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Bobby W. Chung
University of South Florida

Enel Shirinli
University of South Florida

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# Teacher Salary, Hiring, and Retention: Evidence from a Minimum Pay Shock*

Bobby W. Chung†
Enel Shirinli‡

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**Abstract**

Utilizing administrative employment records, we examine the impact of Arkansas's 2020 minimum teacher pay policy on district-level teacher recruitment and retention. To control for spatially heterogeneous pandemic trends, we combine a difference-in-differences framework with border-pair matching along the Arkansas–Texas border. Our empirical analysis documents a robust first-stage rise in teacher salary. Nevertheless, due to the brief post-intervention period, initial impacts on teacher hiring and separation are inconclusive. Because labor market responses unfold gradually, future studies tracking long-term data will be crucial.

*Keywords:* teacher salary, teacher shortage, LEARNS Act
*JEL Classification:* I28, J45

*We are thankful for the comments from seminar participants at West Virginia University. All errors are ours.

†Department of Economics, University of South Florida; HCEO and Knee Regulatory Research Center (email: bobbywchung@usf.edu).

‡Department of Economics, University of South Florida

# 1 Introduction

Unlike traditional competitive labor markets where wages adjust to reflect individual worker productivity, public school teacher compensation has historically been governed by rigid, state-mandated single-salary schedules (Hanushek, 2011). Because the rigid schedules decouple pay from individual productivity and local labor market conditions, public school teacher salaries have fallen behind alternative college-educated professions, depressing the entry pipeline for new teaching talent. This structural disconnect is one of the drivers of the persistent teacher shortages in the US public education. As reported in the official statistics, unfilled teaching vacancies have been a persistent issue since the 2010s (National Center for Education Statistics, 2023).

We examine the extent to which higher compensation improves both the recruitment and retention margins of public school teachers. Identifying the causal effect of teacher salaries in U.S. public education is empirically challenging because state-mandated single-salary schedules severely restrict local wage variation. Causal identification thus hinges on sharp, state-level policy shifts. In this paper, we exploit exogenous policy initiatives in Arkansas beginning in the 2019–2020 school year and apply a spatial border discontinuity design along the Arkansas–Texas border.[1] Because the policy coincided with the onset of the COVID-19 pandemic, we encounter an additional layer of differential geographic trends caused by different school and local lockdown policies. We overcome this identification challenge by integrating border-pair matching with a difference-in-differences framework. By leveraging geographic proximity, we identify the treatment effect of Arkansas's policy shocks through comparisons of contiguous school districts adjacent to Texas before and after the reform. As a robustness check, we also apply a synthetic difference-in-differences estimator to these border districts.

Prior to the policy, substantial spatial inequality characterized teacher compensation

[1] Texas serves as a clean counterfactual comparison because other neighboring states enacted concurrent teacher salary reforms during our sample period. We discuss the detailed rationale for selecting Texas in Section 2.

in Arkansas, rendering state-level starting salary floors non-binding for certain high-wealth or metropolitan districts. We first confirm a prominent first-stage effect, finding that the Arkansas initiatives boosted average teacher salaries by 16.4% to 21.7% across empirical specifications. In contrast to expectations, these wage increases failed to generate a significant response in new teacher hiring and teacher attrition. Consequently, the reform did not produce the intended supply-side expansion in public school staffing.

Recent evidence documents a decade-long contraction in the pipeline of incoming public school teachers (King and James, 2022). A substantial literature investigates the drivers of teacher labor supply, focusing on institutional constraints such as working environments and structural entry barriers (Carter and Carter, 2000; Chung and Zou, 2025; Guarino et al., 2006; Kraft et al., 2020). Our findings align with studies highlighting the critical role of financial compensation in shaping teacher supply (Biasi, 2021; Feng and Sass, 2018; Hendricks, 2014; Liu et al., 2004; Murnane and Olsen, 1989; Sun et al., 2025). We build on these foundational studies by examining the extent to which a targeted starting salary floor shock mitigates challenges in entry-level recruitment.

