women who change jobs than for their male counterparts.

As a comparison, Table A10 in Appendix G.4 examines wage effects by job-mobility status among younger workers aged 25-44. In contrast to the results for mid- to late-career workers, pay transparency has no detectable wage effect among younger job stayers and does not significantly narrow the gender wage gap among either changers or stayers. The wage gains are concentrated among job changers. This pattern suggests that younger workers benefit from cross-firm wage information primarily when changing jobs, whereas older workers also experience wage gains within their existing employment relationships.

These findings are broadly consistent with Feng (2024), who studies workers aged 25–64 and finds that Colorado's pay transparency law narrows the gender wage gap primarily among job changers. Among mid- to late-career workers, I similarly find a larger reduction among changers, consistent with outside wage information being particularly valuable during job transitions. Unlike Feng (2024), however, I also find a statistically significant reduction among job stayers, suggesting that pay transparency may affect relative wages through within-job adjustments as well as job changes. Women who remain with their employers may use information about outside wage opportunities to improve their bargaining position. Although the estimated reduction is smaller among stayers, they represent the vast majority of workers, so even modest relative wage gains within ongoing employment relationships may contribute meaningfully to the overall reduction in the gender wage gap.

6.1.3 Effect of Pay Transparency on Job Mobility

The previous analysis compares workers who change jobs with those who remain with their employers. A related question is whether pay transparency itself changes workers' job mobility. To examine this possibility, I estimate the effects of Colorado's pay transparency policy on several measures of job mobility.

Table 7 examines how Colorado's pay transparency policy affected job mobility among mid- to late-career individuals. Column (1) uses an indicator for whether an individuals ever changed employers during the CPS survey period because the period-level employer-change variable contains substantial missing values.[9] The same approach is used for the occupation and industry mobility measures in columns (2) and (3), so these estimates should be interpreted as effects on observed mobility over the CPS survey period rather than precise month-to-month transition rates.

The estimated effect on employer mobility is small (-0.3 percentage points). In contrast, the estimated effects on occupational and industry mobility are uniformly positive. The probability of

[9]This measure does not always precisely identify the timing of employer changes relative to the policy implementation, the resulting measurement error is likely limited because only a small share of individuals are observed around the implementation date.

ever changing occupations and industries increased by 1.1 and 2.3 percentage points, respectively, while the probability of changing occupations and industries in a given survey month increased by 0.9 and 0.8 percentage points. Although these estimates are economically meaningful in several cases, none is statistically significant. The results are robust to using the CPS ORG sample, as shown in Table A8 in Appendix G.3.

These findings are robust to using the CPS ORG sample, as shown in Table A8 in Appendix G.3. Moreover, the results reported in Table A9 in Appendix G.3 provide evidence that pay transparency encourages occupational or industry changes among men but has limited effects among women.

Overall, the results provide little evidence that Colorado's pay transparency policy substantially changed job mobility among mid- to late-career workers but suggest that it encouraged men to change occupations or industries. Taken together, these results show that those who change jobs experience larger wage gains under pay transparency, even though the policy does not substantially increase the overall number of workers changing jobs.

6.2 Effects of Pay Transparency on Hourly Wage by Occupations

Previous studies show that occupation is an important source of wage differences across workers (Groshen, 1991; Autor and Handel, 2013). Occupational differences have also been identified as a leading contributor to the gender wage gap (Blau and Kahn, 2000; Faberman et al., 2026). In addition, occupations differ substantially in their average wage levels, wage dispersion, and age-wage profiles, which may influence how workers benefit from improved information about outside wage opportunities. I therefore examine whether the wage effects of pay transparency vary across occupations and whether these differences are systematically related to occupation characteristics.

6.2.1 Heterogeneous Effects on Hourly Wage by Occupation

Figure 6 shows the heterogeneous effects of pay transparency on hourly wages across occupation groups. The results indicate that pay transparency has positive and statistically significant effects for workers in professional, sales, craft or repair, and operators or assemblers occupations. The estimates are also positive for admin/clerical and service occupations, although they are not statistically significant. For technical occupations, the estimated effect is small and statistically insignificant. In contrast, the estimates are negative for residual labor and transportation occupations, but these effects are not statistically significant. The estimate for management occupations is negative and statistically significant. Hence, the effects on wage of pay transparency differ across occupations.

In addition, Figure A7 in Appendix H.2 reports the corresponding DiD event-study estimates separately by occupation group. The results are broadly consistent with the DiD estimates, although the estimates are less precise because the sample size is smaller within each occupation group. Figure A8 in Appendix H.2 further shows the residualized yearly wage trends for mid- to late-career individuals in Colorado and other SHB states by occupation group. These residualized trends also align with the DiD results and show patterns similar to those in the event-study estimates.

Appendix J presents additional evidence on the heterogeneous effects of pay transparency on wages across industries. The results indicate that the wage effects of pay transparency vary across industries, implying that the benefits of wage disclosure depend on industry-specific labor market structures. Moreover, Appendix H.4 examines how pay transparency changes wage dispersion within occupations. The results suggest modest wage compression, with larger wage gains at the bottom and middle of the wage distribution and a smaller effect at the top.

6.2.2 Heterogeneous Effects on Hourly Wage by Wage Dispersion and Wage Level

The previous results suggest that the effects of pay transparency differ across occupations. To better understand, I discuss whether they are associated with differences in occupational wage structures. Specifically, I focus on two characteristics: within-occupation wage dispersion and average wage levels.

Figure 5 shows the distribution of log hourly wages among mid- to late-career workers across occupation categories in the pre-policy period. The box plot indicates that both wage levels and wage dispersion differ substantially across occupations. [10] In addition, Figure 7 plots the estimated effects of pay transparency on hourly wages against pre-policy wage dispersion across occupation groups. Although the number of occupation groups is limited, the figure suggests a modest positive association between pre-policy wage dispersion and the estimated wage effects of pay transparency.

One possible explanation is that wage postings provide more valuable information in occupations with greater wage dispersion. By making outside opportunities easier to identify and compare, disclosed wages may provide workers with more informative benchmarks in wage negotiations. Nevertheless, the pattern is not perfectly monotonic, suggesting that wage dispersion alone does not fully account for differences in the policy's effects across occupations.

Another related question is whether the effects of pay transparency vary with the average wage level within occupations. Figure 8 plots the estimated effects of pay transparency on hourly wages against the pre-policy average wage level for each occupation group. The figure suggests that the largest positive wage effects are concentrated among occupations with middling average wage levels.

In addition, results in Panel A of Table 8 report DiD estimates of the heterogeneous effects of pay transparency across occupation groups with different average wage levels. The results show that positive effects appear in some high-wage occupations, but most positive estimates are concentrated in occupations with middling wage levels. The effects are more limited in several low-wage occupations.

One possible explanation is that high-wage workers are already well informed of their opportunities. In addition, workers in low-wage occupations may have less bargaining power or fewer outside options, making it more difficult for improved wage information to translate into wage gains. This interpretation is also consistent with the education heterogeneity results, which suggest that the benefits of reduced wage information frictions are concentrated among relatively highly-educated workers.

[10] Table A11 in Appendix H.1 further reports summary statistics on corresponding average wage levels and wage dispersion for each occupation group.

Overall, the results suggest that the wage effects of Colorado's pay transparency policy vary across occupations, with larger effects generally observed in medium-wage occupations and in some occupations with relatively high wage dispersion. While these findings suggest that occupational wage structures help explain the heterogeneous effects of pay transparency, they also indicate that other occupation-specific labor market conditions likely play an important role.

6.2.3 Wage Growth Occupation

The previous results show that pay transparency significantly reduces the gender wage gap among mid- to late-career individuals but has little effect among younger workers. One possible explanation is that compensation information becomes more valuable after gender differences in wage growth have accumulated over the career. As men generally experience faster wage growth than women, women may benefit more from disclosed wage information when evaluating whether their current pay is below market levels. Here, I focus on this mechanism by examining the heterogeneous effects of pay transparency across occupations with different wage-growth profiles.

Figure 9 shows pre-2021 hourly wage profiles by age and gender across occupation groups. Men earn higher hourly wages than women in nearly all occupations, with the gender wage gap becoming more pronounced at older ages in occupations with steeper age-wage profiles, such as management, professional, and technical occupations. The gap is more moderate in sales, service, administrative and clerical, and craft and repair occupations, and relatively limited in occupations with flatter age-wage profiles, including residual labor, operators and assemblers, and transportation occupations. [11] These differences motivate the following analysis of whether pay transparency has stronger effects on hourly wages and the gender wage gap in occupations with steeper age-wage profiles.

Based on this, I classify occupations into three groups based on their wage-growth patterns. The steep wage-growth group consists of management, professional, and technical occupations. The moderate wage-growth group includes sales, administrative and clerical, service, and craft and repair occupations. The flat wage-growth group includes residual labor, operators and assemblers, and transportation occupations.

Panel B in Table 8 shows the heterogeneous effects of pay transparency on hourly wages among mid- to late-career workers by wage-growth occupation group. The first column shows that, among workers in steep wage-growth occupations, pay transparency is associated with a 2.7% increase in hourly wages. Although this estimate is not statistically significant, its magnitude is nontrivial and suggests that pay transparency may still have economically relevant effects for workers in these occupations. The second column shows that pay transparency significantly increases hourly wages among workers in moderate wage-growth occupations by 4.4%. However, the last column shows that pay transparency limited increases hourly wages among workers in flat wage-growth occupations by 0.5%.

The results suggest that the benefits of pay transparency vary across occupations with different age-wage profiles. Workers in occupations with flat age-wage profiles experience little wage benefit

[11] The estimated pre-2021 age-wage slopes are reported in Appendix H.1, Table A12 and confirm these patterns.

from pay transparency, whereas workers in occupations with moderate or steep profiles experience larger wage gains. This pattern is consistent with the interpretation that, when wage opportunities change with experience, workers without sufficient outside wage information may overlook the compensation opportunities associated with their accumulated experience. Pay transparency can make these opportunities more visible, increasing the value of wage information in occupations where wages grow more substantially with experience.

Figure 10 shows the level of gender wage gap of mid- to late-career workers across occupation groups with different wage-growth profiles in Colorado and the control states before and after the implementation of pay transparency. The figure suggests that the gender wage gap narrows more in Colorado than in the control states following the policy, particularly in occupations with steep wage-growth profiles. A smaller reduction is observed in occupations with moderate wage-growth profiles, while the change is limited in occupations with flat wage-growth profiles. These patterns suggest that pay transparency has a stronger effect on narrowing the gender wage gap in occupations with steeper life-cycle wage growth.

Results in Panel C of Table 8 confirms this pattern. Pay transparency reduces the gender wage gap by 6.8% in steep wage-growth occupations, primarily because women experience larger wage gains, while men's hourly wages decline only slightly (0.7%). This finding is consistent with earlier results showing that cross-firm pay transparency mainly raises women's wages without substantially reducing men's wages. The gender wage gap also declines significantly by 4.6% in moderate wage-growth occupations, whereas the estimated effect is small and statistically insignificant (0.9%) in flat wage-growth occupations. Overall, these results suggest that pay transparency is most effective at narrowing the gender wage gap in occupations where wages grow more steeply over the life cycle.

Overall, the results suggest that occupational wage-growth profiles are an important source of heterogeneity in the effects of pay transparency on the gender wage gap. Occupations with steeper age-wage profiles tend to have larger pre-existing gender wage gaps, leaving greater scope for pay transparency to improve wage bargaining and reduce gender differences in pay. Consistent with this interpretation, the policy generates the largest reduction in the gender wage gap in steep wage-growth occupations, a smaller but still significant reduction in moderate wage-growth occupations, and little effect in flat wage-growth occupations. The accompanying wage estimates further indicate that these reductions are primarily driven by larger wage gains for women, particularly in occupations where life-cycle wage growth is steeper.

6.2.4 Heterogeneous Effects by Baseline Employer Concentration

The effects of pay transparency may depend on the degree of employer concentration in the local occupational labor market. When employment opportunities are concentrated among fewer employers, workers' ability to pursue outside employment opportunities may be more constrained, giving employers greater wage-setting power. Such power may make group-based wage differentials easier to sustain when workers differ in their mobility or labor supply elasticities to the firm (Alderman et al., 2023). These constraints may be particularly consequential for older workers, who may already

face age-related barriers in hiring (Neumark et al., 2019). In such markets, information about the compensation offered by other employers may be particularly valuable to workers when evaluating alternative employment opportunities and bargaining with their current employers.

To examine whether the effects of pay transparency vary with baseline employer concentration, I use the 2018 concentration measures constructed by Handwerker and Dey (2022). Handwerker and Dey combine microdata from the Occupational Employment and Wage Statistics with the Quarterly Census of Employment and Wages to estimate occupational employment and payroll by employer and local area. Employers are identified using Employer Identification Numbers. I use their measures for occupation-by-metropolitan-area labor markets and merge them with individual CPS records. Consequently, CPS respondents in the same occupation and metropolitan area are assigned the same concentration measure. Since the measure is taken from 2018, it captures employer concentration before the implementation of Colorado's pay transparency law in 2021.

Following Handwerker and Dey (2022), my primary measure is the payroll-based Herfindahl–Hirschman Index (HHI). For occupation o in metropolitan area g, the 2018 payroll HHI is defined as

$$HHI_{og}^{P} = \sum_{e \in \Omega_{og}} \left(\frac{Payroll_{eog}}{\sum_{e \in \Omega_{og}} Payroll_{eog}} \right)^2, \tag{6.1}$$

where $Payroll_{eog}$ is the total payroll paid by employer e to workers in occupation o and metropolitan area g, and Ω_{og} is the set of employers in that occupation-by-metropolitan-area labor market. The index ranges from zero to one, with a higher value indicating that occupational payroll is more concentrated among a smaller number of employers.

As an alternative measure, I use the employment-based HHI,

$$HHI_{og}^{E} = \sum_{e \in \Omega_{og}} \left(\frac{Employment_{eog}}{\sum_{e \in \Omega_{og}} Employment_{eog}} \right)^2, \tag{6.2}$$

where $Employment_{eog}$ is the number of workers employed by employer e in occupation o and metropolitan area g. Unlike the payroll-based measure, the employment-based HHI does not incorporate employers' wage levels when calculating market shares. I therefore use it to assess whether the results are robust to measuring employer concentration using occupational employment rather than occupational payroll.

To examine whether the effects of pay transparency vary with baseline employer concentration, I divide local occupational labor markets into three approximately equal-sized groups based on the weighted pre-policy HHI distribution: low, medium, and high employer concentration. Panel A of Table 9 uses the payroll-based HHI. The estimates from the separate regressions in the first three columns imply increases in hourly wages of approximately 3.7% in low-concentration markets, 4.1% in medium-concentration markets, and 5.3% in high-concentration markets. The pooled specification in the final column shows a similar pattern. Thus, the point estimates increase with baseline payroll concentration. The pooled specification in the final column yields a similar pattern.

Panel B reports results using the employment-based HHI. The separate regressions imply wage increases of approximately 2.7%, 4.8%, and 4.8% in low-, medium-, and high-concentration markets, respectively.The pooled specification in the final column also yields a similar pattern.

Taken together, these findings suggest that pay transparency generate larger wage gains for mid- to late-career workers in relatively more concentrated local occupational labor markets. In these markets, constrained employment choices may give employers greater wage-setting discretion, making information about alternative opportunities particularly valuable. By helping workers identify and compare these opportunities, the results are potentially consist with the evidence that compensation disclosure may improve their bargaining position in wage setting. Although the estimates do not establish that the law changes employer concentration or directly reduces monopsony power, the pattern complements evidence from Arnold et al. (2025) that pay transparency can increase wage competition across firms.

7 Effects of Pay Transparency on Employment and Working Hours

I continue by examining how pay transparency affects employment and working hours among mid- to late-career workers, capturing the extensive and intensive margins of labor market activity. Mid- to late-career workers face greater labor market barriers, including age discrimination during hiring, longer job-search durations, and lower reemployment probabilities after job displacement (Neumark et al., 2019; Brown et al., 2025). They may also have weaker incentives to remain in the labor force because of retirement incentives and shorter remaining work horizons (Maestas and Li, 2006; Blundell et al., 2016). Reducing compensation information frictions may therefore affect their employment and working-hour decisions. Because employment is an equilibrium outcome, its estimated response also reflects employers' posting and hiring decisions.

Table 10 reports DiD estimates of the effects of Colorado's pay transparency policy on employment and conditional working hours in the main job. Columns (1) and (2) show that pay transparency increased the employment rate of mid- to late-career workers by 0.6 and 0.8 percentage points under the two fixed-effects specifications. The estimate from the main specification corresponds to approximately 0.9% of the control-group mean, and both estimates are statistically significant. Columns (3) and (4) show that pay transparency also increased conditional weekly hours worked in the main job by 0.603 and 0.536 hours, respectively, corresponding to about 1.5% of the control-group mean under the main specification. Both estimates are statistically significant and remain similar across specifications. Overall, these findings suggest modest but precisely estimated effects of pay transparency on labor supply among mid- to late-career workers, with increases on both the extensive and intensive margins.

Figure 11 presents the corresponding DiD event-study estimates, using 2019 rather than 2020 as the omitted base year to avoid COVID-19-related disruptions. The pre-policy coefficients for both outcomes fluctuate around zero and provide little evidence of differential pre-trends.

The first panel shows that pay transparency increased employment among mid- to late-career

workers immediately after implementation. The estimated effects are statistically significant during the first two post-policy years but decline thereafter and become statistically insignificant in later years, suggesting that the employment effects are concentrated in the short run. The second panel shows that pay transparency also increased conditional working hours in the main job. The estimated effect becomes statistically significant in the second post-policy year before diminishing in later years. Similar to the employment results, the increase in working hours is concentrated in the early post-policy period.

One possible interpretation is that improved wage information increased the expected returns to work, generating a substitution effect that encouraged employed workers to supply more hours.[12] Another possibility is that pay transparency improved job matching by helping workers find jobs with more desirable wage-hours packages, thereby increasing their willingness to remain employed and work longer hours.

To provide additional evidence on labor supply, Table A15 in Appendix I examines labor force participation, conditional hours worked across all jobs, and unemployment duration. These findings suggest that pay transparency increases labor-force participation and total hours worked across all jobs while shortening unemployment duration among mid- to late-career workers. The employment increase after pay transparency policy may therefore arise through both greater labor-force attachment and shorter job-search durations.

Moreover, Table 11 provides evidence on effect of Colorado's pay transparency policy on labor supply among younger group (aged 25-44). The results show that the policy has limited effects on employment and conditional working hours for this younger group. All estimated effects are statistically insignificant and small in economic magnitude. Thus, the pay transparency does not appear to have encouraged younger workers to work.

Furthermore, I use the pooled sample to examine the marginal effects of pay transparency on older workers relative to younger workers in terms of labor supply, as reported in Table A3 in Appendix E. The last two columns show limited effects on employment and weekly working hours among younger workers, whereas the corresponding marginal effects among older workers are economically meaningful.

Overall, the evidence suggests that reducing compensation information frictions through pay transparency increased labor supply among mid- to late-career workers on both the extensive and intensive margins. The policy increases employment, labor force participation, and working hours, although the labor supply response is concentrated in the early post-policy years. In contrast, the positive effects on earnings and hourly wages become stronger over time, suggesting that workers adjusted their labor supply relatively quickly while the effects on compensation are more persistent.

[12]Table A14 in Appendix I reports the effects of pay transparency on main-job working hours using the CPS ORG sample. The results indicate that pay transparency increases main-job working hours and are consistent with the main findings.

8 Mechanisms: Workers' Beliefs about Job Opportunities

I have argued that a key mechanism through which pay transparency may affect worker outcomes is by improving workers' information about outside options. Workers' beliefs about these opportunities are unobserved in the CPS data. In this section, I use the Survey of Consumer Expectations (SCE) Labor Market Survey data that directly elicit workers' expectations about outside opportunities to examine whether these beliefs changed following the implementation of Colorado's pay transparency law.

8.1 The SCE Labor Market Survey

The SCE Labor Market Survey, conducted by the Federal Reserve Bank of New York, is a nationally representative survey module that collects detailed information on individuals' labor market experiences, expectations, and subjective beliefs. A key advantage of the survey is that it provides direct measures of workers' expectations about labor market opportunities and outside options, information that is typically unavailable in standard labor force surveys. This feature makes the survey particularly useful for examining whether pay transparency affects workers' expectations about wages, job opportunities, and outside options.

Because the SCE Labor Market Survey has a relatively small sample size, I use all states that had not adopted pay transparency laws at either the state or city level through 2025 as the control group, excluding Alaska. Following the CPS sample definition, I also exclude self-employed individuals and focus on workers aged 45 to 64 between 2015 and 2024. The final sample contains 7,813 observations, including 242 from Colorado and 7,571 from the control states.