## 2 The Evolution of Teacher Compensation Policy in Arkansas

Over the past decade, Arkansas enacted two major reforms to its teacher compensation system. The first, the Teacher Salary Enhancement Act of 2019 (Act 170), increased the state-mandated minimum salary schedule over four school years. The reform raised the minimum salary for a teacher with a bachelor's degree and no prior experience from $31,800 in 2018-2019 to $32,800 in 2019-2020, with subsequent increases to $33,800 in 2020–2021, $34,900 in 2021–2022, and $36,000 in 2022–2023. Importantly, the reform retained Arkansas's existing salary schedule structure. State law continued to specify separate minimum salaries by teachers' years of experience and educational attainment, with higher required salaries for more experienced teachers and those holding a master's de-

gree. Thus, the Teacher Salary Enhancement Act gradually shifted the existing salary ladder upward rather than fundamentally changing its structure.

In March 2023, Arkansas enacted the LEARNS Act (Act 237), a broad education reform package that introduced a substantially different approach to teacher compensation. Beginning in the 2023–2024 school year, the Act increased the statutory minimum base salary for classroom teachers from $36,000 to $50,000. In addition, each teacher was required to receive a salary at least $2,000 higher than his or her salary as of September 1, 2022. The state created the Teacher Minimum Salary and Raise Fund to support these increases, with approximately $180 million allocated for teacher salary increases. In contrast to the gradual increases under the Teacher Salary Enhancement Act, LEARNS therefore generated a large and immediate increase in the statewide salary floor.

The LEARNS Act also fundamentally changed the structure of the state's teacher compensation system by eliminating the statewide minimum salary schedule. Prior to LEARNS, school districts were required to comply not only with the statutory starting salary but also with a state-mandated salary ladder that established minimum pay levels according to teachers' experience and educational attainment. LEARNS removed these state-mandated experience and education differentials while retaining the $50,000 minimum base salary, giving districts substantially greater discretion over salary progression above the minimum. Consequently, the two reforms differ not only in magnitude and timing but also in their underlying compensation structures: the Teacher Salary Enhancement Act gradually increased a centrally determined salary ladder, whereas LEARNS sharply increased the salary floor while decentralizing the determination of salaries above that floor.

Neither reform, however, imposed an identical salary shock across districts. Because districts could pay teachers more than the state-mandated minimum, the effect of the Teacher Salary Enhancement Act depended on how close a district's pre-reform experience by education salary schedule was to the new state minimum schedule. Similarly,

the effect of LEARNS depended on the district's pre-reform salary distribution relative to the new $50,000 floor and the $2,000 raise requirement. These differences generated substantial variation in the intensity of the reforms across school districts. Moreover, by removing the statewide experience-based salary ladder, LEARNS shifted responsibility for salary progression toward local districts, potentially increasing the role of district fiscal capacity and local compensation policies in determining pay differences across districts, particularly for more experienced teachers.

To identify the causal effect of salary increase on teacher hiring and retention, Texas stands out as a reasonable bordering comparison with Arkansas. Between 2017 and 2024, the landscape of teacher compensation across the neighboring states shifted significantly through major structural reforms and stopgap measures. Oklahoma enacted aggressive back-to-back baseline salary increases of $6,100 in 2018 and $1,200 in 2019 following historic statewide educator walkouts, followed by a multi-tiered raise of up to $6,000 in 2023. Mississippi achieved a landmark structural shift in 2022 with the START Act, providing an average annual pay bump of $5,151 and raising baseline starting pay to $41,638. Meanwhile, Tennessee mapped out its long-term strategy in 2023 by passing the Teacher Paycheck Protection Act, commencing a multi-year, phased-in schedule to incrementally push minimum starting pay toward a future $50,000 threshold. In contrast to its neighbors, Louisiana avoided permanent schedule alterations during this period, relying instead on temporary, year-by-year stipends of $2,000 for teachers to prop up compensation against rising post-pandemic inflation. By contrast, as we are aware, the only significant teacher salary policy in Texas during the sample period was implemented in 2019, which directed district revenues educators with over five years of experience. Texas border districts, thus, arise as a natural comparison group to the Arkansas border districts.