I use five questions from the survey to measure three dimensions of workers' labor market beliefs. The first two questions measure expected earnings associated with outside job opportunities by asking respondents about the expected annual salary of job offers they may receive and the expected annual salary of their best potential offer within the next four months. The third question measures respondents' reservation wage, defined as the lowest annual wage they would be willing to accept if offered a job. Finally, two additional questions measure perceived job-finding probabilities by asking employed and non-employed respondents, respectively, about the probability of receiving at least one job offer within the next four months. Together, these measures allow me to examine how pay transparency affects workers' expectations about outside wage opportunities, reservation wages, and job-finding prospects.

8.2 Results on Workers' Beliefs

Figures 12 present residualized yearly trends in workers' beliefs about labor market opportunities based on the SCE Labor Market Survey. Because the Colorado sample is relatively small, the Colorado series exhibits greater year-to-year fluctuations than the control states throughout the sample period. The figures should therefore be interpreted as suggestive evidence on the evolution of workers' beliefs rather than as formal causal estimates.

Panel (a) in Figure 12 shows residualized yearly trends in the expected average annual salary of job offers that mid- to late-career individuals believe they may receive within the next four months. Prior to the implementation of Colorado's pay transparency law in 2021, the Colorado series is considerably more volatile than the control series, rising from 2015 to 2017 before declining sharply in 2019–2020. Following the implementation of the policy, a relative divergence emerges between the two series. Expected salaries in Colorado increase and remain above those in the control states, while the control series declines modestly after 2021. The divergence becomes particularly pronounced from 2023 to 2024. These patterns provide descriptive evidence of an increase in expected outside-option wages in Colorado relative to the control states following the introduction of pay transparency and are consistent with the hypothesis that greater access to compensation information improves workers' expectations about earnings associated with outside job opportunities.

Panel (b) presents the residualized yearly trends in the expected annual salary of the best job offer. The overall pattern closely resembles that in Panel (a). Following the implementation of pay transparency, expected best-offer salaries increase in Colorado relative to the control states, indicating improved expectations about the highest-paying outside opportunities available in the labor market.

Panel (c) presents the residualized yearly trends in reservation wages. Prior to 2021, the Colorado series is more volatile than the control series and fluctuates around it. Following the implementation of Colorado's pay transparency law, the two series diverge. Reservation wages in the control states decline modestly, whereas reservation wages in Colorado increase and remain above those in the control states throughout the post-policy period. The divergence becomes particularly pronounced from 2023 to 2024. This pattern is consistent with the hypothesis that reducing compensation information frictions leads workers to revise upward their beliefs about the value of outside job opportunities. As argued by Jäger et al. (2024), workers' beliefs about outside options are often anchored to their current wages. Because mid- to late-career workers may rely on relatively outdated compensation information, greater pay transparency may help them update these beliefs and increase the minimum compensation they require to accept a new job. Together with the increase in expected offer wages, the rise in reservation wages provides suggestive evidence that pay transparency improves workers' assessments of the value of outside labor market opportunities.

Panel (d) presents the residualized yearly trends in employed workers' perceived probability of receiving at least one job offer within the next four months. Following the implementation of pay transparency, perceived job-finding probabilities increase in Colorado during the first few post-policy years while remaining relatively stable in the control states. However, the Colorado series declines noticeably in 2024 and returns to approximately its pre-policy level. Panel (e) shows a similar pattern for non-employed individuals. In both groups, the perceived probability of receiving a job offer increases temporarily following the policy but weakens by the end of the sample period.

Furthermore, Appendix M reports difference-in-differences estimates for each of the worker-belief outcomes examined above. The estimates are consistent with the descriptive patterns documented in this section.

Overall, the SCE evidence suggests that pay transparency improves mid- to late-career workers' beliefs about labor market opportunities. Workers revise upward their expectations about outside wages and increase their reservation wages following the policy. They also revise their perceived odds of finding a job upward, but this occurs only in hte short run. These findings are consistent with the view that pay transparency reduces compensation information frictions by improving workers' information about outside opportunities. Better information may enable workers to make more informed decisions when searching for jobs, evaluating offers, and negotiating compensation, providing a plausible mechanism for the wage gains documented in the main analysis.

9 Robustness Check

This section presents robustness checks and investigates the role of the COVID-19 shock in the estimated effects of pay transparency on mid- to late-career workers. For the robustness analysis, I use alternative control groups and examine the effects of statewide pay transparency laws implemented in other states. I then investigate the unusual wage movement observed during the COVID-19 period. As shown in the event-study estimates for hourly wages, Colorado experienced a relative increase in average wages during the pandemic compared with the control states. This section examines potential sources of this temporary divergence and assesses whether the main results remain robust after mitigating the influence of the COVID-19-related noise.

9.1 Robustness to Alternative Control Groups and Estimation Methods

My main identification strategy uses states that had already implemented salary history bans before 2021 as the control group for Colorado. However, one potential concern is whether these salary-history-ban states provide an appropriate counterfactual for Colorado before the implementation of EPEWA. In particular, the results may depend on the choice of control group. To address this concern, I conduct two complementary robustness checks.

First, I re-estimate the difference-in-differences specification using all states that did not implement pay transparency laws before 2025 as the control group, excluding Alaska. Second, I apply synthetic difference-in-differences to construct a weighted comparison group from the eligible donor states, assigning greater weight to states whose pre-policy outcome trajectories more closely resemble Colorado's. These exercises test whether the main findings are robust to both an expanded control group and a data-driven synthetic comparison group.

Panel A in Table 12 reports the DiD estimates using the alternative control group. The first column shows that pay transparency significantly increases the employment rate by 0.6 percentage points, which is consistent with the main results. The second column shows that pay transparency increases conditional weekly hours worked in the main job by 0.404 hours, and this effect is statistically significant. This finding is also consistent with the main results, although the magnitude is about 0.2 hours smaller than the baseline estimate.

The third and fourth columns show that pay transparency significantly increases both weekly

earnings and hourly wages. These effects are also consistent with the main results. Finally, the last column shows that pay transparency significantly reduces the gender wage gap by 6.6 percent. The magnitude of this reduction is larger than the baseline estimate, which shows a 3.7 percent decrease in the gender wage gap.

Overall, the results based on the alternative control group are consistent with the main findings. This suggests that the estimated effects of Colorado's pay transparency policy are not sensitive to the choice of control group.

Panel B of Table 12 reports estimates from the synthetic difference-in-differences method developed by Arkhangelsky et al. (2021). The estimates in the first two columns indicate economically meaningful positive effects on employment and main-job hours among mid- to late-career group, although neither estimate is statistically significant. The third and fourth columns show statistically significant increases in weekly earnings and hourly wages among mid- to late-career workers. The final column examines the gender wage gap, defined as the average wage of men minus that of women. The negative estimate indicates that pay transparency significantly narrows the wage gap. Overall, the synthetic difference-in-differences estimates are consistent with the main findings.

9.2 Triple-Differences Robustness Check: Isolating Pay Transparency from Salary History Ban

Since Colorado's EPEWA combines pay transparency requirements with a salary history ban, I further implement a triple-differences specification to separate the effect of pay transparency from the effect of salary history bans. The control group includes states that had neither salary history bans nor pay transparency laws before 2025, while the comparison group captures the effect of salary history bans alone. The coefficient on the triple interaction compares the post-2021 change in Colorado with the corresponding change in salary-history-ban states, net of changes in states with neither policy. Therefore, this coefficient captures the additional effect of Colorado's EPEWA beyond the effect of salary history bans. Under the assumption that the effect of salary history bans is comparable across states, this remaining effect can be interpreted as the effect of pay transparency.

The DDD regression is as follows

$$\begin{aligned} Y_{igt} \; &= \rho_1 \, \mathrm{PT}_{ig} \times SHB_{ig} \times Post_t + \rho_2 SHB_{ig} \times Post_{gt}^{shb} \\ &\quad + X_{igt}'\gamma + \lambda M_{st} + \omega_{oy(t)} + \mu_{jy(t)} + \delta_t + \theta_g + \varepsilon_{igt}, \end{aligned} \tag{9.1}$$

where PT_{ig} is the indicator whether individual i in metropolitan g that implement pay transparency (in Colorado). SHB_{ig} is the indicator of the Salary History Ban. $Post_t$ is the indicator of post periods that metropolitan g implement both pay transparency and Salary History Ban, and $Post_{gt}^{shb}$ is the indicator of post periods of Salary History Ban. The coefficient of interest is ρ_1, which captures the additional effect of Colorado's EPEWA relative to the effect of salary history bans alone.

Additionally, the regression below shows the identification method for identifying the gender wage gap:

$$
\begin{aligned}
Y_{igt} \; &= \rho_1^G \, \mathrm{PT}_{ig} \times SHB_{ig} \times Post_t \times Female_i + \rho_2^G SHB_{ig} \times Post_{gt}^{shb} \times Female_i \\
&+ \rho_3^G \, \mathrm{PT}_{ig} \times SHB_{ig} \times Post_t + \rho_4^G SHB_{ig} \times Post_{gt}^{shb} + X_{igt}'\gamma + \lambda M_{st} \\
&+ \omega_{oy(t)} + \mu_{jy(t)} + \delta_t + \theta_g + \eta_{fg} + \pi_{ft} + \varepsilon_{igt},
\end{aligned} \tag{9.2}
$$

where $Female_i$ is an indicator for female workers, and π_{ft} denotes female-by-time fixed effects. The coefficient of interest is ρ_1^G, which captures the additional effect of Colorado's EPEWA on female workers relative to male workers, after netting out the gender-specific effect of salary history bans.

Results in Panel B of Table 12 reports the DDD estimates that separately identify the effects of pay transparency and salary history bans on labor market outcomes among mid- to late-career workers. Consistent with the baseline results, pay transparency significantly increases employment, conditional weekly hours worked, weekly earnings, and hourly wages, with estimated magnitudes that are similar to those reported in the main specifications. In contrast, there is little evidence that salary history bans affect these outcomes.

Results in the last column presents the estimates for the gender wage gap. Pay transparency continues to significantly reduce the gender wage gap by approximately 5.1%, consistent with the baseline results. By comparison, the estimated effect of salary history bans is considerably smaller and statistically indistinguishable from zero. Together, these findings suggest that the labor market improvements associated with Colorado's EPEWA are primarily driven by its pay transparency provisions rather than by the salary history ban.

Overall, the robustness-check results are consistent with the main findings, suggesting that the main findings are driven primarily by the pay transparency component of Colorado's EPEWA rather than by salary history bans alone.

9.3 Robustness Check: The Pay Transparency in Other States

In this section, I focus on the effects of pay transparency policies in states other than Colorado. Specifically, I examine the effects of the policies in California and Washington, both of which implemented their pay transparency laws in January 2023. Because California and Washington are also SHB states, I use the same group of SHB states as the control group as in the main identification strategy.

Panel C in Table 12 reports the estimated effects of pay transparency in California and Washington. In contrast to the Colorado results, the estimated effects on employment, conditional weekly hours worked, weekly earnings, and the gender wage gap are all small and statistically insignificant. The estimated effect on hourly wages is positive (1.7%) and economically meaningful, although it is not statistically significant. Figure A12 and Figure A13 in Appendix L provide similar evidence from the event-study analysis. The event-study estimates show little indication of systematic effects on employment, hours, weekly earnings, or the gender wage gap, while the hourly wage estimates are positive in the first post-treatment year but exhibit noticeable noise in the pre-treatment period. Taken together, these results provide little evidence that the pay transparency laws in California and Washington affected labor market outcomes over the available sample period.

Several institutional differences may explain why the estimated effects are weaker than those in Colorado. California's law requires employers to disclose the pay scale but does not require disclosure of other forms of compensation or benefits, potentially allowing greater flexibility in the composition of compensation. In addition, Washington implemented several major policies around the same time, including a substantial minimum wage increase and the WA Cares Fund, which may independently affect labor market outcomes and complicate identification of the pay transparency effect. Finally, because both states implemented pay transparency in 2023, the available post-treatment period is relatively short, making it difficult to detect delayed policy effects. The more meaningful labor outcome effects that I estimate for Colorado appear more than two years after the reform. Taken together, these differences leave open the possibility that the more limited reforms in California and Washington may generate meaningful earnings and hours responses over a longer follow-up period.

10 Conclusion

This paper examines how cross-firm pay transparency affects the labor market outcomes of mid- to late-career workers, using Colorado's Equal Pay for Equal Work Act. This group is particularly relevant because mid- to late-career workers may face greater labor market barriers, including age discrimination, and may benefit from updated information about market compensation given the longer average time since their last job search.

The results show that cross-firm pay transparency increases both weekly earnings and hourly wages among workers aged 45–64. These gains are concentrated primarily among women and highly educated workers, whereas the estimated effects for men are positive but small and statistically insignificant. These findings suggest that the benefits of improved access to compensation information vary substantially across workers. Pay transparency also reduces both the gender earnings gap and the gender wage gap among mid- to late-career workers, although these effects are concentrated in the short run. The narrowing of the gender gap is driven by wage gains among women rather than wage declines among men. This pattern differs from the effects of horizontal pay transparency documented in previous studies, where reductions in gender pay gaps are driven primarily by slower wage growth among men, with limited effects on women's wages.

I also focus on two factors that may shape the wage effects of pay transparency: job mobility and occupation. Regarding job mobility, I find that pay transparency increases hourly wages and reduces the gender wage gap among both job changers and job stayers, with larger effects among job changers. By contrast, the policy has limited effects on job mobility itself, although the policy modestly increases men's likelihood of changing occupations and industries, whereas the corresponding effects for women are limited. These findings suggest that improved wage information is particularly valuable when workers change jobs, while it can also benefit workers who remain with their current jobs.

Based on occupational characteristics, wage gains are largest in occupations with middle wage levels and moderate age-wage profiles. The occupation-level estimates also show a positive relationship

between wage dispersion and the wage effects of pay transparency, suggesting that workers in occupations with greater wage dispersion tend to benefit more, in terms of wage, from information about available opportunites. Among these characteristics, age-wage profiles are particularly relevant for understanding heterogeneity in the effects on the gender wage gap. The reduction in the gender wage gap is largest in occupations with steep age-wage profiles, followed by occupations with moderate profiles, while the effects are limited in occupations with relatively flat profiles. I also find smaller wage effects in local occupational labor markets with low baseline employer concentration and larger effects in markets with medium and high concentration, although these differences are estimated imprecisely. Together, these findings show that the benefits of pay transparency depend on both the wage structure and employer concentration of workers' local occupational labor markets. Also, the findings potentially consist with the evidence that the pay transparency may increases wage level by improving bargaining position among mid- to late-career workers.

Beyond wages, cross-firm pay transparency also increases employment and working hours among mid- to late-career workers, although both effects are modest and concentrated in the short run. The event-study estimates show that employment and hours increase immediately following the policy but gradually attenuate over time. Additional evidence indicates that the pay transparency increases labor-force participation and shortens unemployment duration, suggesting that it both encourages labor-market participation and reduces job-search duration. Together, these findings suggest that improved information about outside opportunities can strengthen labor-force attachment among mid- to late-career workers.

Comparisons across age groups further highlight that the benefits of cross-firm pay transparency are concentrated among mid- to late-career workers. The policy has limited effects on earnings, wages, gender wage gap, and labor supply factors among younger workers, although it modestly increases hourly wages among younger job changers. These differences suggest that reducing compensation information frictions is particularly valuable for workers whose knowledge of outside labor market opportunities is more likely to be outdated.

Descriptive evidence from the SCE Labor Market Survey provides additional support for the proposed mechanisms. Following the introduction of pay transparency, mid- to late-career workers gradually revise upward their expectations about outside-option wages and their reservation wages, whereas their perceived probability of receiving a job offer increases only temporarily. These patterns are consistent with workers updating their beliefs about the value of outside opportunities rather than their chances of obtaining them. They also help reconcile the dynamic treatment effects, with persistent changes in wage expectations corresponding to sustained wage gains and temporary changes in perceived job opportunities paralleling the short-run increases in employment and working hours.

From a policy perspective, the findings suggest that cross-firm pay transparency can improve labor-market outcomes and reduce gender inequality among workers who face substantial information frictions and labor-market barriers. However, these benefits are not evenly distributed. The effects are more limited among workers with lower education and those employed in low-wage occupations or

occupations with relatively flat wage growth, who may have fewer opportunities to act on disclosed compensation information. Complementary policies may therefore be needed to improve employment opportunities and bargaining conditions for more disadvantaged workers.

The suggestive evidence from employer concentration adds an important qualification. Pay transparency may be particularly valuable in concentrated labor markets because compensation information helps workers evaluate alternative opportunities, form more accurate wage expectations, and strengthen their bargaining positions with current and prospective employers. By making outside wage opportunities more visible, disclosure may also constrain employers' wage-setting discretion. In this sense, pay transparency can complement anti-discrimination policy by making compensation offers more observable and operate as a competition-enhancing labor-market regulation by increasing the comparability of employers' offers.

This study also raises several questions for future research. Future work could examine how pay transparency affects non-wage compensation, particularly health insurance and retirement benefits, which is especially important for mid- to late-career workers but is not measured in sufficient detail in the CPS. More direct evidence is also needed on how the policy changes workers' wage-bargaining and job-search behavior. Finally, while this study focuses on worker-side responses, firms may also adjust their hiring, wage-setting, and recruiting practices following the introduction of pay transparency laws. Understanding these demand-side responses, especially toward mid- to late-career workers, remains an important direction for future research.

References

Svend Albæk, Peter Møllgaard, and Per B Overgaard. Government-assisted oligopoly coordination? a concrete case. *The Journal of Industrial Economics*, 45(4):429–443, 1997.

Brianna L. Alderman, Roger D. Blair, and Perihan Ö. Saygin. Monopsony, wage discrimination, and public policy. *Economic Inquiry*, 61(3):572–583, 2023. doi: 10.1111/ecin.13131.

Dmitry Arkhangelsky, Susan Athey, David A Hirshberg, Guido W Imbens, and Stefan Wager. Synthetic difference-in-differences. *American economic review*, 111(12):4088–4118, 2021.

David Arnold, Simon Quach, and Bledi Taska. The impact of pay transparency in job postings on the labor market. Technical report, National Bureau of Economic Research, 2025.

David H. Autor and Michael J. Handel. Putting tasks to the test: Human capital, job tasks, and wages. *Journal of Labor Economics*, 31(S1):S59–S96, 2013.

Michael Baker, Yosh Halberstam, Kory Kroft, Alexandre Mas, and Derek Messacar. Pay transparency and the gender gap. *American Economic Journal: Applied Economics*, 15(2):157–183, 2023. doi: 10.1257/app.20210141.

Moshe A. Barach and John J. Horton. How do employers use compensation history? evidence from a field experiment. *Journal of Labor Economics*, 39(1):193–218, 2021. doi: 10.1086/709277.

Morten Bennedsen, Elena Simintzi, Margarita Tsoutsoura, and Daniel Wolfenzon. Do firms respond to gender pay gap transparency? *Journal of Finance*, 77(4):2051–2091, 2022. doi: 10.1111/jofi.13136.

Marianne Bertrand, Claudia Goldin, and Lawrence F. Katz. Dynamics of the gender gap for young professionals in the financial and corporate sectors. *American Economic Journal: Applied Economics*, 2(3):228–255, 2010.

Francine D Blau and Lawrence M Kahn. Gender differences in pay. *Journal of Economic perspectives*, 14(4):75–100, 2000.

Francine D. Blau and Lawrence M. Kahn. The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, 55(3):789–865, 2017.

Richard Blundell, Eric French, and Gemma Tetlow. Retirement incentives and labor supply. In *Handbook of the Economics of Population Aging*. Elsevier, 2016.

Meta Brown, Rachel Dwyer, Stephanie Moulton, and Sungmin Park. Who supports young workers through job loss? Working paper, The Ohio State University, July 2025.

Sydnee Caldwell and Nikolaj Harmon. Outside options, bargaining, and wages: Evidence from coworker networks. *Unpublished manuscript, Univ. Copenhagen*, pages 203–207, 2019.

Brantly Callaway and Pedro H. C. Sant'Anna. Difference-in-differences with multiple time periods. *Journal of Econometrics*, 225(2):200–230, 2021.

David Card, Alexandre Mas, Enrico Moretti, and Emmanuel Saez. Inequality at work: The effect of peer salaries on job satisfaction. *American Economic Review*, 102(6):2981–3003, 2012. doi: 10.1257/aer.102.6.2981.

Sewin Chan and Ann Huff Stevens. Job loss and employment patterns of older workers. *Journal of labor economics*, 19(2):484–521, 2001.

Courtney C Coile, Phillip B Levine, and Robin McKnight. Recessions, older workers, and longevity: How long are recessions good for your health? *American Economic Journal: Economic Policy*, 6 (3):92–119, 2014.

Colorado Department of Labor and Employment. INFO #9A: Transparency in Pay and Job Opportunities: The Colorado Equal Pay for Equal Work Act, Part 2, May 2024. URL `https://cdle.colorado.gov/sites/cdle/files/INFO%20%239A%20Transparency%20in%20Pay%20and%20Job%20Opportunities%20The%20Colorado%20EPEWA%20Part%202%205.29.24%20%5Baccessible%5D.pdf`. Division of Labor Standards and Statistics, Interpretive Notice and Formal Opinion.

Zoë Cullen. Is pay transparency good? *Journal of Economic Perspectives*, 38(1):153–180, 2024.

Zoë B. Cullen and Bobak Pakzad-Hurson. Equilibrium effects of pay transparency. *Econometrica*, 91 (3):765–802, 2023. doi: 10.3982/ECTA19631.

R Jason Faberman, Andreas I Mueller, and Ayşegül Şahin. Job search, job amenities and the gender pay gap. Technical report, National Bureau of Economic Research, 2026.

Kexin Feng. Pay transparency and gender differences in job search. Working paper, 2024.

Sarah Flood, Miriam King, Renae Rodgers, Steven Ruggles, J. Robert Warren, Michael Westberry, Dan Backman, Annie Chen, Grace Cooper, Stephanie Richards, and Megan Schouweiler. Ipums cps: Version 11.0 [dataset], 2023.

Shigeru Fujita, Giuseppe Moscarini, and Fabien Postel-Vinay. Measuring employer-to-employer reallocation. *American Economic Journal: Macroeconomics*, 16(3):1–51, 2024.

Andrew Goodman-Bacon. Difference-in-differences with variation in treatment timing. *Journal of Econometrics*, 225(2):254–277, 2021.

Erica L Groshen. The structure of the female/male wage differential: Is it who you are, what you do, or where you work? *Journal of Human Resources*, pages 457–472, 1991.

Elizabeth Weber Handwerker and Matthew Dey. Some facts about concentrated labor markets in the united states. BLS Working Paper 550, U.S. Bureau of Labor Statistics, 2022.

Raymond He and Suryansh Upmanyu. How much can i make? cross-firm pay transparency's effects on the us labor market. *Cross-Firm Pay Transparency's Effects On the US Labor Market (March 02, 2026)*, 2026.

Simon Jäger, Christopher Roth, Nina Roussille, and Benjamin Schoefer. Worker beliefs about outside options. *The Quarterly Journal of Economics*, 139(3):1505–1556, 2024.

Alan B Krueger and Andreas I Mueller. A contribution to the empirics of reservation wages. *American Economic Journal: Economic Policy*, 8(1):142–179, 2016.

Joanna N Lahey. Age, women, and hiring: An experimental study. *Journal of Human resources*, 43 (1):30–56, 2008.

Thomas Le Barbanchon, Roland Rathelot, and Alexandra Roulet. Gender differences in job search: Trading off commute against wage. *The Quarterly Journal of Economics*, 136(1):381–426, 2021.

Linda S. Leighton and Jacob Mincer. Labor turnover and youth unemployment. In Richard B. Freeman and David A. Wise, editors, *The Youth Labor Market Problem: Its Nature, Causes, and Consequences*, pages 235–275. University of Chicago Press, Chicago, 1982.

Nicole Maestas and Xiaoyan Li. Discouraged workers? job search outcomes of older workers. Working Paper WP 2006-133, Michigan Retirement Research Center, 2006.

Alexandre Mas. Does transparency lead to pay compression? *Journal of Political Economy*, 125(5): 1683–1721, 2017. doi: 10.1086/693137.

Giuseppe Moscarini and Fabien Postel-Vinay. Did the job ladder fail after the great recession? *American Economic Review*, 106(5):131–134, 2016.

Giuseppe Moscarini and Fabien Postel-Vinay. The job ladder: Inflation versus reallocation. *Annual Review of Economics*, 10:165–188, 2018.

Andreas I Mueller, Johannes Spinnewijn, and Giorgio Topa. Job seekers' perceptions and employment prospects: Heterogeneity, duration dependence, and bias. *American Economic Review*, 111(1): 324–363, 2021.

David Neumark, Ian Burn, and Patrick Button. Is it harder for older workers to find jobs? new and improved evidence from a field experiment. *Journal of Political Economy*, 127(2):922–970, 2019.

Nina Roussille. The central role of the ask gap in gender pay inequality. *University of California, Berkeley*, 192, 2021.

Nina Roussille. The role of the ask gap in gender pay inequality. *The Quarterly Journal of Economics*, 139(3):1557–1610, 2024.

Joe Rubino. Colorado remote workers need not apply: Companies avoid state due to salary-posting law. *The Denver Post*, June 2021.

Peter Rupert and Giulio Zanella. Revisiting wage, earnings, and hours profiles. *Journal of Monetary Economics*, 72:114–130, 2015. doi: 10.1016/j.jmoneco.2015.02.001.

John B Shoven and Sita Nataraj Slavov. The role of retiree health insurance in the early retirement of public sector employees. *Journal of health economics*, 38:99–108, 2014.

Samuel Skoda. Directing job search in practice: Mandating pay information in job ads. Job Market Paper, University of Zurich, 2022.

Liyang Sun and Sarah Abraham. Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics*, 225(2):175–199, 2021.

Robert H. Topel and Michael P. Ward. Job mobility and the careers of young men. *The Quarterly Journal of Economics*, 107(2):439–479, 1992.

11 Figures and Tables

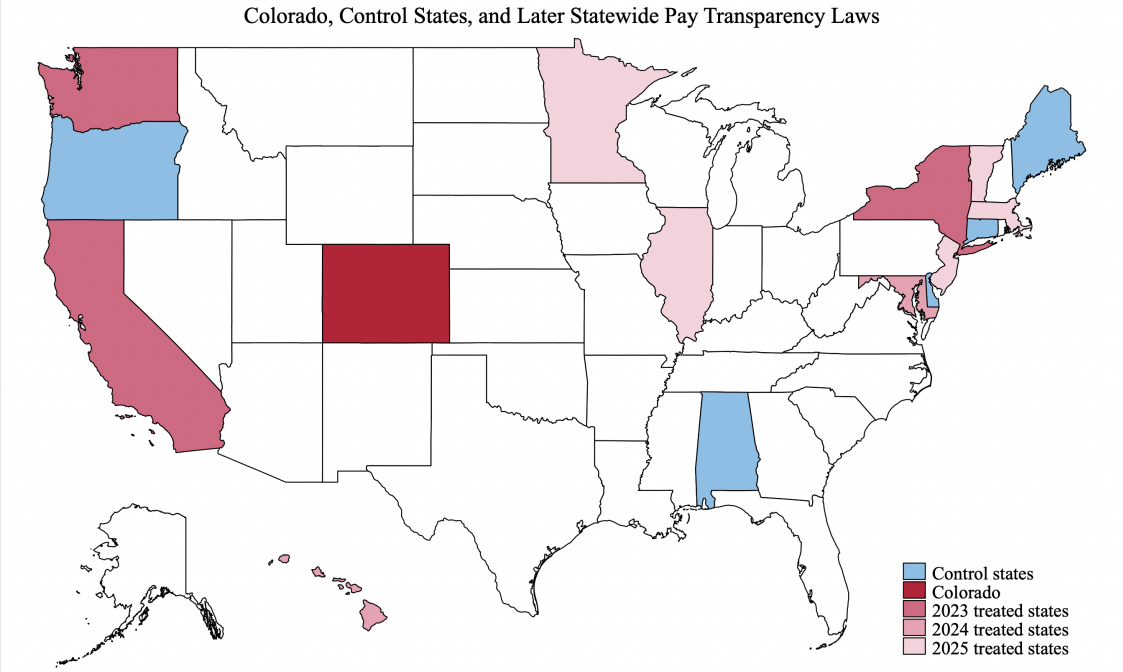


Figure 1: Pay transparency states and control states



Figure 2: Labor Market Trends by Treatment Status and Age Group

Notes: This figure presents annual labor market raw trends in Colorado and the control states from 2014 to 2025, separately for workers aged 25–44 and workers aged 45–64. The control group consists of Alabama, Connecticut, Delaware, Maine, and Oregon. Solid lines represent Colorado, while dashed lines represent the control states. Blue lines correspond to workers aged 25–44, and red lines correspond to workers aged 45–64. Working hours, weekly earnings, and hourly wages are measured conditional on employment. The vertical dashed line marks the implementation of Colorado's pay transparency law in 2021.

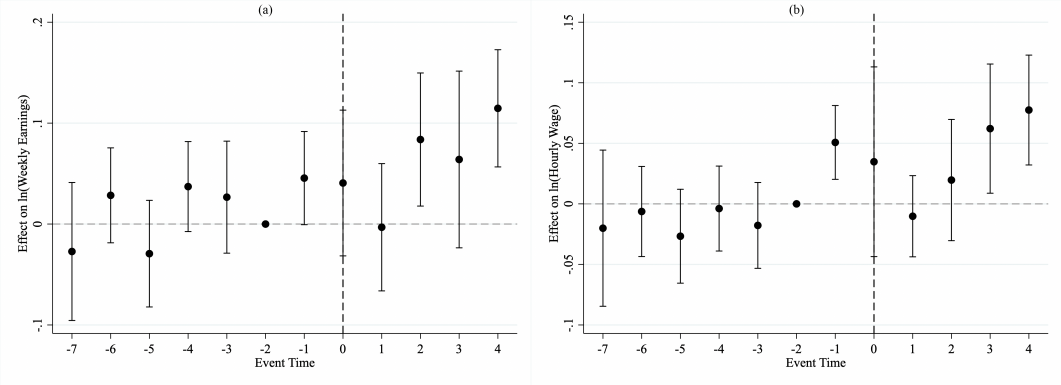


Figure 3: Event Studies: Weekly Earnings and Hourly Wage

Notes: This figure presents event-study estimates of the wage effects of Colorado's pay transparency law on the labor market outcomes of workers aged 45–64, following the specification in Equation (3). Panel (a) reports the estimates for the logarithm of weekly earnings, while Panel (b) reports the estimates for the logarithm of hourly wages. Event time is measured relative to the implementation of the law in 2021, so event time zero corresponds to 2021, and the vertical dashed line marks the implementation of the policy. Event time -2, corresponding to 2019, is the omitted reference period. The regressions include individual-level controls, industry-by-year fixed effects, occupation-by-year fixed effects, year-by-month fixed effects, and metropolitan-area fixed effects. The bars display 95 percent confidence intervals based on standard errors clustered at the metropolitan-area level.

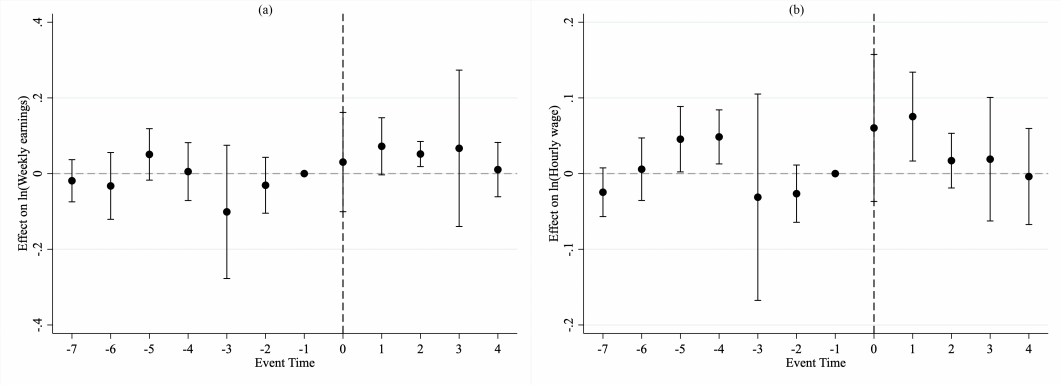


Figure 4: Event Studies: Gender Earning Gap and Gender Wage Gap

Notes: This figure presents event-study estimates of the effects of Colorado's pay transparency law on the gender earnings and wage gaps among employed workers aged 45–64, following the specification in Equation (4). Panel (a) reports the differential effect of the policy on women relative to men for the logarithm of weekly earnings, while Panel (b) reports the corresponding differential effect for the logarithm of hourly wages. Positive estimates indicate an improvement in women's earnings or wages relative to men and therefore a narrowing of the gender gap. Event time is measured relative to the implementation of the law in 2021, so event time zero corresponds to 2021, and the vertical dashed line marks the implementation of the policy. Event time -1, corresponding to 2020, is the omitted reference period. The regressions include individual-level controls, industry-by-year fixed effects, occupation-by-year fixed effects, year-by-month fixed effects, metropolitan-area fixed effects, and female-by-metropolitan-area fixed effects. The bars display 95 percent confidence intervals based on standard errors clustered at the metropolitan-area level.

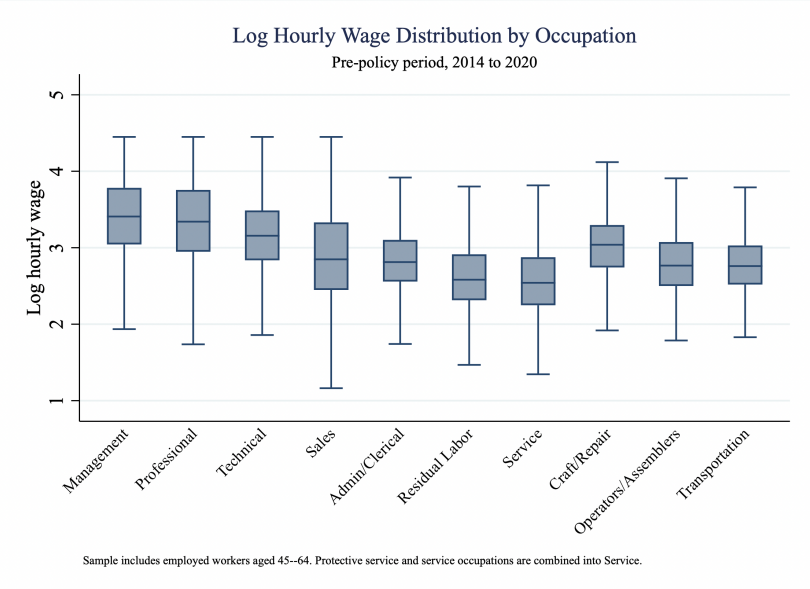


Figure 5: Log Hourly Wage Distribution by Occupations

Notes: This figure presents the distribution of log hourly wages across major occupation groups during the pre-policy period from 2014 to 2020. The sample is restricted to workers aged 45–64 with nonmissing hourly-wage information. The boxes represent the interquartile range, and the horizontal line within each box indicates the median.

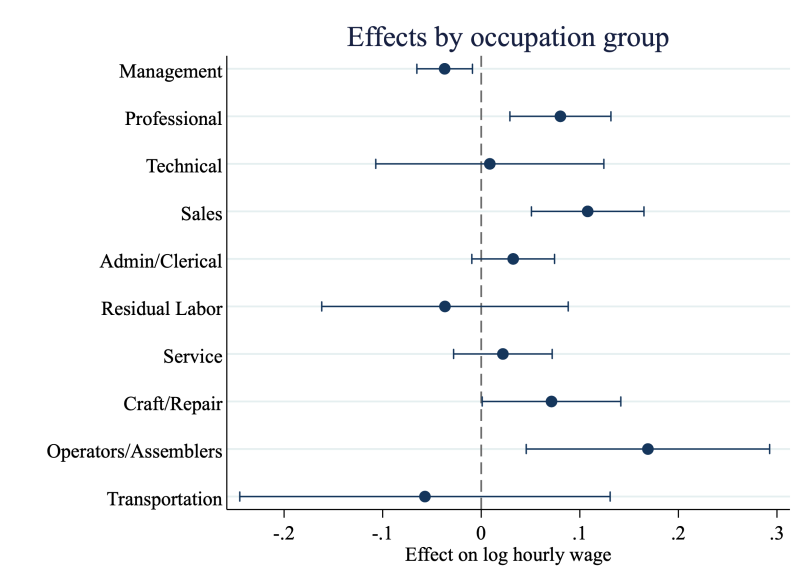


Figure 6: Wage Effects of Pay Transparency by Occupations

Notes: Each circle shows the estimated coefficient on CO × Post from a separate regression by occupation group. Horizontal lines indicate 90% confidence intervals. All regressions include major industry-by-year, year-by-month, and metropolitan fixed effects. Standard errors are clustered at the metropolitan level.