Figure 1 shows the spatial inequality of starting teacher salary in Arkansas districts. Our identification compares the districts in the southwest of Arkansas with the bordering Texas school districts, which is shown in Figure 2.

Figure 1: Geographical Differences of Starting Salary in Arkansas

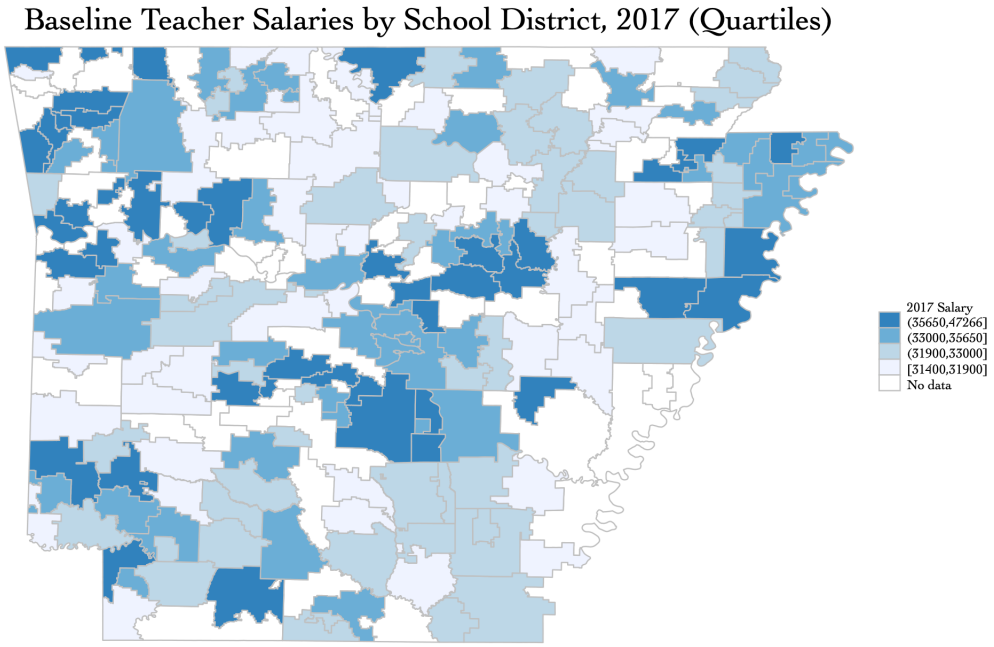
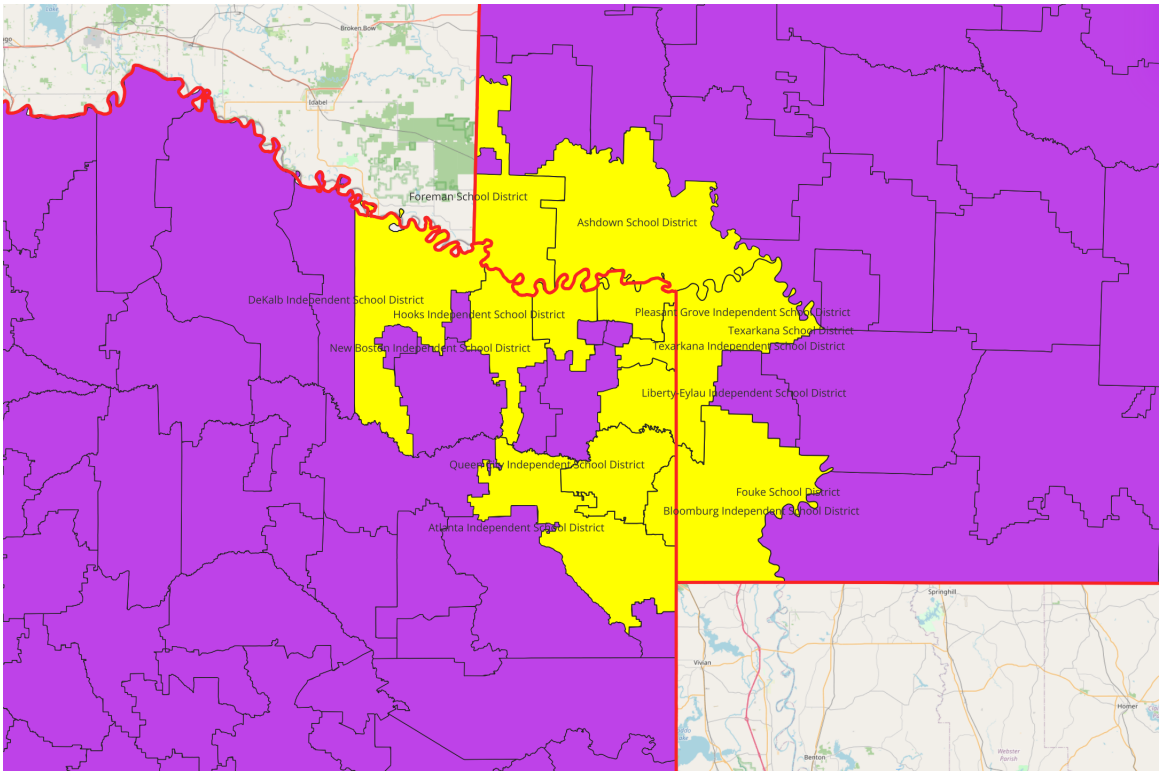