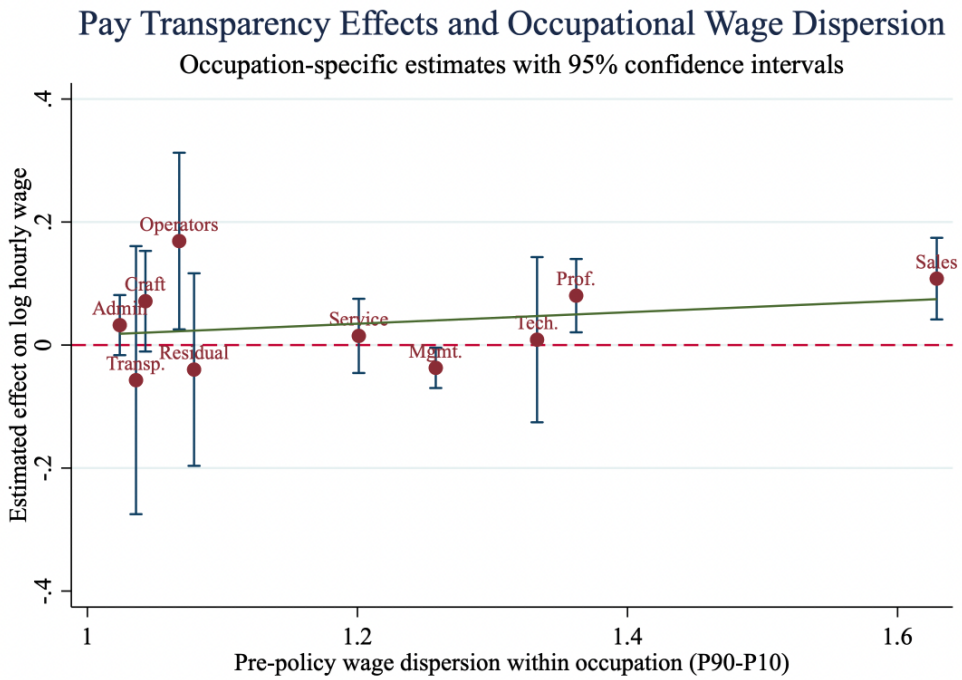


Figure 7: Pay Transparency Effect by Wage Dispersion

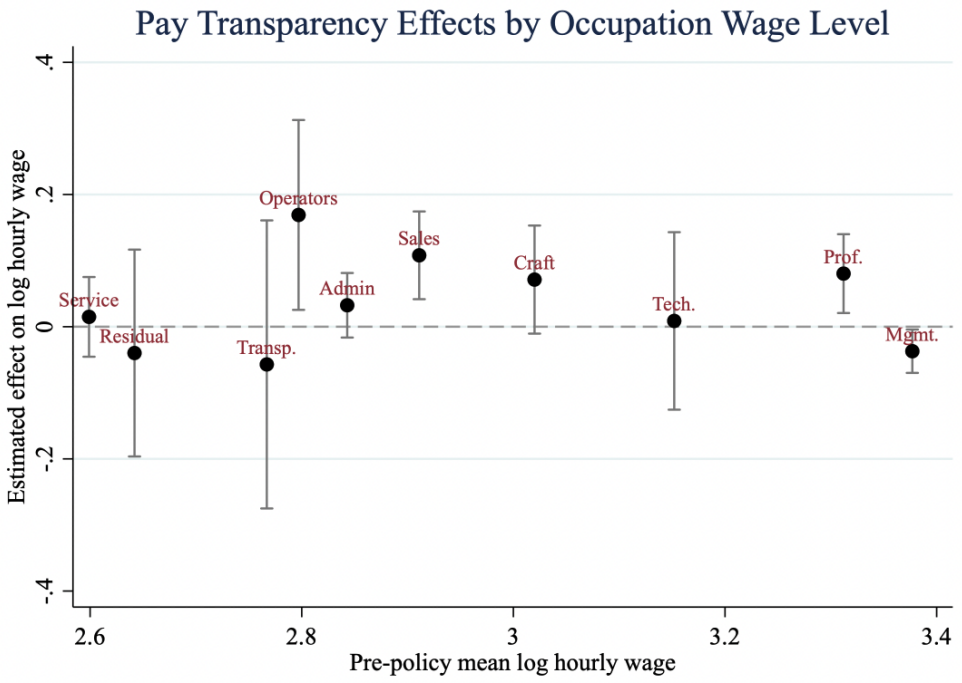


Figure 8: Pay Transparency Effect by Wage Level

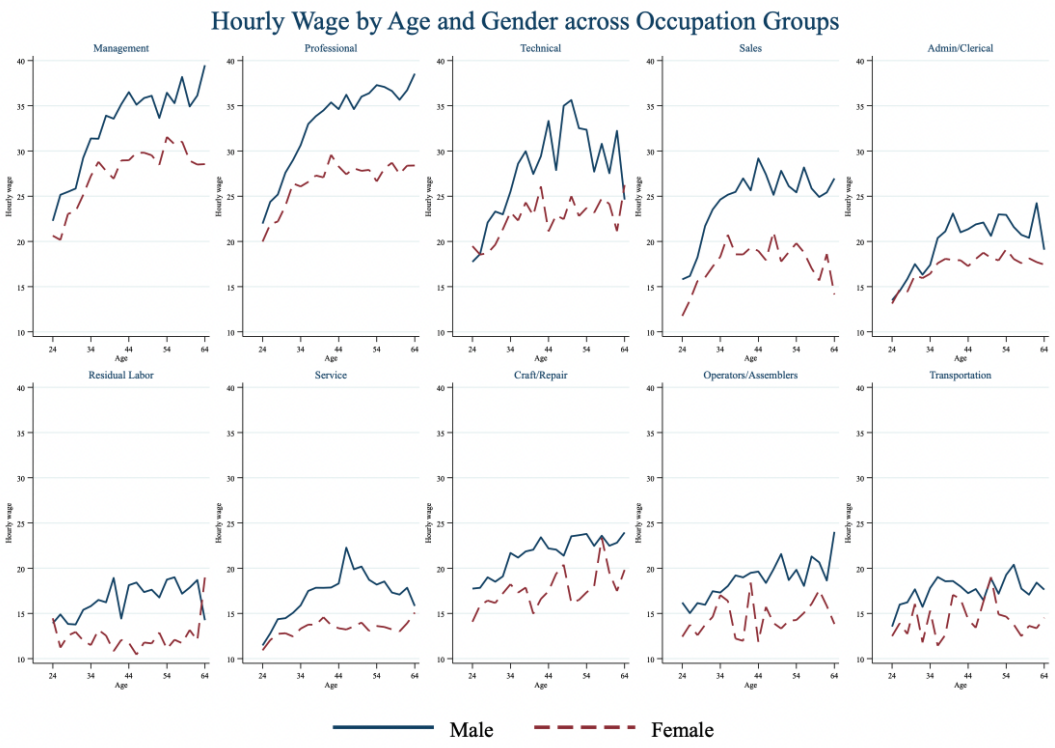


Figure 9: Wage growth on age by occupations Before 2021

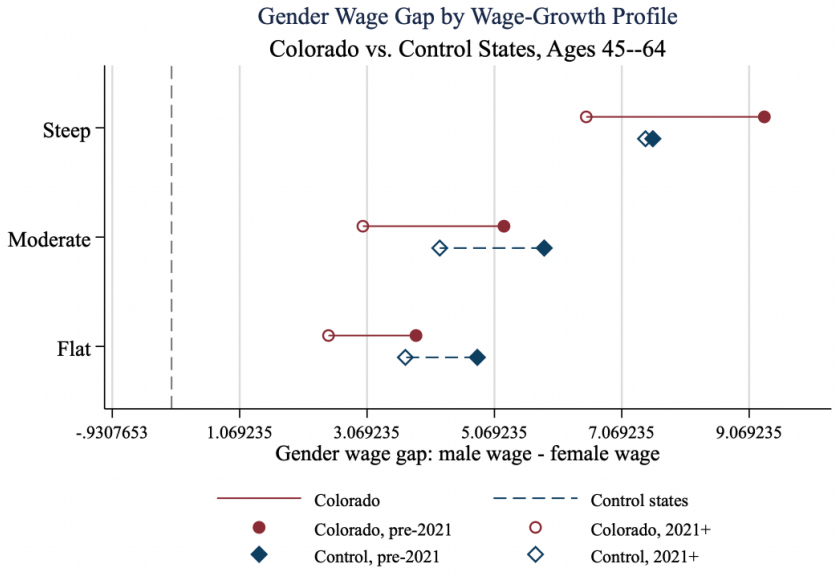


Figure 10: Gender wage gap by wage-growth profile

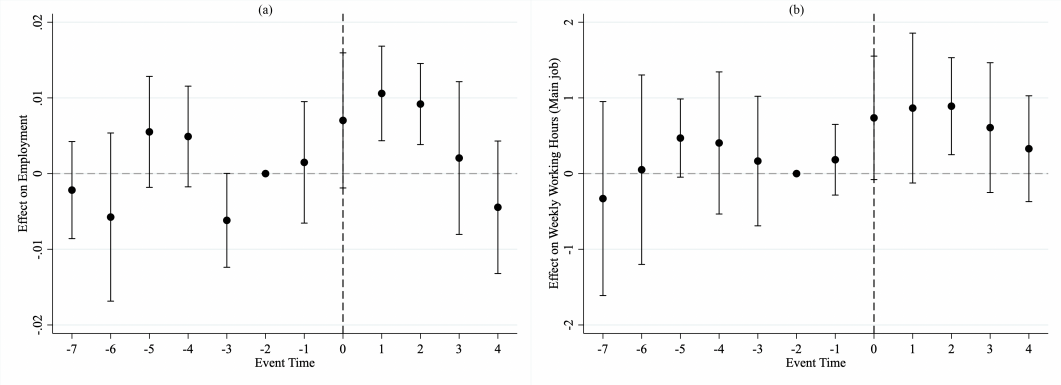


Figure 11: Event Studies: Employment and Working Hours of the Main Job

Notes: This figure presents event-study estimates of the effects of Colorado's pay transparency law on labor supply outcomes for the sample aged 45–64. Panel (a) reports the estimates for employment, capturing the extensive margin of labor supply. Panel (b) reports the estimates for weekly working hours in the main job conditional on employment, capturing the intensive margin. Event time is measured relative to the implementation of the law in 2021, so event time zero corresponds to 2021, and the vertical dashed line marks the implementation of the policy. Event time −2, corresponding to 2019, is the omitted reference period. The regressions include individual-level controls, industry-by-year fixed effects, occupation-by-year fixed effects, year-by-month fixed effects, and metropolitan-area fixed effects. The bars display 95 percent confidence intervals based on standard errors clustered at the metropolitan-area level.

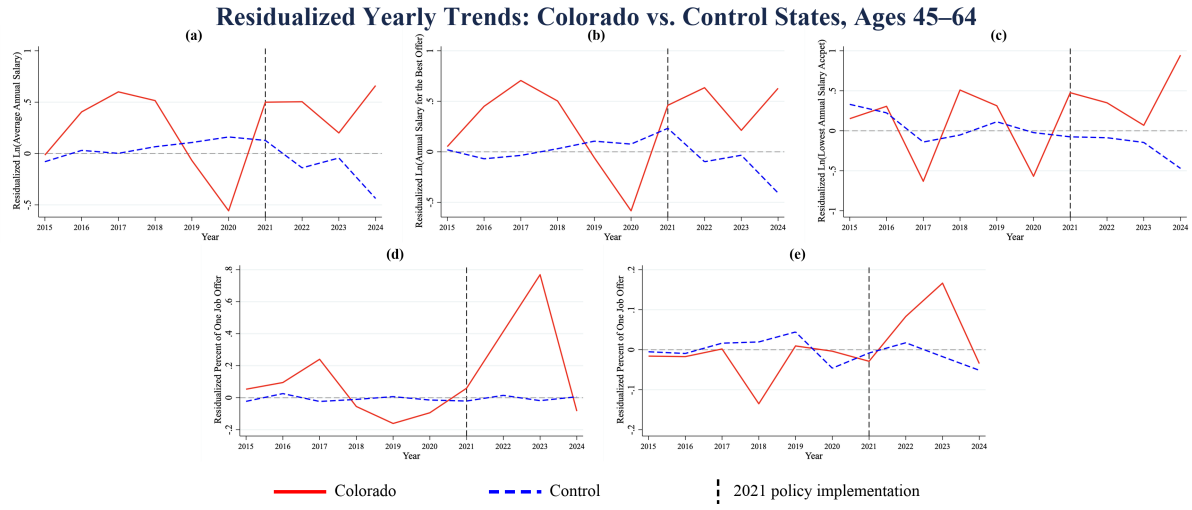


Figure 12: Residualized Trends of Workers' Beliefs by Year

Notes: This figure presents annual averages of residualized labor market expectations in Colorado and the comparison states from 2015 to 2024 for the sample aged 45–64 based on data come from the SCE Labor Market Survey. Panel (a) reports the log expected average annual salary across potential job offers, Panel (b) reports the log expected annual salary associated with the best potential offer, and Panel (c) reports the log of the lowest annual salary respondents would be willing to accept. Panels (d) and (e) report the perceived probability of receiving at least one job offer among those who are employed and not employed, respectively. Each outcome is residualized with respect to age, sex, race and ethnicity, educational attainment, and marital status. The vertical dashed line marks the implementation of Colorado's pay transparency law in 2021.

Table 1: Summary Statistics by Treatment Status

Variable	Colorado		Other SHB States		Difference
	Mean	Std. Dev.	Mean	Std. Dev.	
Age	54.541	5.800	54.814	5.703	-0.273†
Sex (Male=1)	0.431	0.495	0.421	0.494	0.010†
Marriage	0.670	0.470	0.644	0.479	0.026†
Less than high school	0.045	0.206	0.063	0.243	-0.018†
High school	0.209	0.406	0.293	0.455	-0.084†
Some college	0.146	0.353	0.154	0.361	-0.008†
Associate degree	0.101	0.302	0.108	0.311	-0.007†
Bachelor degree	0.301	0.459	0.231	0.421	0.070†
Master or more	0.198	0.399	0.150	0.357	0.048†
White	0.799	0.400	0.781	0.414	0.018†
Black	0.035	0.184	0.128	0.335	-0.093†
Hispanic	0.117	0.322	0.047	0.213	0.070†
Family size	2.618	1.325	2.577	1.279	0.041†
Num of children in HH	1.379	2.012	1.248	1.878	0.131†
Num of own children in HH	0.734	1.023	0.670	0.965	0.064†
Labor force participation	0.746	0.435	0.710	0.454	0.036‡
Employment status	0.722	0.448	0.686	0.464	0.036†
Ever changed employer	0.080	0.271	0.064	0.245	0.016†
Paid hourly	0.102	0.302	0.125	0.330	-0.023†
Public sector	0.199	0.399	0.185	0.389	0.014†
Working hours if employed	41.563	10.161	40.714	9.611	0.849†
Main-job hours if employed	40.847	9.760	40.025	9.042	0.822†
Weekly earnings if employed	1,154.462	692.824	1,012.773	633.321	141.689†
Hourly wage if employed	28.068	15.906	24.869	14.514	3.199†
Observations (main vars)	33,366		185,994		
Observations (employer change)	22,883		120,542		
Observations (job characteristics)	24,079		127,544		
Observations (hours if employed)	23,055		119,073		
Observations (main-job hours)	23,191		119,983		
Observations (weekly earnings)	6,164		32,247		
Observations (hourly wage)	5,928		30,400		

Notes: † indicates significance at the 1 percent level, and ‡ indicates significance at the 5 percent level. The sample includes individuals aged 45–64. Variables from "Ever changed employer" through "Hourly wage if employed" are summarized among employed workers. Colorado is the treated state, and the other SHB states are the comparison states. Difference is calculated as the Colorado mean minus the mean for the other SHB states.

Table 2: Effects of Pay Transparency on Earnings and Wages (Aged 45–64)

	ln(Weekly earnings)		ln(Hourly wage)	
	(1)	(2)	(3)	(4)
CO × Post	0.046***	0.042***	0.037***	0.033***
	(0.016)	(0.014)	(0.012)	(0.010)
Metropolitan Area FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Month FE	No	Yes	No	Yes
Year × Month FE	Yes	No	Yes	No
Industry × Year FE	Yes	Yes	Yes	Yes
Occupation × Year FE	Yes	Yes	Yes	Yes
Observations	38,411	38,411	36,328	36,328
Adjusted R^2	0.358	0.357	0.420	0.419

Note: This table reports difference-in-differences estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among workers aged 45–64 in the CPS ORG sample. The treatment variable, CO × Post, equals one for workers in Colorado after the implementation of the EPEWA. All specifications include controls, industry-by-year fixed effects, occupation-by-year fixed effects, and metropolitan-area fixed effects. Columns (1) and (3) include month-year fixed effects, while columns (2) and (4) include separate year and month fixed effects. Standard errors, clustered at the metropolitan-area level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Effects of Pay Transparency on the Gender Earning and Wage Gap (Aged 45–64)

	ln(Weekly earnings)		ln(Hourly wage)	
	(1)	(2)	(3)	(4)
CO × Post	0.009	0.013	0.019	0.017
	(0.018)	(0.019)	(0.018)	(0.016)
CO × Post × Female	0.066***	0.067***	0.037**	0.035**
	(0.021)	(0.021)	(0.017)	(0.017)
Industry × Year FE	Yes	Yes	Yes	Yes
Occupation × Year FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Month FE	No	Yes	No	Yes
Month-Year FE	Yes	No	Yes	No
Metropolitan Area FE	Yes	Yes	Yes	Yes
Female × Metropolitan Area FE	Yes	Yes	Yes	Yes
Observations	38,411	38,411	36,328	36,328
Adjusted R^2	0.357	0.358	0.420	0.419

Note: This table reports difference-in-differences estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among workers aged 45–64 in the CPS ORG sample. The treatment variable, CO × Post, equals one for workers in Colorado after the implementation of the EPEWA. The coefficient on CO × Post captures the effect of the policy on men's weekly earnings and hourly wages, while the coefficient on CO × Post × Female captures the marginal effect on women's weekly earnings and hourly wages relative to men's. All specifications include controls, industry-by-year fixed effects, occupation-by-year fixed effects, metropolitan-area fixed effects, and female-by-metropolitan-area fixed effects. Column (1) includes year-by-month fixed effects, while Column (2) includes separate year and month fixed effects. Standard errors are clustered at the metropolitan-area level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Effects of Pay Transparency on Earnings and Wages (Aged 25-44)

	ln(Weekly earnings)	ln(Hourly wage)	ln(Weekly earnings)	ln(Hourly wage)
CO×Post	0.002	0.011	-0.008	0.011
	(0.021)	(0.016)	(0.024)	(0.018)
CO×Post×Female			0.020	-0.000
			(0.022)	(0.020)
Industry × Year FE	Yes	Yes	Yes	Yes
Occupation × Year FE	Yes	Yes	Yes	Yes
Month-Year FE	Yes	Yes	Yes	Yes
Metropolitan Area FE	Yes	Yes	Yes	Yes
Observations	43,337	41,093	43,337	41,093
Adjusted R^2	0.355	0.436	0.355	0.436

Note: This table displays difference-in-differences estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among workers aged 25–44 in the CPS ORG sample. Columns (1) and (2) report the average effects on weekly earnings and hourly wages, respectively. Columns (3) and (4) additionally examine whether these effects differ between women and men. Standard errors, clustered at the metropolitan-area level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Heterogeneous Effects of Pay Transparency, Gender, Education, and Age (Aged 45-64)

	Male	Female	Low educated	High educated	Aged 45-59	Aged 60-64
Panel A: ln(Weekly earnings)						
Colorado × Post	0.011	0.082***	-0.019	0.035*	0.035*	0.074***
	(0.022)	(0.020)	(0.023)	(0.012)	(0.019)	(0.025)
Observations	17,581	20,823	11,081	27,329	30,759	7,648
Adjusted R^2	0.329	0.325	0.362	0.344	0.362	0.344
Panel B: ln(Hourly wage)						
Colorado × Post	0.019	0.057***	0.002	0.050***	0.040**	0.008
	(0.018)	(0.013)	(0.019)	(0.012)	(0.016)	(0.038)
Observations	16,611	19,711	10,378	25,949	29,140	7,185
Adjusted R^2	0.404	0.401	0.306	0.342	0.424	0.408
Panel C: ln(Weekly earnings)						
Colorado × Post			0.004	0.018	0.017	-0.024
			(0.022)	(0.024)	(0.025)	(0.055)
Colorado × Post × Female			-0.030	0.088***	0.036	0.197*
			(0.056)	(0.032)	(0.024)	(0.101)
Observations			11,081	27,327	30,759	7,644
Adjusted R^2			0.263	0.331	0.362	0.343
Panel D: ln(Hourly wage)						
Colorado × Post			0.029	0.015	0.021	-0.001
			(0.031)	(0.023)	(0.022)	(0.060)
Colorado × Post × Female			-0.043	0.062**	0.037*	0.040
			(0.044)	(0.028)	(0.019)	(0.052)
Observations			10,378	25,947	29,140	7,182
Adjusted R^2			0.319	0.365	0.424	0.406

Note: This table displays difference-in-differences estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among workers aged 45–64 in the CPS ORG sample. Panels A and B report separate estimates by gender, education, and age group. Panels C and D examine gender differences within the education and age groups. In Panels C and D, Colorado × Post represents the estimated effect for men, while Colorado × Post × Female represents the differential effect for women relative to men. Standard errors, clustered at the metropolitan-area level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Pay Transparency Effects on Log Hourly Wages by Job Mobility Status (Aged 45-64)

	Changed employer or industry		Changed employer	
	Job changers	Job stayers	Job changers	Job stayers
Panel A: Hourly wage				
CO × Post	0.062*	0.034***	0.085	0.035***
	(0.037)	(0.012)	(0.058)	(0.012)
Observations	7,575	28,749	2,275	32,193
Adjusted R^2	0.417	0.422	0.424	0.420
Panel B: Gender wage gap				
CO × Post	0.008	0.021	-0.012	0.020
	(0.051)	(0.014)	(0.056)	(0.017)
CO × Post × Female	0.112**	0.027*	0.169*	0.031*
	(0.048)	(0.014)	(0.085)	(0.018)
Observations	7,572	28,749	2,272	32,193
Adjusted R^2	0.413	0.422	0.412	0.420

Notes: The sample consists of CPS ORG workers aged 45–64. Columns (1)–(2) distinguish workers who changed employers or industries from those who did not; columns (3)–(4) distinguish workers by employer changes only. The dependent variable in both panels is log hourly wage. In Panel B, CO × Post is the effect for men, and CO × Post × Female is the additional effect for women. Standard errors, clustered by metropolitan area, are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Pay Transparency Law Effects on Job Mobility (Aged 45-64)

	Ever Changed employer	Ever Changed occupation	Ever Changed industry	Change occupation	Change industry
CO×Post	-0.003	0.011	0.023	0.009	0.008
	(0.010)	(0.020)	(0.017)	(0.007)	(0.006)
Observations	143,425	151,623	151,623	121,427	121,427
Adjusted R^2	0.011	0.045	0.056	0.017	0.017

Notes: The sample consists of CPS ORG workers aged 45–64. The "Ever Changed" variables in columns (1)–(3) equal one if a worker is observed changing employers, occupations, or industries at least once during the CPS survey period. The "Change" variables in columns (4) and (5) indicate whether a worker's occupation or industry differs from that reported in the preceding observed CPS period. Standard errors are clustered by metropolitan area. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Heterogeneous Effects of Pay Transparency by Occupation Characteristics (45-64)

Panel A: Occupation Wage Level			
	High	Median	Low
CO×Post	0.027	0.053***	0.007
	(0.019)	(0.018)	(0.025)
Observations	17,663	12,447	6,213
Adjusted R^2	0.250	0.270	0.264
Panel B: Occupation Wage Growth			
	Steep	Moderate	Flat
CO×Post	0.028	0.044**	0.005
	(0.020)	(0.017)	(0.028)
Observations	17,663	14,824	3,833
Adjusted R^2	0.252	0.319	0.236
Panel C: Gender Heterogeneity by Occupation Wage Growth			
	Steep	Moderate	Flat
CO×Post	-0.007	0.019	0.006
	(0.026)	(0.023)	(0.041)
CO×Post×Female	0.068**	0.046**	0.009
	(0.025)	(0.022)	(0.092)
Observations	17,660	14,824	3,827
Adjusted R^2	0.251	0.318	0.226

Note: This table displays difference-in-differences estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among workers aged 45–64 in the CPS ORG sample. Standard errors are clustered at the metropolitan-area level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Heterogeneous Effects of Pay Transparency by Baseline Employer Concentration

	Low HHI	Medium HHI	High HHI	Pooled sample
Panel A: Payroll-based HHI				
Colorado × Post	0.037**	0.041	0.053*	0.032*
	(0.014)	(0.025)	(0.027)	(0.016)
Colorado × Post × Medium HHI				0.007
				(0.024)
Colorado × Post × High HHI				0.014
				(0.020)
Observations	10,587	10,743	10,638	31,973
Adjusted R^2	0.406	0.418	0.313	0.426
Panel B: Employment-based HHI				
Colorado × Post	0.027*	0.048**	0.048*	0.021
	(0.015)	(0.021)	(0.025)	(0.014)
Colorado × Post × Medium HHI				0.029
				(0.026)
Colorado × Post × High HHI				0.022
				(0.019)
Observations	10,741	10,465	10,762	31,973
Adjusted R^2	0.403	0.427	0.308	0.426

Note: The dependent variable is log hourly wage, and the sample consists of employed workers aged 45–64. Low, medium, and high HHI correspond to the three terciles of the respective HHI distribution, with the cutoffs determined using the 2018 employed sample and CPS earnings weights. The first three columns report separate regressions for the three HHI groups. The final column reports a pooled regression with a full interaction among the Colorado, post-policy, and HHI-group indicators. Standard errors clustered at the metropolitan-area level are reported in parentheses.
* $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Table 10: Effects of Pay Transparency on Labor Supply (Aged 45–64)

	Employment		Working hours: main job	
	(1)	(2)	(3)	(4)
CO × Post	0.006***	0.008***	0.603***	0.536**
	(0.002)	(0.002)	(0.206)	(0.202)
Metropolitan Area FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Month FE	No	Yes	No	Yes
Year × Month FE	Yes	No	Yes	No
Industry × Year FE	Yes	Yes	Yes	Yes
Occupation × Year FE	Yes	Yes	Yes	Yes
Industry FE	No	No	No	No
Occupation FE	No	No	No	No
Observations	219,360	219,360	143,174	143,174
Adjusted R^2	0.871	0.871	0.119	0.119

Notes: This table reports difference-in-differences estimates for individuals aged 45–64 in CPS. Columns (1)–(2) use employment status as the dependent variable. Columns (3)–(4) use usual weekly hours worked in the main job and restrict the sample to employed individuals with positive main-job hours. Columns (1) and (3) include year-by-month fixed effects, while Columns (2) and (4) include separate year and month fixed effects. Standard errors are clustered at the metropolitan-area level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: Effects of Pay Transparency on Labor Supply (Aged 25–44)

	Employment	Main-job hours
CO×Post	-0.002	0.035
	(0.003)	(0.150)
Industry × Year FE	Yes	Yes
Occupation × Year FE	Yes	Yes
Month-Year FE	Yes	Yes
Metropolitan Area FE	Yes	Yes
Observations	212,355	162,227
Adjusted R^2	0.773	0.127

Notes: This table reports difference-in-differences estimates for individuals aged 25–44 in CPS. Standard errors are clustered at the metropolitan-area level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Robustness Checks

	Employment	Main-job hours	ln(Weekly earnings)	ln(Hourly wage)	ln(Hourly wage)	Gender Gap
Panel A: Alt Controls						
CO×Post	0.006***	0.404*	0.048***	0.039***	0.006	
	(0.002)	(0.202)	(0.013)	(0.008)	(0.014)	
CO×Post×Female					0.066***	
					(0.015)	
Observations	1,618,921	1,055,906	280,799	266,469	266,465	
Adjusted R^2	0.876	0.111	0.344	0.415	0.415	
Panel B: Sythetic DiD						
CO×Post	0.014	0.495	0.072***	0.043**		-0.059*
	(0.012)	(0.350)	(0.024)	(0.018)		(0.036)
Panel C: DDD						
PT×SHB×Post	0.006***	0.438**	0.053***	0.044***	0.019	
	(0.002)	(0.212)	(0.014)	(0.009)	(0.016)	
PT×SHB×Post×Female					0.051***	
					(0.018)	
SHB×Post	0.001	-0.052	-0.005	-0.004	-0.014*	
	(0.001)	(0.088)	(0.007)	(0.006)	(0.007)	
SHB×Post×Female					0.016	
					(0.011)	
Observations	1,618,921	1,056,498	280,799	266,469	266,469	
Adjusted R^2	0.876	0.111	0.344	0.415	0.415	
Panel D: CA & WA						
CO×Post	-0.001	-0.077	0.006	0.017	0.016	
	(0.002)	(0.171)	(0.013)	(0.011)	(0.014)	
CO×Post×Female					0.000	
					(0.015)	
Observations	478,621	309,065	82,067	78,201	78,199	
Adjusted R^2	0.862	0.107	0.362	0.435	0.435	

Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A Implementation Timeline of Pay Transparency Laws and Salary History Bans

Table A1: Cross-Firm Pay Transparency Laws and Salary History Bans

Cross-Firm Pay Transparency		**Salary History Ban**	
Location	**Effective Year**	**Location**	**Effective Year**
Colorado	2021	Delaware	2017
California	2023	New York	2017
Washington	2023	Oregon	2017
New York	2023	California	2018
Hawaii	2024	Massachusetts	2018
Washington, D.C.	2024	New Jersey	2018
Maryland	2024	Vermont	2018
Illinois	2025	Alabama	2019
Minnesota	2025	Connecticut	2019
New Jersey	2025	Illinois	2019
Massachusetts	2025	Maine	2019
Vermont	2025	Washington	2019
		Maryland	2020
		Colorado	2021
		Nevada	2021
		Rhode Island	2023

B Summary Statistics and Additional Descriptive Evidence

Table A2 below presents summary statistics for the full sample. The average age in the sample is approximately 54.8. The labor force participation rate is around 71.5%, and about 69.1% of observations are employed. Among employed observations, around 6.7% report ever changing employers, around 12.1% are paid hourly, and 18.7% work in the public sector. In addition, employed individuals work an average of 40.85 hours per week across all jobs, while average weekly hours on the main job are about 40.16. Based on the ORG supplement, average weekly earnings are 1,035.51 dollars per week, and the average hourly wage is around 25.39 dollars. Both earnings and wage measures are expressed in 2010 dollars, as provided by IPUMS-CPS.

In addition, Figure A1 illustrates how labor market outcomes vary with age in the sample before the implementation of the policy. The employment rate remains relatively stable throughout prime working age but begins to decline in the late forties, with the decline becoming substantially steeper after age 50. Conditional on employment, weekly working hours initially increase with age but begin to decline around age 60 and fall more sharply as workers approach retirement. These patterns are consistent with previous evidence that employment and working hours decline as workers approach retirement and respond to retirement incentives (Rupert and Zanella, 2015; Blundell et al., 2016). The share of workers observed changing employers also declines steadily with age and falls particularly sharply around age 60. This pattern is consistent with Leighton and Mincer (1982), who argue that the incentive to change jobs declines with age because a shorter remaining work horizon reduces the period over which the gains from mobility can be realized. It may also reflect more limited outside employment opportunities due to age discrimination in hiring (Neumark et al., 2019). Finally, weekly earnings initially increase with age, become relatively stable after approximately age 40, and decline moderately after age 50. Hourly wages exhibit a similar increase at younger ages but remain comparatively stable later in the working life.

Moreover, Figure A2 plots age profiles of hourly wages for men and women before and after Colorado's pay transparency law took effect in 2021. The left panel presents Colorado, while the right panel presents the corresponding trends in the other salary-history-ban (SHB) states. Before the policy implementation, the gender wage gap widens with age in both groups of states, suggesting that gender wage disparities are more pronounced among mid- to late-career workers than among younger workers. After the policy implementation, the gender wage gap remains relatively stable in the other SHB states but appears to narrow in Colorado among mid- to late-career workers. These patterns suggest that gender wage disparities are particularly pronounced among mid- to late-career workers and motivate examining whether pay transparency has larger effects on the gender wage gap for this group.

Table A2: Summary Statistics Among Aging Workers

Variable	**Obs**	**Mean**	**Std. Dev.**
Age	219,360	54.772	5.719
Sex (Male=1)	219,360	0.422	0.494
Marriage	219,360	0.648	0.478
Less than high school	219,360	0.060	0.238
High school	219,360	0.280	0.449
Some college	219,360	0.153	0.360
Associate degree	219,360	0.107	0.309
Bachelor degree	219,360	0.242	0.428
Master or more	219,360	0.157	0.364
White	219,360	0.784	0.412
Black	219,360	0.114	0.318
Hispanic	219,360	0.058	0.234
Family size	219,360	2.583	1.286
Num of children in HH	219,360	1.268	1.899
Num of own children in HH	219,360	0.679	0.974
Labor force participation	219,360	0.715	0.451
Employment status	219,360	0.691	0.462
Ever changed employer	143,425	0.067	0.249
Paid hourly	151,623	0.121	0.326
Public sector	151,623	0.187	0.390
Working hours if employed	142,128	40.851	9.707
Main-job hours if employed	143,174	40.159	9.167
Weekly earnings if employed	38,411	1,035.511	645.330
Hourly wage if employed	36,328	25.391	14.797

Notes: The sample includes individuals aged 45–64. Variables from Ever changed employer to Hourly wage are summarized among employed workers.

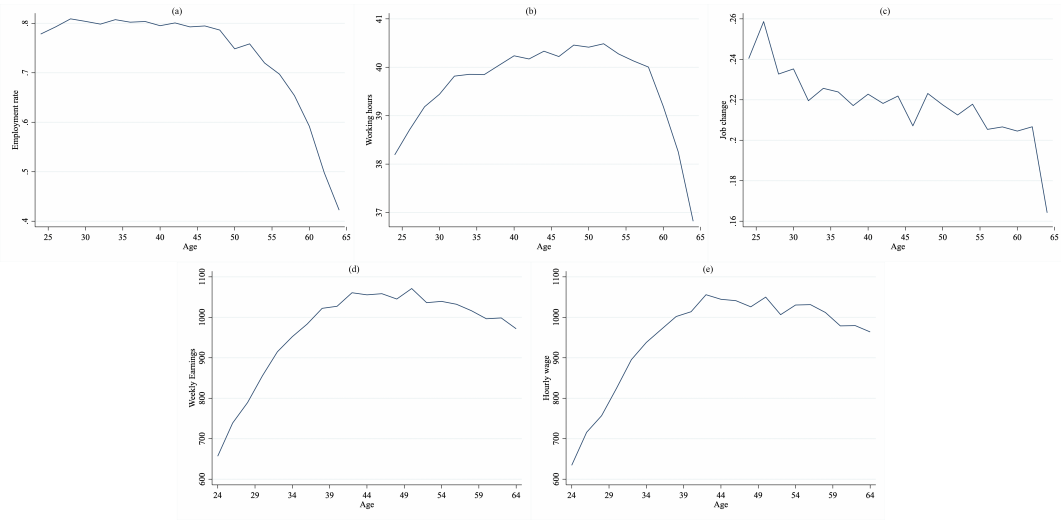


Figure A1: Labor Market Outcomes over the Life Cycle

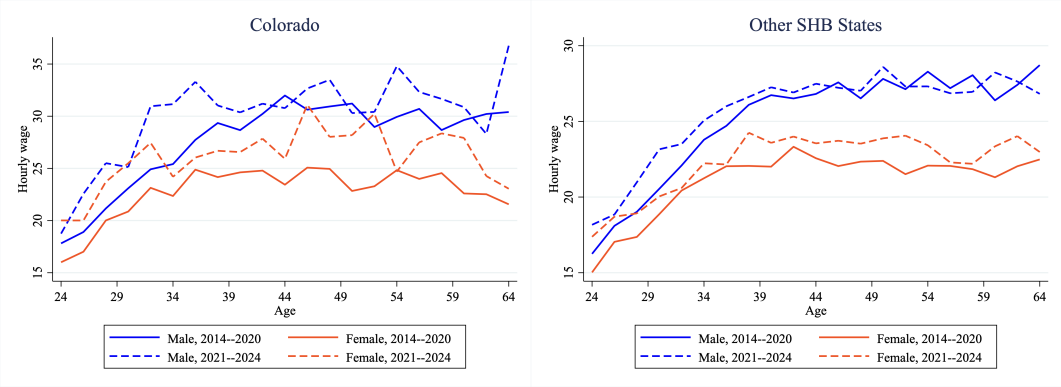


Figure A2: Hourly Wage Profiles by Age and Gender in Colorado and Other SHB States

C Alternative Event-Study Normalization

Because the EPEWA was introduced and enacted in 2019 but did not take effect until January 2021, employers and workers may have adjusted their behavior in anticipation of its implementation. To examine such anticipatory responses and assess the sensitivity of the event-study presentation to the choice of reference period, this section reports an alternative event-study specification using 2018 as the omitted reference year. Hence, the coefficients for 2019 and 2020 capture changes during the period between enactment and implementation, while the coefficients from 2021 onward capture changes following the law's implementation.

Figure A3 presents the event-study estimates for weekly earnings and hourly wages, using 2018 as the omitted reference year. The first panel shows no significant changes in weekly earnings during 2019 or 2020, providing little evidence of anticipatory responses between the enactment and implementation of the policy. Following implementation, the point estimates are generally positive in the later post-policy period. In particular, the estimate for 2025 is positive and statistically significant. This pattern is consistent with the main finding that pay transparency increased weekly earnings, with the estimated gains becoming more significant over time.

The second panel presents the event-study estimates for hourly wages. The estimates provide no evidence of differential trends before enactment, and the 2019 coefficient is small and statistically insignificant. However, a positive and statistically significant estimate emerges in 2020, prior to the policy's implementation. Because this increase coincides with the onset of the COVID-19 pandemic, it may reflect a Colorado-specific pandemic-related labor-market shock rather than an anticipatory response to pay transparency. Nevertheless, the timing alone does not allow these explanations to be distinguished. Following implementation, the estimated effects are generally positive, although they do not increase monotonically and remain imprecisely estimated in some years. The estimates become larger and statistically significant in 2024 and 2025, consistent with the main event-study evidence of positive hourly-wage effects in the later post-policy period.

Overall, the event-study results provide limited evidence of anticipatory responses following the enactment of the policy, although the positive hourly-wage estimate in 2020 warrants some caution. The qualitative findings remain unchanged when 2018 is used as the alternative reference year. Following implementation, the estimated wage effects are generally more positive in the later post-policy years and become statistically significant toward the end of the sample period.

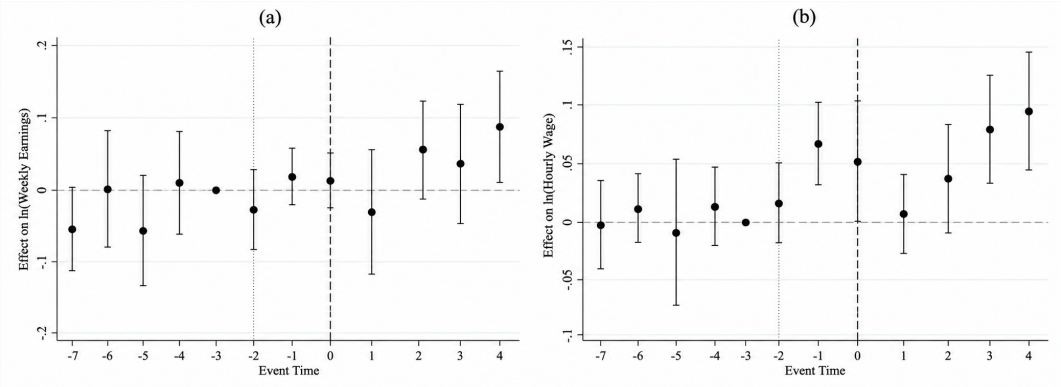


Figure A3: Event-Study Estimates Using 2018 as the Reference Year

Notes: This figure presents event-study estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among workers aged 45–64. The first panel reports the estimates for log weekly earnings, and the second panel reports the estimates for log hourly wages. The dotted vertical line marks the enactment of the law in 2019, and the dashed vertical line marks its implementation in 2021. The horizontal dashed line represents zero. The omitted reference year is 2018.

D Supplementary Event Studies for Heterogeneous Effects

Figure A4 presents the corresponding DiD event-study estimates of the heterogeneous effects by gender. For women, the estimated effect on weekly earnings becomes positive after the policy implementation and increases over time. Beginning in the second post-policy year, the estimated effects become statistically significant. A similar pattern appears for women's hourly wages. Although the estimate around 2020 is somewhat noisy, the post-policy estimates show an upward pattern, and the effects become statistically significant in the third and fourth post-policy years. These results suggest that pay transparency increased both weekly earnings and hourly wages among women, indicating that women benefited more from the disclosure of wage information. For men, the event-study estimates show a different pattern. The estimated effects on both weekly earnings and hourly wages are negative in the first post-policy year, but these negative effects dissipate in later years. The short-run decline in men's wage outcomes may be consistent with an initial wage-compression response, similar to mechanisms emphasized in the horizontal pay transparency literature. However, this decline does not persist. Beginning in the third post-policy year, the estimated effects of pay transparency on men's weekly earnings and hourly wages become small and statistically insignificant.

Figure A5 presents the corresponding DiD event-study estimates by education level. oth event studies show no evidence of significant pre-trends. The results are consistent with the DiD estimates. For highly educated individuals, the post-policy estimates are generally positive for both weekly earnings and hourly wages. The positive effects are especially clear for earnings and wage outcomes, where the estimates become larger in later post-policy years. In contrast, the estimates for the low-education group are smaller, less precise, and do not display a clear positive post-policy pattern. These results suggest that highly educated workers benefit more from pay transparency, possibly because they can use wage information more effectively, have access to more outside opportunities, and possess greater bargaining power, consistent with the mechanisms discussed in Cullen and Pakzad-Hurson (2023). Moreover, Figure A6 presents the corresponding event-study estimates of gender wage gap by education level. Both event studies show no evidence of significant pre-trends, despite some noise in the pre-policy period. The event-study estimates further show that pay transparency reduced both the gender earnings gap and the gender wage gap among high-educated workers only in the short run, while the effects are limited among less-educated workers.

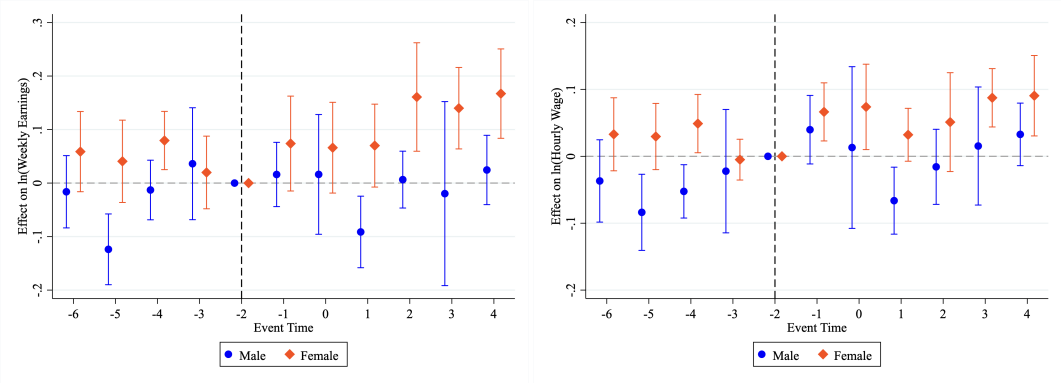


Figure A4: Event Studies: Heterogeneous Effects on Earnings and Wage by Gender

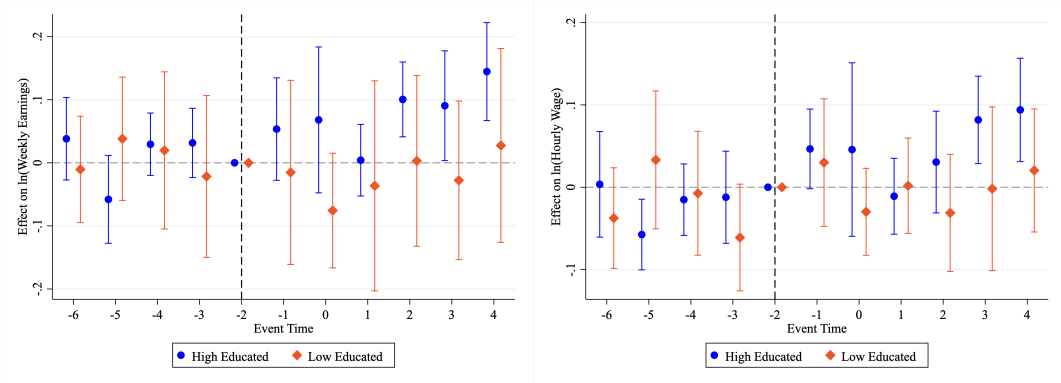


Figure A5: Event Studies: Heterogeneous Effects on Earnings and Wage by Education Level

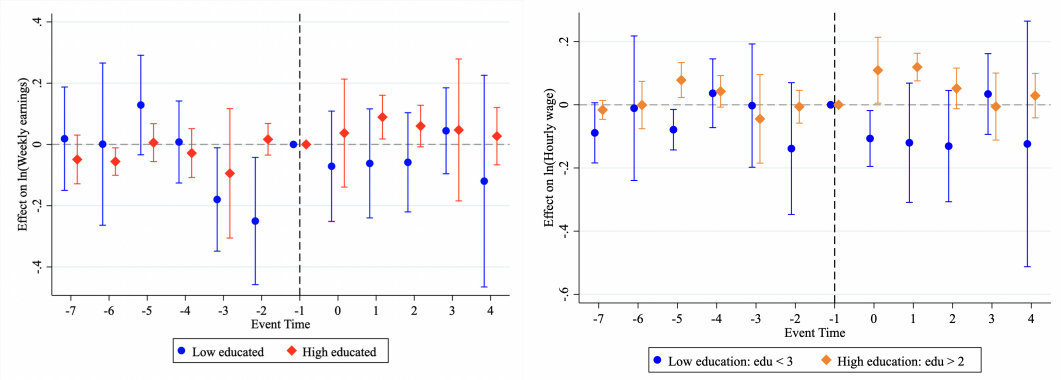


Figure A6: Event Studies: Heterogeneous Effects on Gender Earning/Wage Gap by Education Level

E Effects on Older Workers Relative to Younger Workers

This section pools the younger and older age groups to compare the effects of pay transparency between them. In Table A3, the coefficient on CO × Post captures the policy effect among workers aged 25–44, while the coefficient on CO × Post × Older captures the additional effect among workers aged 45–64 relative to the younger group. The estimated effects among younger workers are limited across all outcomes considered, including weekly earnings, hourly wages, the gender wage gap, employment, and conditional working hours of the main job. In contrast, the interaction estimates are economically meaningful across these outcomes. The results indicate that pay transparency has larger effects on the earnings, wages, employment, and working hours of older workers and produces a larger reduction in the gender wage gap among the older group. These findings are consistent with the main results of the paper and provide further evidence that older workers benefit more from pay transparency than younger workers.