Figure 2: Texas - Arkansas Border Districts



# 3 Data and Variables

To examine the effects of teacher compensation reforms on teacher hiring and retention, we use administrative data from the Arkansas Division of Elementary and Secondary Education and the Texas Education Agency. These data provide annual district-level information on teacher employment, teacher separations, new teacher hires, teacher salaries, student demographic composition, suspension rates, and total enrollment. Our analysis covers the 2017–2018 through 2024–2025 school years. The resulting panel provides multiple years of pre- and post-reform variation, which we use to examine pre-treatment trends and estimate changes in teacher hiring and retention associated with the reforms.

We construct consistent measures of teacher hiring and attrition for Arkansas and Texas using the administrative information available in each state. For Arkansas, the number of newly hired teachers is reported directly in the administrative data. For Texas, we construct a comparable district-level hiring measure using individual-level personnel records from the Texas Education Agency. We track teachers across school years within each district and classify a teacher as a new hire in district $d$ in year $t$ if the teacher is observed in that district in year $t$ but was not employed in the same district in the preceding year. We then aggregate these teacher-level indicators to the district-year level to obtain the annual number of new hires in each district. We construct teacher attrition consistently for both Arkansas and Texas using the longitudinal personnel records. A teacher is classified as separating from district $d$ in year $t$ if the teacher was employed in that district in year $t-1$ but is no longer observed in the same district in year $t$. We aggregate these individual-level separations to obtain the number of teacher separations in each district-year. Following Hendricks (2014), the attrition rate is defined as the number of separations in year $t$ divided by the total number of teachers employed in the district in year $t-1$. Because the measure is based on departure from the district rather than the reason for departure, it captures both movements to other districts and exits from the observed public-school workforce.

Table 1 presents mean values of the variables used in the analysis for school districts in Texas and Arkansas. Columns (1) and (2) include all districts in the two states, while columns (4) and (5) restrict the sample to border districts, our main analysis sample. In the full sample, Arkansas school districts are substantially smaller on average, have lower total enrollment, fewer new teachers, and a fewer teacher separations than Texas districts. Arkansas also exhibits a lower teacher attrition rate and a higher share of White teachers. Student characteristics differ across the two state as well – Arkansas districts have higher shares of homeless and White students, but lower rates of in-school suspension. Most of these differences are statistically significant at 1 percent. The border district comparison narrows several of these gaps, particularly for graduation rates and total enrollment, where difference are no longer statistically significant. However, meaningful differences remain in teacher staffing patterns, attrition, teacher racial composition, homelessness, in-school suspension, and White student enrollment. Overall, the descriptive statistic indicate that the border sample is more comparable along several dimensions than the full sample.