Table A3: Effects of Pay Transparency on Older Workers Relative to Younger Workers

	ln(Weekly earnings)	ln(Hourly wage)	Gender wage gap	Employment	Weekly working hours
	(1)	(2)	(3)	(4)	(5)
CO × Post	0.007	0.016	0.022	-0.003	0.034
	(0.019)	(0.015)	(0.015)	(0.003)	(0.141)
CO × Post × Older	0.035*	0.018	-0.012	0.010***	0.602**
	(0.019)	(0.013)	(0.018)	(0.003)	(0.241)
CO × Post × Female			-0.012		
			(0.014)		
CO × Post × Female × Older			0.060***		
			(0.019)		
Industry × Year FE	Yes	Yes	Yes	Yes	Yes
Occupation × Year FE	Yes	Yes	Yes	Yes	Yes
Month-Year FE	Yes	Yes	Yes	Yes	Yes
Metropolitan Area FE	Yes	Yes	Yes	Yes	Yes
Older × Metropolitan Area FE	Yes	Yes	Yes	Yes	Yes
Older × Month-Year FE	Yes	Yes	Yes	Yes	Yes
Female × Metropolitan Area FE	No	No	Yes	No	No
Female × Month-Year FE	No	No	Yes	No	No
Observations	81,748	77,421	77,421	431,718	305,401
Adjusted R^2	0.355	0.429	0.430	0.833	0.118

Note: This table reports difference-in-differences estimates using the pooled sample of workers aged 25–64. Older equals one for workers aged 45–64, while workers aged 25–44 form the younger comparison group. In Columns (1), (2), (4), and (5), CO × Post reports the policy effect for younger workers, and CO × Post × Older reports the additional effect for older workers. Column (3) examines whether the effect on the hourly-wage gender gap differs by age. Weekly earnings, hourly wages, and weekly working hours are measured conditional on employment. Standard errors, clustered at the metropolitan-area level, are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

F More Evidence on the Heterogeneous Effects of Pay Transparency on Earnings and Wage

F.1 Heterogeneous Effects by Marital Status and Presence of Children

Table A4 reports heterogeneous effects of Colorado's pay transparency policy on weekly earnings and hourly wages by marital status and the presence of children in the household. Among married workers, the policy significantly increased both weekly earnings and hourly wages by 5.2% and 5.9%, respectively. By contrast, the estimated effects for unmarried workers are smaller in magnitude and statistically insignificant. Similarly, workers with children experienced larger earnings gains than those without children. Weekly earnings increased by 6.0% among workers with children, compared with an economically smaller and statistically insignificant increase among those without children. For hourly wages, the estimated effects are positive for both groups but are larger for workers with children.

Overall, the results suggest that the wage effects of Colorado's pay transparency policy are stronger among married workers and workers with children. One possible explanation is that these groups face higher search costs or greater constraints on job search, making them more likely to benefit from improved information about outside wage opportunities.

Table A4: Heterogeneous Effects of Pay Transparency on Earnings and Wages by Marital Status and Presence of Children (Aged 45-64)

	Married	Unmarried	With children	No children
Panel A: ln(Weekly earnings)				
CO×Post	0.052***	0.033	0.060**	0.031
	(0.018)	(0.035)	(0.024)	(0.026)
Observations	26,031	12,374	17,747	20,662
Adjusted R^2	0.357	0.341	0.387	0.331
Panel B: ln(Hourly wage)				
CO×Post	0.059***	-0.007	0.043**	0.026**
	(0.012)	(0.024)	(0.019)	(0.013)
Observations	24,726	11,596	16,885	19,441
Adjusted R^2	0.409	0.410	0.436	0.400

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

F.2 Heterogeneous Effects of Pay Transparency on Earnings and Wages by Whether Hourly Paid

The hourly wage measure for workers who are not paid hourly is constructed by dividing weekly earnings by usual weekly hours worked at the main job. This raises a concern that the estimated effect of pay transparency on hourly wages may be influenced by the construction of the outcome. To address this concern, I also report results using the raw earnings measures available in the CPS ORG. Specifically, I estimate the effect of pay transparency on weekly earnings among workers who are not paid hourly and on reported hourly wages among workers who are paid hourly. For completeness, I also report both outcomes for each group. These estimates provide additional evidence on whether the effects of pay transparency differ between hourly paid and non-hourly-paid mid- to late-career workers.

The first two columns of Table A5 report the results for workers who are not paid hourly. Pay transparency increased their weekly earnings by 4.3% and their constructed hourly wages by 4.1%, with both estimates statistically significant. The third and fourth columns report the results for hourly paid workers. For this group, the policy increased weekly earnings by 5.3% and reported hourly wages by 2.4%, and both estimates are statistically significant. Overall, these findings are consistent with the main results showing that pay transparency increased both weekly earnings and wage rates among mid- to late-career workers.

Table A5: Effects of Pay Transparency Law by Hourly Pay Status (Aged 45-64)

	Not hourly paid		Hourly paid	
	ln(Weekly earnings)	ln(Hourly wage)	ln(Weekly earnings)	ln(Hourly wage)
CO × Post	0.043***	0.041***	0.053**	0.024*
	(0.017)	(0.013)	(0.022)	(0.012)
Observations	20,067	19,039	18,341	17,285
Adjusted R^2	0.257	0.284	0.249	0.343

Standard errors clustered at the metropolitan-area level are in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

G Effect of Pay Transparency by Job Mobility Status

G.1 Effect of Pay Transparency Hours Worked by Job Mobility Status

This section provide evidence on the effect of pay transparency on working hours of the main job by job mobility status.

Table A6 examines whether the effects of pay transparency on conditional working hours differ between job changers and job stayers among mid- to late-career individuals. The first two columns use a broader definition of job changers that includes individuals who ever changed employers or industries during the CPS survey window. Column (1) shows that pay transparency reduced conditional working hours among job changers by 0.255 hours per week, although the estimated effect is not statistically significant. In contrast, column (2) shows that the policy increased conditional working hours among job stayers by 0.598 hours per week, with the estimate statistically significant at the 10 percent level.

The last two columns define job changers based only on whether individuals ever changed employers during the CPS survey window. Under this definition, pay transparency significantly reduced conditional working hours among job changers by 2.627 hours per week. By contrast, the policy increased conditional working hours among job stayers by 0.525 hours per week. Overall, the results indicate that the increase in working hours following pay transparency was concentrated among job stayers, whereas job changers tended to reduce their working hours.

Table A6: Pay Transparency Effects on Hours Worked by Job Mobility Status (Aged 45-64)

	Ever changed emp. or ind.	Never changed emp. nor ind.	Ever changed employers	Never changed employers
Main-job hours				
CO×Post	-0.255	0.598*	-2.627**	0.525**
	(0.487)	(0.323)	(1.274)	(0.236)
Observations	7,604	28,849	2,280	32,305
Adjusted R^2	0.154	0.149	0.181	0.150

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Notes: This table reports difference-in-differences estimates of the effect of Colorado's pay transparency law by job mobility status among employed individuals aged 45–64 based on CPS ORG. Columns (1)–(2) classify workers by whether they changed employers or industries. Columns (3)–(4) classify workers by whether they changed employers.

G.2 Comparison between Job Changers and Job Stayers

This section examines whether job changers respond differently to the pay transparency policy than job stayers. Table A7 reports summary statistics comparing job changers and job stayers across individual characteristics and labor market outcomes.The table shows that job changers and job stayers are broadly similar in terms of background characteristics. There are no substantial

differences between the two groups in demographic characteristics such as age, gender, marital status, education, race, ethnicity, family size, or the presence of children. However, among employed individuals, job stayers differ from job changers along several labor market dimensions. Job stayers are less likely to be paid hourly, more likely to work in the public sector, work more hours in their main job, and have higher weekly earnings and hourly wages.

Overall, the summary statistics suggest that job changers and job stayers are not substantially different in observable background characteristics, although they differ in some labor market outcomes. This comparison helps interpret the heterogeneous effects by job mobility status by showing that the two groups are broadly comparable in demographic characteristics.

Table A7: Sample Composition by Employer Mobility Status (Aged 45-64)

	Stayer mean	Changer mean	Difference
Age	53.849	53.777	0.073
Male	0.453	0.469	-0.016**
Married	0.681	0.658	0.023***
Less high school	0.037	0.045	-0.008***
High school	0.262	0.262	-0.000
Some college	0.149	0.158	-0.009*
Associate degree	0.112	0.114	-0.001
Bachelor degree	0.257	0.264	-0.006
Master or more	0.183	0.158	0.024***
Hispanic	0.050	0.057	-0.007**
White	0.815	0.762	0.053***
Black	0.095	0.137	-0.042***
Family size	2.650	2.689	-0.039**
Has child	1.429	1.446	-0.017
Number of children	0.766	0.773	-0.007
Hourly paid	0.484	0.514	-0.030***
Public sector	0.199	0.145	0.054***
Main-job hours	40.255	39.539	0.716***
ln(Hourly wage)	3.064	3.024	0.040***
ln(Weekly earnings)	6.719	6.645	0.074***

Difference is defined as stayer mean minus changer mean.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Notes: This table reports pre-treatment summary statistics by job mobility status among employed CPS ORG respondents aged 45–64. Changers are workers who experience either an employer change or a change across major industry groups during the CPS observation period, while stayers are workers with neither type of change. The sample is restricted to employed individuals before 2021. The last column reports the difference in means between stayers and changers, based on two-sample t-tests.

G.3 More Evidence on Effect of Pay Transparency Job Mobility Status

This section provide evidence on the effect of pay transparency on job mobility status based on CPS ORG sample and the heterogeneous effect of pay transparency on job mobility status by

gender.

Table A8 examines the effects of pay transparency on job turnover outcomes using the CPS ORG sample. The results show that Colorado's pay transparency policy had no statistically significant effect on any of the job mobility measures among mid- to late-career individuals, which is consistent with the results based on the full sample. However, the estimates suggest economically meaningful positive effects on the share of individuals who ever changed occupations and the share who ever changed industries, although these estimates are not statistically significant. In contrast, the policy has a negative point estimate for period-level occupation changes, but this effect is also statistically insignificant. Overall, the results provide limited evidence that the policy significantly changed job mobility among mid- to late-career workers based on the CPS ORG.

Table A9 reports the effects of Colorado's pay transparency policy on job mobility by gender. The results in column (1) show that the policy had no statistically significant effect on the share of workers who ever changed employers for either men or women. However, column (2) shows that the policy increased the share of men who ever changed occupations, while the corresponding effect for women is close to zero and statistically insignificant. Column (3) further shows that the policy significantly increased the share of men who ever changed industries. By contrast, the estimated effect for women is negative but statistically insignificant. Although the negative estimate for women is economically meaningful in magnitude, the lack of statistical significance suggests that it should be interpreted cautiously. Overall, these results suggest that any job mobility response to the pay transparency policy is concentrated among men, particularly through occupation and industry changes, rather than employer changes.

The results in the last two columns show that, among men, Colorado's pay transparency policy significantly increased the probability of changing occupations and changing industries. In contrast, the estimated effects for women are negative but statistically insignificant. Therefore, the evidence suggests that the policy encouraged job mobility among mid- to late-career men, particularly through occupation and industry changes, while there is no evidence of a positive mobility response among women. One possible interpretation is that improved access to information about outside options increased men's incentives to move across occupations or industries. For women, however, the policy does not appear to have increased occupation or industry mobility. This may suggest that mid- to late-career women respond to wage information through other margins, such as increased wages or working hours, rather than through job mobility.

Table A8: Pay Transparency Law Effects on Job Mobility (ORG Aged 45-64)

	Ever Changed employer	Ever Changed occupation	Ever Changed industry	Change occupation	Change industry
CO×Post	-0.000	0.011	0.030	-0.007	0.002
	(0.010)	(0.023)	(0.020)	(0.021)	(0.021)
Observations	36,495	38,489	38,489	12,599	12,599
Adjusted R^2	0.008	0.040	0.050	0.043	0.059

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A9: Pay Transparency Law Effects on Job Mobility by Gender (Aged 45-64)

	Ever changed employer	Ever changed occupation	Ever changed industry	Change occupation	Change industry
Panel A: Male					
CO×Post	-0.005	0.020**	0.044*	0.025***	0.059***
	(0.011)	(0.009)	(0.026)	(0.008)	(0.022)
Observations	65,540	55,749	69,308	55,749	69,308
Adjusted R^2	0.019	0.016	0.053	0.015	0.063
Panel B: Female					
CO×Post	-0.001	0.000	-0.015	-0.008	-0.008
	(0.011)	(0.006)	(0.018)	(0.006)	(0.020)
Observations	77,883	65,675	82,313	65,675	82,313
Adjusted R^2	0.015	0.019	0.051	0.019	0.061

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

G.4 The Effects on Wage Among Younger Workers by Job Mobility Status

I also examine whether pay transparency affects wages differently by job mobility status among younger workers.

Table A10 provides evidence on how Colorado's pay transparency policy affected the gender wage gap among younger workers. The results show that the policy had limited effects on the gender wage gap for this group. Among both job changers and job stayers, the interaction term between CO × Post and Female remains small and statistically insignificant, suggesting that the policy did not differentially increase women's wages relative to men's wages within either group.

One notable finding is that pay transparency significantly increases hourly wages among younger job changers, while there is no significant wage effect among younger job stayers. The estimated gains among job changers are sizable, at 7.1% based on the broader definition of employer or industry changes and 11.4% based on employer changes. This is the only outcome for which I find a statistically significant positive effect among younger workers. However, the insignificant interactions with gender indicate that these wage gains are not significantly larger for women than for men. Thus, while pay transparency has limited effects on younger workers overall, the results point to sizable wage gains among those who change jobs, without a corresponding reduction in the gender wage gap.

Table A10: Pay Transparency Effects on Gender Wage Gap (Aged 25-44)

	Changed employer or industry		Changed employer	
	Job changers	Job stayers	Job changers	Job stayers
CO×Post	0.071*	-0.006	0.114**	-0.003
	(0.037)	(0.017)	(0.046)	(0.016)
CO×Post × Female	-0.023	0.009	0.015	0.007
	(0.033)	(0.021)	(0.052)	(0.026)
Industry × Year FE	Yes	Yes	Yes	Yes
Occupation × Year FE	Yes	Yes	Yes	Yes
Month-Year FE	Yes	Yes	Yes	Yes
Metropolitan Area FE	Yes	Yes	Yes	Yes
Female × Metropolitan Area FE	Yes	Yes	Yes	Yes
Observations	9,497	31,593	3,272	35,135
Adjusted R^2	0.424	0.438	0.421	0.437

Note: This table displays difference-in-differences estimates of the effects of Colorado's pay transparency law on weekly earnings and hourly wages among workers aged 25–44 in the CPS ORG sample. Standard errors are clustered at the metropolitan-area level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

H Effect of Pay Transparency by occupations

H.1 Summary Statistics of Wage Among Occupation

This section provides summary statistics for each occupation, including average wages, wage dispersion, and age–wage slopes, which capture differences in wage growth over the life cycle across occupations.

Table A11: Pre-policy Wage Level and Wage Dispersion by Occupation Group

Occupation group	N	Mean wage	Mean log wage	P90–P10	SD log wage
Management	4,697	32.800	3.377	1.258	0.497
Professional	5,578	31.180	3.312	1.362	0.526
Technical	834	26.240	3.152	1.333	0.484
Sales	2,120	22.130	2.911	1.629	0.599
Admin/Clerical	3,561	18.830	2.843	1.024	0.418
Residual Labor	867	15.690	2.642	1.079	0.451
Service	2,392	15.400	2.599	1.201	0.500
Craft/Repair	1,830	22.390	3.020	1.043	0.422
Operators/Assemblers	796	18.050	2.797	1.068	0.426
Transportation	856	17.480	2.767	1.036	0.424

Notes: The table reports pre-policy wage levels and wage dispersion by occupation group among employed mid- to late-career workers in Colorado. Hourly wages below $1 are excluded. Wage dispersion is measured using log hourly wages. Protective service and service occupations are combined into the Service group.

Table A12: Pre-Policy Age-Wage Slopes by Major Occupation Before 2021

Occupation group	Age-wage slope	Standard error	Observations	R^2
Management	0.0090	0.0007	9,109	0.094
Professional	0.0080	0.0005	12,527	0.066
Technical	0.0079	0.0013	1,822	0.139
Sales	0.0054	0.0010	4,413	0.086
Admin/Clerical	0.0055	0.0006	6,824	0.071
Residual Labor	0.0037	0.0009	1,928	0.118
Service	0.0054	0.0006	5,631	0.063
Craft/Repair	0.0066	0.0006	3,907	0.084
Operators/Assemblers	0.0044	0.0008	1,594	0.123
Transportation	0.0039	0.0010	1,621	0.114

Notes: This table reports pre-policy age-wage slopes by major occupation group.
The dependent variable is log hourly wage. The age-wage slope is the coefficient on age from occupation-specific regressions estimated using employed individuals aged 25–64 in the pre-policy period. Each regression controls for year fixed effects, month fixed effects, and metropolitan-area fixed effects.

H.2 Event Studies of Wage Effects by Occupation

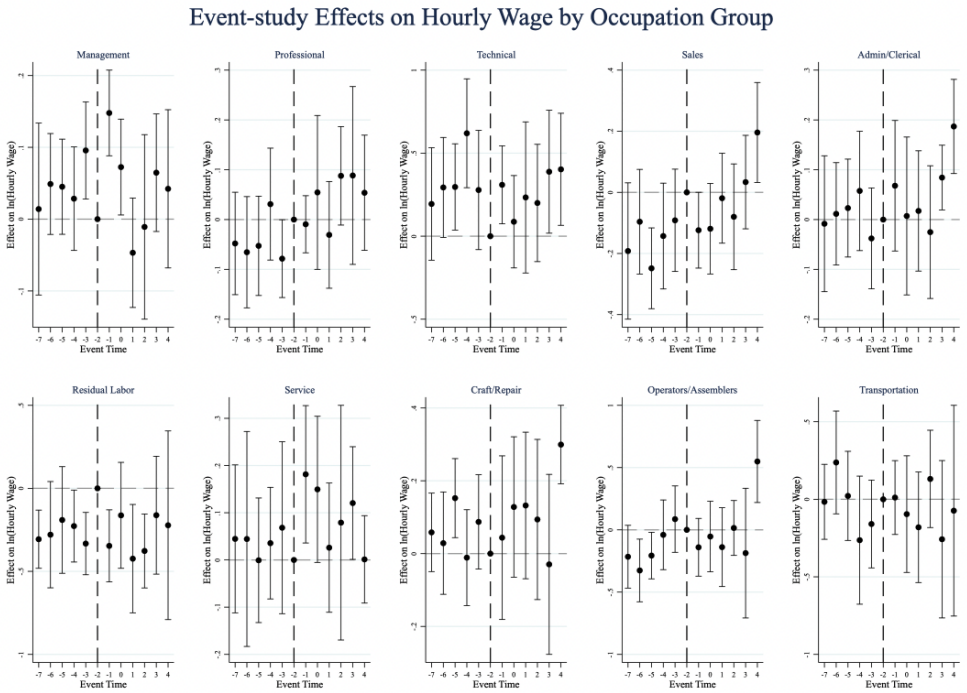


Figure A7: Event Study among Occupations

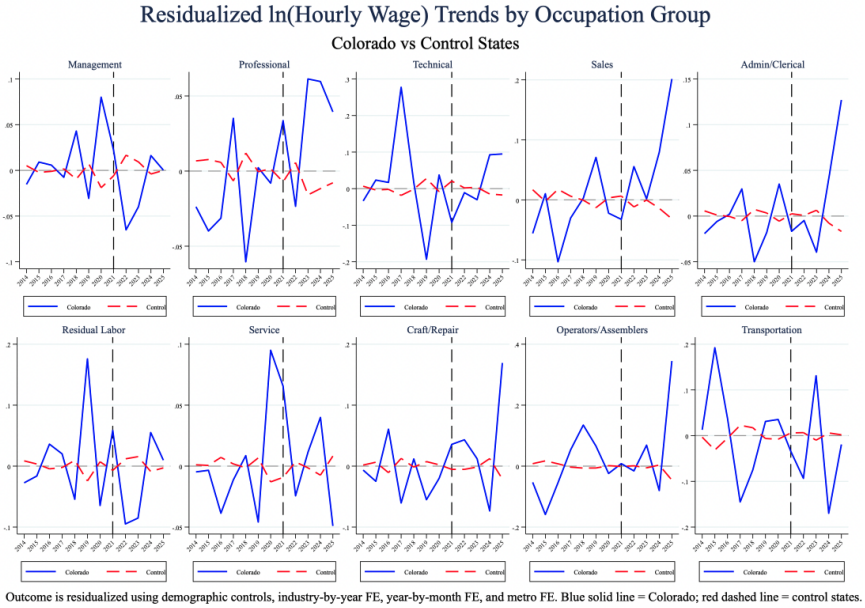


Figure A8: Hourly Wage Trends among Occupations

H.3 Descriptive Evidence on Gender Wage Gap among Occupations

This section provides descriptive evidence on changes in the gender wage gap among mid- to late-career workers across occupations in Colorado and the control states before and after the implementation of pay transparency. As shown in the Figure A9, relative to the changes observed in the control states, the gender wage gap in Colorado decreased more substantially in occupations with steeper age-wage profiles, including management, professional, and technical occupations. The decline is more moderate in occupations with moderate age-wage growth, such as sales, service, administrative and clerical, and craft and repair occupations. In contrast, changes in the gender wage gap are generally limited in occupations with flatter age-wage profiles, including residual labor and transportation occupations, although operators and assemblers exhibited a relatively pronounced decline. Overall, these descriptive patterns suggest that the reduction in the gender wage gap following pay transparency is more concentrated in occupations characterized by steeper age-wage profiles.