Table 1: Summary Statistics by State

| | All Districts | | | Border Districts | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Arkansas | Texas | Diff. | Arkansas | Texas | Diff. |
| New Teachers | 20.7 | 65.3 | -44.6*** | 20.7 | 34.7 | -14.0*** |
| Attrition Rate | 0.167 | 0.241 | -0.075*** | 0.147 | 0.217 | -0.070*** |
| Teacher Separations | 21.0 | 60.8 | -39.8*** | 22.9 | 35.7 | -12.9*** |
| White Teacher Share | 0.90 | 0.717 | 0.18*** | 0.91 | 0.866 | 0.05*** |
| Homeless (%) | 4.2 | 2.0 | 2.2*** | 2.3 | 1.5 | 0.8*** |
| Graduation Rate (%) | 7.3 | 23.1 | -15.8*** | 6.8 | 7.0 | -0.2 |
| Total Enrollment | 1,863 | 5,013 | -3,150*** | 1,720 | 2,056 | -337 |
| In-School Suspension (%) | 19.4 | 31.0 | -11.6*** | 29.1 | 10.8 | 18.3*** |
| White Enrollment (%) | 69.1 | 47.7 | 21.4*** | 66.7 | 59.7 | 7.0** |
| Observations | 2,039 | 8,638 | | 88 | 78 | |
| Districts | 257 | 1,211 | | 4 | 9 | |

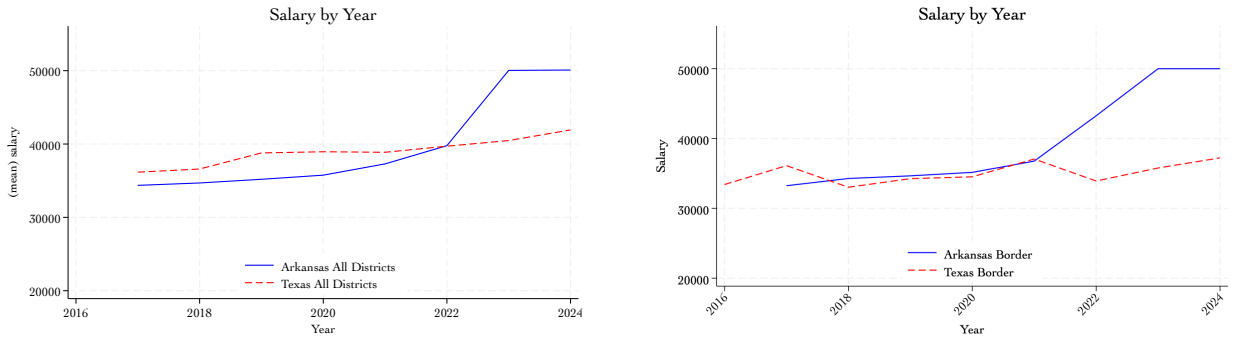
*Notes:* Differences are calculated as the Arkansas mean minus the Texas mean. Statistical significance is based on two-sample tests. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

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Figure 1 presents the spatial distribution of starting teacher salaries across Arkansas school districts in 2017. Although starting salaries vary substantially across districts, this variation does not exhibit a clear pattern of spatial clustering. Figure 2 illustrates the contiguous school districts along the Arkansas–Texas border that form our border sample, comparing districts in southwestern Arkansas with their adjacent Texas counterparts.