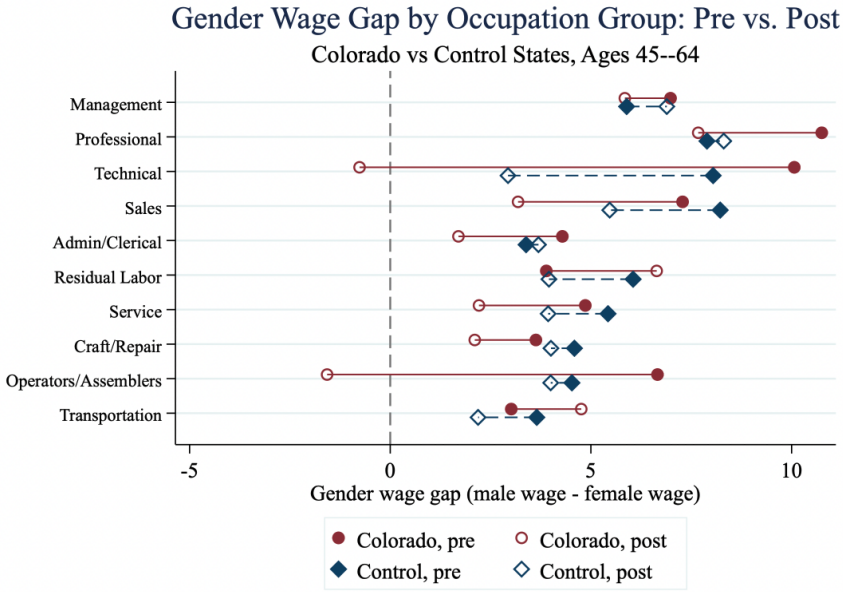


Figure A9: Hourly Wage Trends among Occupations

H.4 Pay Transparency and Within-Occupation Wage Compression

To examine whether pay transparency changes wage dispersion within occupation groups, I first aggregate the worker-level data into metropolitan-by-occupation-by-year cells. Within each cell, I calculate the 10th, 50th, and 90th percentiles of log hourly wages and construct three measures of wage dispersion: the $P90-P10$, $P90-P50$, and $P50-P10$ gaps. I then estimate cell-level difference-in-differences regressions in which each wage-dispersion measure is regressed on the treatment effect. The regressions include metropolitan-by-occupation fixed effects and occupation-by-year fixed effects and are weighted by the number of observations in each cell.

Results in the first three columns in Table A13 reports the results on wage dispersion within occupation groups. The estimated effects on all three measures of wage dispersion are negative. The point estimates indicate reductions of 0.031 log points in the $P90-P10$ gap, 0.024 log points in the $P90-P50$ gap, and 0.007 log points in the $P50-P10$ gap. These estimates are directionally consistent with wage compression within occupations, although they are not statistically distinguishable from zero.

Results in the last three columns in Table A13 examines where the effects of pay transparency occur within the wage distribution of each occupation. I first calculate the 10th, 50th, and 90th percentiles of log hourly wages within each metropolitan-area-by-occupation-by-year cell and then estimate the policy effect on each percentile. The estimates indicate that pay transparency increases wages by approximately 5.4 percent at the 10th percentile and 4.7 percent at the median, compared with a limited increase of 2.5 percent at the 90th percentile. Thus, the wage gains are concentrated in the lower and middle parts of the within-occupation wage distribution. This pattern is consistent with wage compression driven by gains at the bottom and middle of the distribution rather than wage reductions at the top.

Table A13: Effects of Pay Transparency on the Within-Occupation Wage Distribution

	Wage Dispersion			Wage Percentiles		
	$P_{90}-P_{10}$	$P_{90}-P_{50}$	$P_{50}-P_{10}$	P_{90}	P_{50}	P_{10}
Colorado × Post	-0.031	-0.024	-0.007	0.023	0.047**	0.054*
	(0.038)	(0.039)	(0.020)	(0.047)	(0.019)	(0.032)
Observations	3,259	3,259	3,259	3,259	3,259	3,259
Adjusted R^2	0.350	0.233	0.331	0.659	0.769	0.521

Note: Each observation is a metropolitan-area-by-occupation-by-year cell. The dependent variables in Columns (1)–(3) are differences between the indicated percentiles of log hourly wages, while the dependent variables in Columns (4)–(6) are the indicated percentiles of log hourly wages within each cell. All specifications include metropolitan-area-by-occupation and occupation-by-year fixed effects and are weighted by the number of observations in each cell. Standard errors clustered at the metropolitan-area level are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

I Further Evidence on the Effect of Pay Transparency on Labor Supply

Table A14: Effects of Pay Transparency on Working Hours in the ORG Sample (Aged 45–64)

	Working hours: main job, ORG sample	
	(1)	(2)
CO × Post	0.424	0.332
	(0.254)	(0.223)
Metropolitan Area FE	Yes	Yes
Year FE	No	Yes
Month FE	No	Yes
Year × Month FE	Yes	No
Industry × Year FE	Yes	No
Occupation × Year FE	Yes	No
Industry FE	No	Yes
Occupation FE	No	Yes
Observations	36,328	36,328
Adjusted R^2	0.148	0.148

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Notes: This table reports difference-in-differences estimates for individuals aged 45–64 using the CPS ORG sample. The dependent variable is usual weekly hours worked in the main job. The sample is restricted to employed individuals with positive main-job hours. The treatment variable, CO × Post, equals one for individuals in Colorado after the implementation of the Equal Pay for Equal Work Act. All specifications include demographic controls and metropolitan-area fixed effects. Column (1) includes year-by-month, industry-by-year, and occupation-by-year fixed effects. Column (2) includes separate year and month fixed effects, industry fixed effects, and occupation fixed effects. Standard errors are clustered at the metropolitan-area level and reported in parentheses.

Table A15: Effects of Pay Transparency on Labor Supply and Unemployment Duration (Aged 45–64)

	Labor force participation	Working hours across all jobs	Log unemployment duration
CO × Post	0.024	0.654***	-0.263*
	(0.022)	(0.222)	(0.142)
Metropolitan Area FE	Yes	Yes	Yes
Year × Month FE	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes
Occupation × Year FE	Yes	Yes	Yes
Observations	219,360	142,128	5,084
Adjusted R^2	0.056	0.104	0.131

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Notes: This table reports difference-in-differences estimates for individuals aged 45–64. The treatment variable, CO × Post, equals one for individuals in Colorado after the implementation of the Equal Pay for Equal Work Act. The dependent variables are labor-force participation, usual weekly hours worked across all jobs, and log unemployment duration. The working-hours specification is restricted to employed individuals with positive total weekly hours, while the unemployment-duration specification is restricted to unemployed individuals with positive reported unemployment duration. All specifications include demographic controls, metropolitan-area fixed effects, year-by-month fixed effects, industry-by-year fixed effects, and occupation-by-year fixed effects. Standard errors are clustered at the metropolitan-area level.

J Heterogeneous effects among industries

This section provide evidence on the effects of pay transparency on hourly wage among industries.

Table A16 reports the estimated effects of Colorado's pay transparency policy on hourly wages by industry group. The results show that the policy significantly increased hourly wages among workers in agriculture, fishing, forestry, mining, and construction; wholesale and retail trade; and professional and related services. The estimated effects are also positive for workers in manufacturing and in transportation, communication, and utilities. Although these estimates are not statistically significant, their magnitudes are economically meaningful.

In contrast, the estimated effect is small and statistically insignificant for workers in public administration, suggesting a limited wage response in this industry group. The estimates are negative for workers in personal and entertainment services and for workers in finance, insurance, real estate, and business services. The negative effect is particularly pronounced and statistically significant for finance, insurance, real estate, and business services.

Figure A11 shows the event-study estimates separately for each industry group. The event-study results are generally consistent with the DiD estimates, although the estimates are less precise because of the smaller sample size within each industry group. Moreover, Figure A10 shows the yearly wage trends by industry group, and the findings are also consist with the DiD estimates. Therefore, the results suggest that the effects of Colorado's pay transparency policy on wage vary by industries, suggesting that the benefits of wage disclosure may also depend on workers' labor market structure within specific industries.

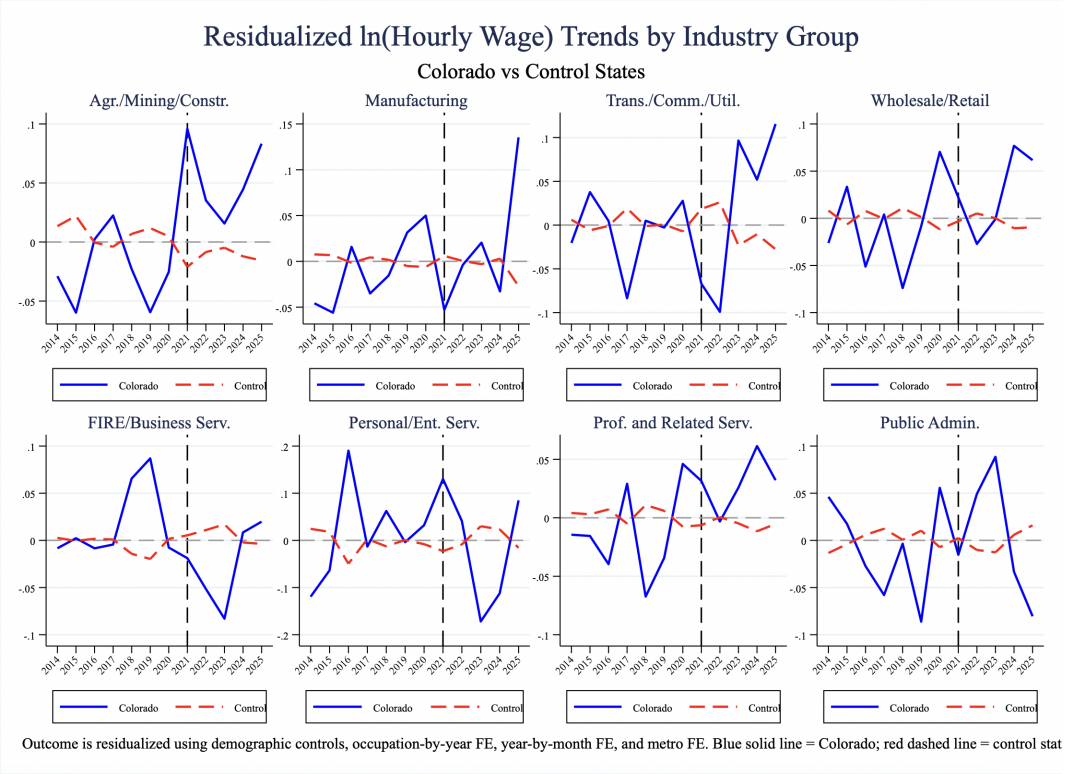


Figure A10: Hourly Wage Trends among Industries

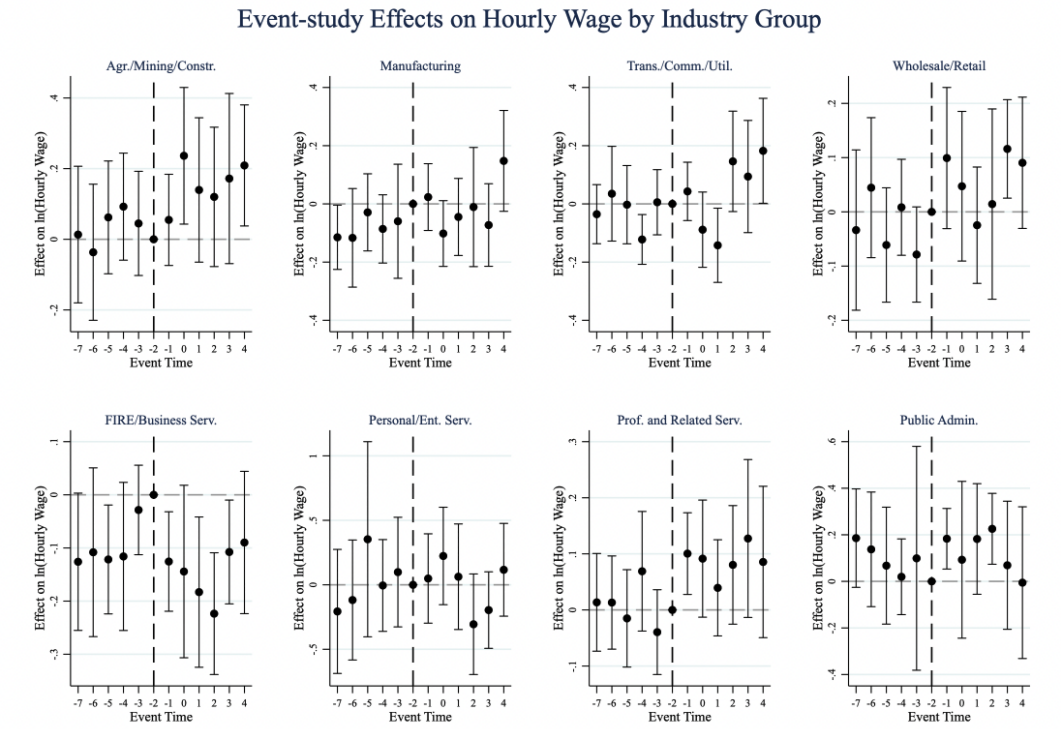


Figure A11: Hourly Wage Trends among Occupations

Table A16: Pay Transparency Effects on Hourly Wages by Industry (Aged 45-64)

	Ag./Mining Constr.	Mfg.	Trans. Comm./Util.	Wholesale/ Retail	FIRE/Bus. Serv.	Pers./Ent. Serv.	Prof. Related Serv.	Public Admin.
Colorado × Post	0.142**	0.049	0.036	0.046**	-0.066***	-0.041	0.063**	0.005
	(0.057)	(0.031)	(0.038)	(0.020)	(0.021)	(0.063)	(0.025)	(0.040)
Observations	2,269	4,375	2,663	5,050	5,667	1,106	12,721	2,355
Adjusted R^2	0.328	0.481	0.351	0.421	0.415	0.356	0.364	0.343

Notes: The dependent variable is log hourly wage. Standard errors clustered at the metropolitan-area level are reported in parentheses. Ag./Mining Constr. combines agriculture, fishing, forestry, mining, and construction; Mfg. denotes manufacturing; Trans. Comm./Util. denotes transportation, communication, and utilities; Wholesale/Retail combines wholesale and retail trade; FIRE/Bus. Serv. combines finance, insurance, and real estate with business services; Pers./Ent. Serv. denotes personal and entertainment services; Prof. Related Serv. combines healthcare and educational, social, and professional services; Public Admin. denotes public administration. All specifications include demographic controls, fixed effects shown in the corresponding regressions, and metropolitan-area fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

K Heterogeneous Effects of Pay Transparency on Labor Supply

This section examines the heterogeneous effects of pay transparency on labor-supply outcomes as shown in TableA17. The first two columns report estimates separately for men and women. Pay transparency increases men's employment probability by 0.8 percentage points, while the estimated effect for women is 0.4 percentage points and is not statistically significant. Conditional on employment, the policy increases weekly hours worked in the main job by 0.398 hours for men and 0.892 hours for women. Thus, the point estimates suggest a larger employment response for men and a larger hours response for women.

The third and fourth columns report heterogeneous results by educational attainment. The estimated labor-supply responses are concentrated among workers with higher education: the policy increases their employment probability by 0.9 percentage points and their weekly hours in the main job by 0.761 hours. By contrast, the corresponding estimates for workers with lower education are small and statistically insignificant.

The education-specific gender-interaction estimates provide additional evidence on differences between men and women. Among workers with lower education, the policy reduces men's employment probability by 1.3 percentage points. The female–male differential is positive at 1.5 percentage points, implying an approximately 0.2-percentage-point total effect for women. For weekly hours, both the male effect and the female–male differential are imprecisely estimated, providing no statistically clear evidence of a response for either gender. Among workers with higher education, the policy increases men's employment probability by 1.2 percentage points. The female–male differential is small and statistically insignificant, implying that the employment response does not differ significantly by gender. The policy increases men's weekly hours by 0.526 hours and have marginal positive effects on women's .

The last two columns examine heterogeneity by age. Pay transparency increases both employment and weekly hours among workers aged 45–59 and those aged 60–64. Among workers aged 45–59, the policy increases both outcomes for men, with larger increases among women. Among workers aged 60–64, the employment effects are similar for men and women, whereas the increase in weekly hours is substantially larger among women. Overall, the results suggest that the labor-supply response among workers approaching retirement is concentrated primarily along the intensive margin, particularly among women.

Table A17: Heterogeneous Effects of Pay Transparency on Labor Supply by Gender, Education, and Age (Aged 45-64)

	Male	Female	Low educated	High educated	Aged 45-59	Aged 60-64
Panel A: Employment						
Colorado × Post	0.008**	0.004	-0.005	0.009***	0.005	0.008*
	(0.004)	(0.003)	(0.005)	(0.002)	(0.003)	(0.004)
Observations	92,649	126,709	74,730	144,630	161,847	57,513
Adjusted R^2	0.845	0.886	0.882	0.859	0.851	0.898
Panel B: Main-job hours						
Colorado × Post	0.398**	0.892***	-0.061	0.761***	0.430*	1.022
	(0.178)	(0.323)	(0.323)	(0.226)	(0.242)	(0.637)
Observations	65,352	77,820	41,053	102,121	114,868	28,391
Adjusted R^2	0.083	0.095	0.129	0.118	0.119	0.133
Panel C: Employment						
Colorado × Post			-0.013**	0.012***	0.002	0.008
			(0.007)	(0.004)	(0.004)	(0.007)
Colorado × Post × Female			0.015**	-0.003	0.005	0.000
			(0.007)	(0.006)	(0.005)	(0.011)
Observations			74,730	144,630	161,847	57,512
Adjusted R^2			0.883	0.859	0.851	0.898
Panel D: Main-job hours						
Colorado × Post			-0.486	0.526**	0.239	0.342
			(0.438)	(0.256)	(0.229)	(0.777)
Colorado × Post × Female			0.878	0.458	0.371	1.404
			(0.853)	(0.307)	(0.292)	(1.224)
Observations			41,078	102,181	114,868	28,391
Adjusted R^2			0.130	0.123	0.121	0.135

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

L Robustness Check: Event Studies of Effects of pay transparency in CO and WA

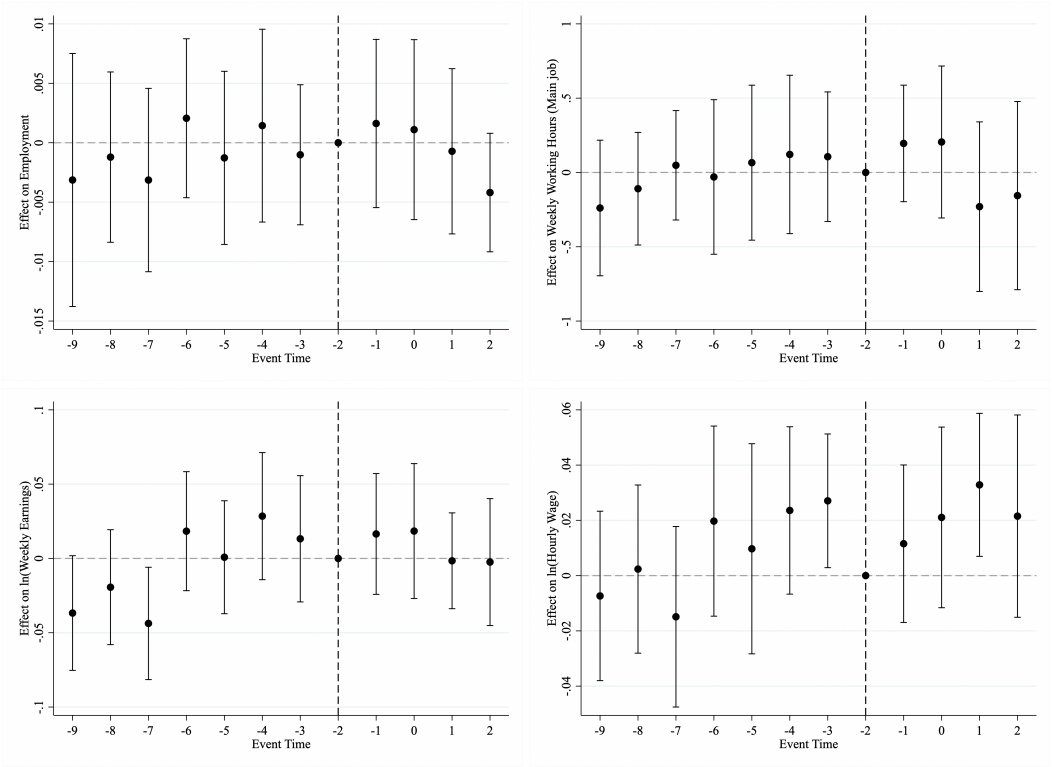


Figure A12: Robustness check: Effects of pay transparency in CO and WA

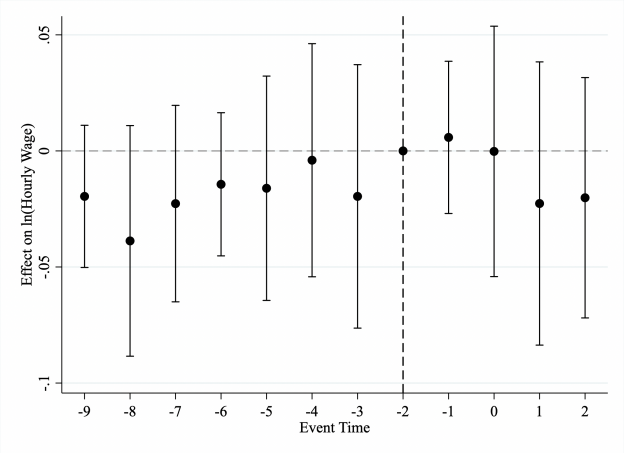


Figure A13: Robustness check: Gender wage gap effects of pay transparency in CO and WA

M DiD Evidence on Workers' Beliefs about Outside Opportunities

As a complementary exercise, I estimate simple difference-in-differences specifications for the SCE outcomes. The estimates are generally consistent with the descriptive patterns presented in the main text. However, these estimates should be interpreted with caution. The SCE contains a relatively small number of respondents from Colorado, particularly within individual years, and the belief measures exhibit substantial dispersion. As a result, the estimated treatment effects are relatively large in magnitude and may be sensitive to sampling variation. I therefore view these estimates as supporting evidence for the direction of the patterns documented in the descriptive analysis rather than as precise estimates of the magnitude of the effects of pay transparency on workers' beliefs.

Table A18: Effects of Pay Transparency on Workers' Wage Beliefs

	ln(Annual salary)	ln(Best annual salary)	ln(Reservation wage)
CO×Post	0.468**	0.404*	0.478**
	(0.208)	(0.208)	(0.195)
Year FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Observations	4,766	4,678	7,496
Adjusted R^2	0.127	0.136	0.144

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A19: Effects of Pay Transparency on Workers' Job Offer Beliefs

	Probability of ≥1 Job Offer (Employed)	Probability of ≥1 Job Offer (Not employed)
CO×Post	0.143	0.092**
	(0.096)	(0.043)
Year FE	Yes	Yes
State FE	Yes	Yes
Observations	1,644	5,351
Adjusted R^2	0.105	0.019

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

N Robustness Check: Alternative Age Ranges

This section examines the robustness of the main results to alternative age ranges. Table A20 reports the estimated effects of pay transparency for workers aged 50–64 in Panel A and workers aged 45–70 in Panel B.

Panel A shows that, among workers aged 50–64, pay transparency increases employment by 0.4 percentage points. Although the estimate is economically meaningful, it is not statistically significant. Pay transparency also significantly increases conditional working hours in the main job, weekly earnings, and hourly wages. In addition, the estimated effect on the gender wage gap is a reduction of approximately 2.9%. The magnitude is economically meaningful, although the estimate is not statistically significant. Panel B considers workers aged 45–70. The results remain consistent with the main findings. Pay transparency significantly increases employment, conditional working hours in the main job, weekly earnings, and hourly wages. In addition, the policy significantly reduces the gender wage gap among this broader group of workers. Overall, the results are broadly consistent across alternative age ranges and support the robustness of the main findings.

Table A20: Robustness Check: Alternative Age Ranges

	Employment	Main-job hours	ln(Weekly earnings)	ln(Hourly wage)	ln(Hourly wage)
Panel A: Aged 50–64					
CO×Post	0.004	0.609***	0.052**	0.040***	0.027
	(0.003)	(0.205)	(0.021)	(0.013)	(0.017)
CO×Post×Female					0.029
					(0.023)
Observations	168,791	104,965	28,118	26,566	26,565
Adjusted R^2	0.880	0.121	0.350	0.415	0.414
Panel B: Aged 45–70					
CO×Post	0.006***	0.467**	0.034**	0.034***	0.013
	(0.002)	(0.191)	(0.015)	(0.011)	(0.016)
CO×Post×Female					0.042**
					(0.016)
Observations	279,478	157,823	42,423	40,015	40,015
Adjusted R^2	0.893	0.131	0.354	0.416	0.416

Standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

O Diagnosing the 2020 wage fluctuation

As shown in the event-study estimates for hourly wages, Colorado exhibits a significant positive coefficient in 2020, one year before the implementation of the pay transparency policy. This pre-treatment deviation weakens the parallel trends assumption and raises the possibility that the estimated wage effects are influenced by factors unrelated to the policy. This section investigates the source of the 2020 wage fluctuation and examines whether the estimated effects of pay transparency remain after accounting for it.

A plausible explanation is that the 2020 fluctuation reflects compositional changes in employment during the COVID-19 pandemic rather than genuine wage growth. COVID-19 affected employment unevenly across workers, and if lower-paid workers were more likely to exit employment than higher-paid workers, average observed hourly wages would increase mechanically even if wages for continuing workers remained unchanged. Because these composition effects may differ across occupations, I first examine whether the pre-treatment deviation is concentrated within particular occupation groups.

Figure A7 in Appendix H.2 shows that the 2020 wage fluctuation is concentrated almost entirely in management occupations, while the remaining occupation groups display little evidence of differential pre-treatment wage movements. This finding suggests that the positive pre-treatment coefficient is driven by occupation-specific shocks rather than by a broad wage trend affecting the Colorado labor market.

I next examine whether this pattern reflects changes in workforce composition within management occupations. Two channels are considered: changes in gender composition and changes in the wage distribution. Figure A14 shows little evidence that the gender composition of management occupations changed substantially during the pandemic, as employment declined for both men and women. By contrast, Figure A15 shows that management occupations have both the highest average wages and the widest wage distribution among the major occupation groups, making average wages particularly sensitive to changes in worker composition. Consistent with this explanation, Figure A16 shows a noticeable shift in the wage distribution of Colorado management workers in 2020, with the share of lower-wage workers declining and the share of higher-wage workers increasing relative to the control states. Taken together, these findings suggest that the 2020 wage fluctuation primarily reflects COVID-related compositional changes within management occupations rather than a genuine pre-policy wage trend.

Motivated by this evidence, Figure A17 compares hourly wage trends before and after excluding management occupations. When management occupations are included, Colorado's hourly wages diverge noticeably from those of the control states during the COVID-19 period. After excluding management occupations, however, the pre-policy wage trends become substantially more similar, suggesting that management occupations account for most of the apparent pre-treatment divergence.

Finally, Figure A18 presents the corresponding event-study estimates after excluding management occupations. The pre-treatment coefficients are close to zero, providing support for the parallel trends assumption in the restricted sample. At the same time, the estimated effects of pay transparency remain positive and become statistically significant in the later post-treatment periods. These results

indicate that the main findings are robust to removing the occupation group most affected by the COVID-related composition shock and suggest that the apparent pre-treatment deviation is unlikely to reflect anticipation effects or a genuine pre-policy wage trend.

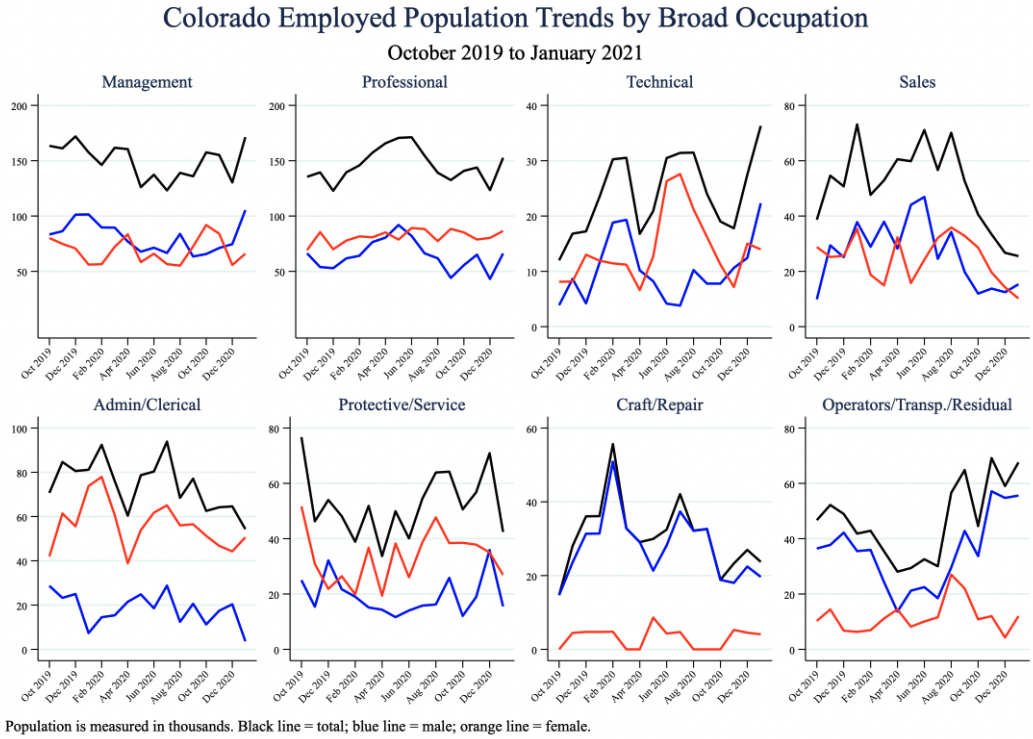


Figure A14: Share of Population in Occupations

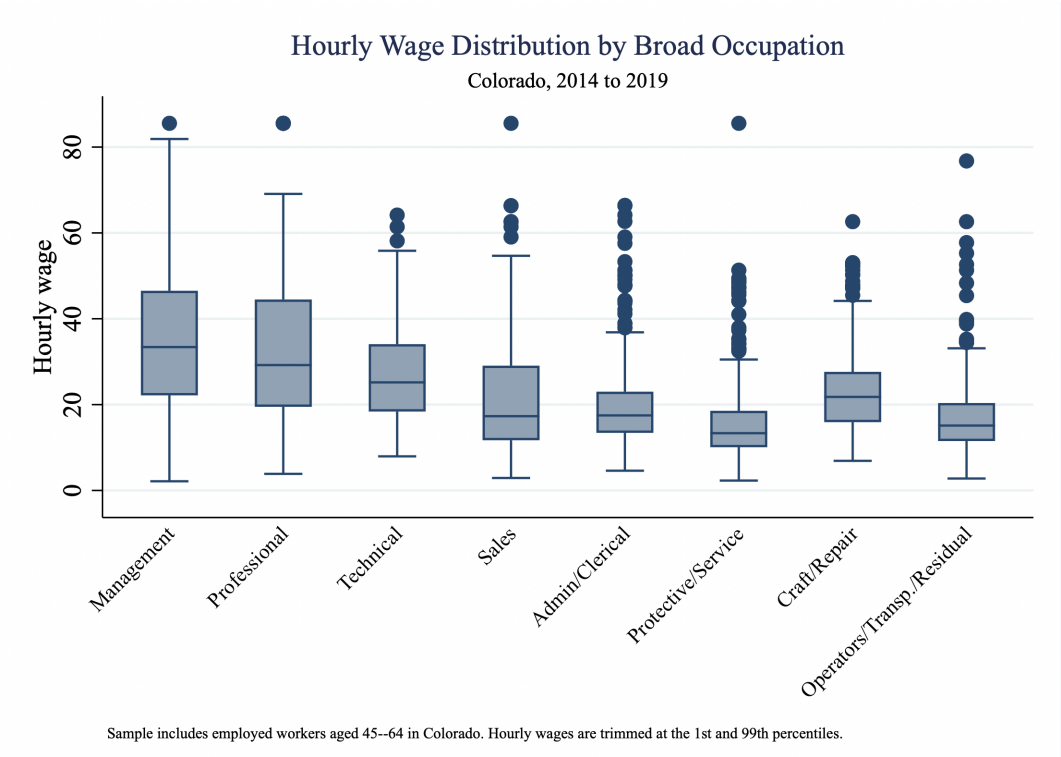


Figure A15: Pre-COVID Hourly Wage Dispersion across Occupation Groups

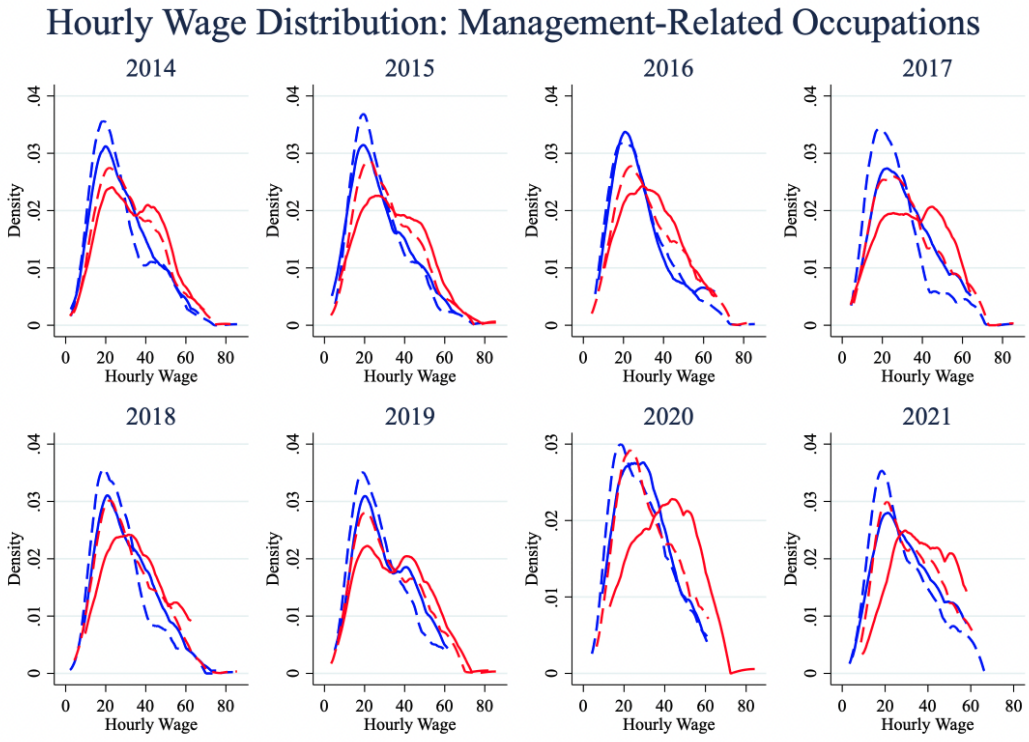


Figure A16: Wage Distributions Among Groups

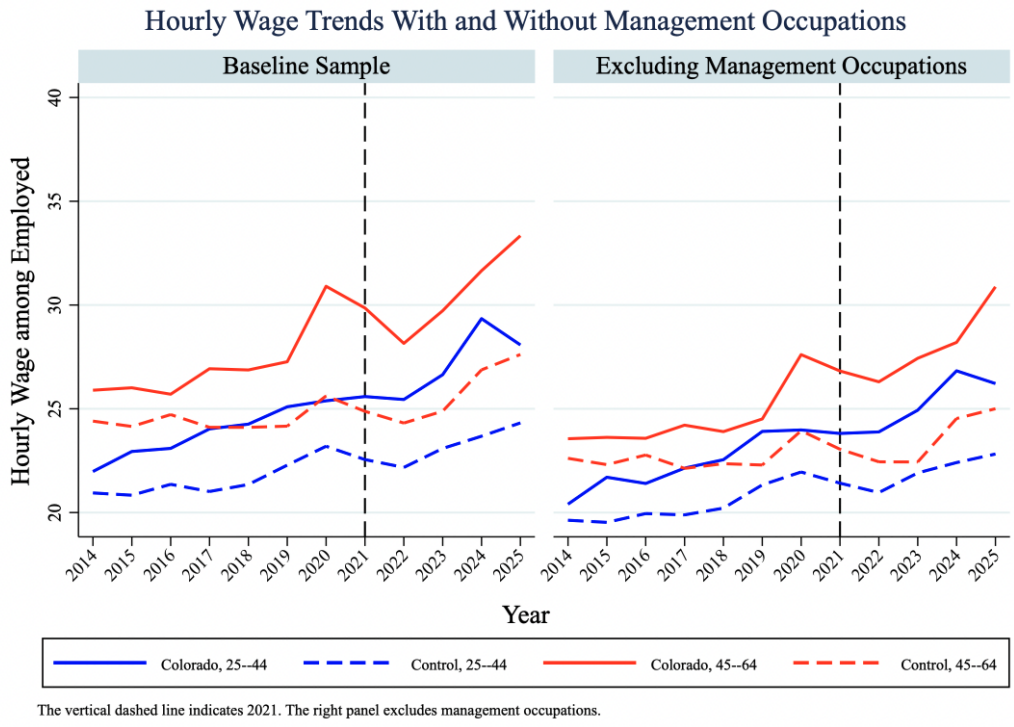


Figure A17: Wage Year Trends in Management

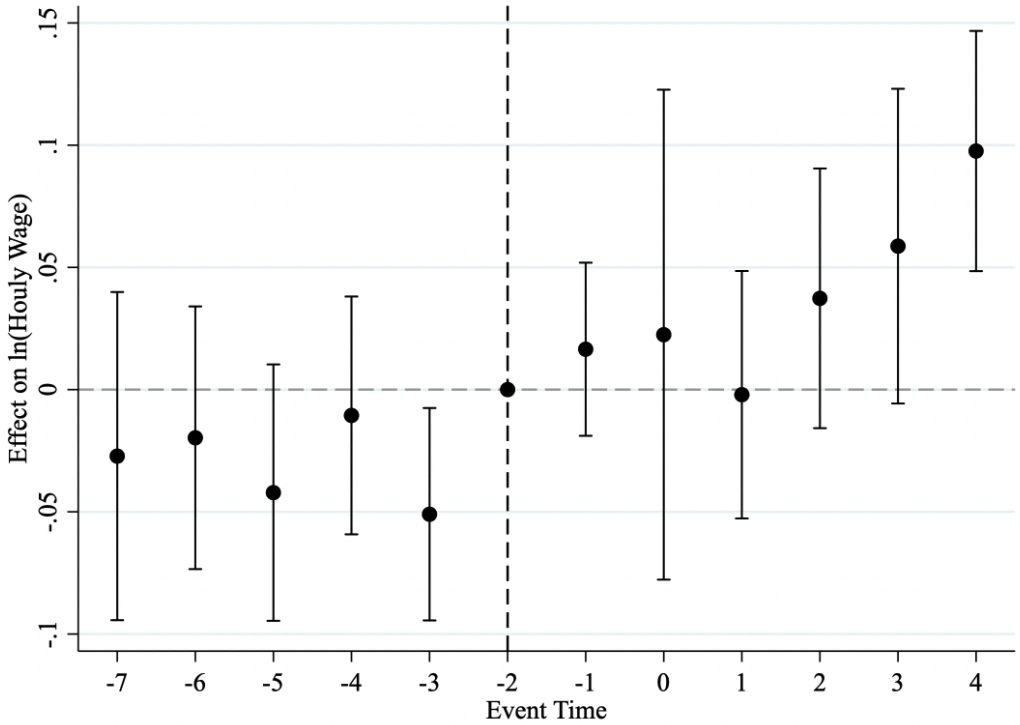


Figure A18: Event Study: Effect on Hourly Wage Exclude Management