The preliminary evidence that serves as a basis for the analysis is presented in Figure 3. Figure 3a plots average teacher salaries by year for all districts in Arkansas and Texas, our comparison state. The two states exhibit similar salary trends prior to 2021, after which Arkansas salaries increase steadily and reach $50,000 in 2023. Coinciding with the policies' implementation timing, we observe a spike compared to the Texas counterparts. Since the salary initiative closely aligned with the Covid timing, it is important to take into account the spatial confounding factors. This is where the border-pair comparison potentially improves causal identification. Figure 3b restricts the comparison to border districts. Pre-treatment salaries are even more closely aligned between the two states, with divergence emerging only after treatment in 2021.

Figure 3: Texas-Arkansas Salary Trends



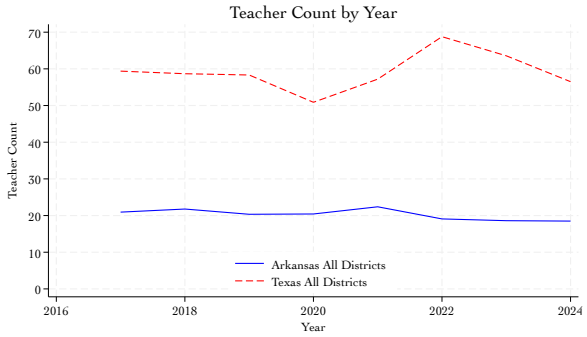

(a) Texas-Arkansas - All Districts

(b) Texas-Arkansas - Border Districts

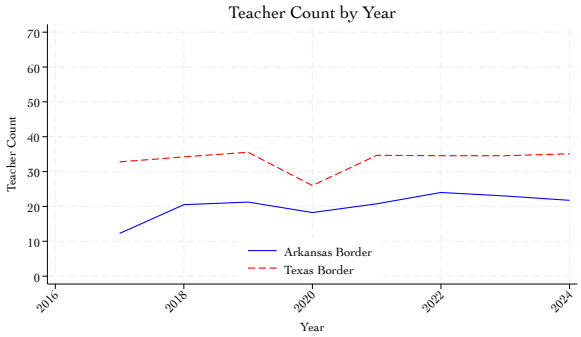
When plotting the average number of teachers (Figure 4a and Figure 4b)–our dependent variable of interest–we do not observe divergence in either direction, which is suggestive, though purely descriptive, evidence that the reforms did not meaningfully affect

teacher hiring, at least within the first two years following implementation. We explore this more formally in the methodology section.

Figure 4: Texas-Arkansas Teacher Count Trends




(a) Texas-Arkansas - All Districts




(b) Texas-Arkansas - Border Districts

# 4 Empirical Strategy

## 4.1 Specification Using All Districts

The teacher salary reforms in Arkansas provide a setting for comparing changes in teacher labor-market outcomes in Arkansas school districts with changes in Texas school districts over the same period. We employ a difference-in-differences framework in which Arkansas districts constitute the treated group and Texas districts serve as the comparison group. The post-treatment period begins after the school year 2019-2020, the first year experiencing a one-thousand increase in starting salary. We define $Treat_{dt}$ as an indicator equal to one for Arkansas school districts in the post-2020 period and zero otherwise. Notice that only after in the school year 2023-24 did the LEARNS Act create a significant jump in salary. We also estimate the event study version to allow this policy dynamics. In the baseline version, we estimate the following two-way fixed effect specification:

$$Y_{dt} = \beta Treat_{dt} + \mathbf{X}'_{dt}\gamma + \delta_d + \lambda_t + \varepsilon_{dt}, \tag{1}$$

where $Y_{dt}$ denotes the outcome variable in school district $d$ in year $t$. $Treat_{dt}$ is equal to one for Arkansas school districts in the post-2020 period and zero otherwise. The vector $\mathbf{X}_{dt}$ denotes time-varying district-level control variables, including total enrollment, graduation rate, the percentage of White students, the percentage of students receiving in-school suspensions, and the percentage of homeless students. District fixed effects, $\delta_d$, absorb time-invariant differences across school districts, while year fixed effects, $\lambda_t$, account for common shocks affecting all districts in a given year. Standard errors are clustered at the state-by-year level. The coefficient of interest, $\beta$, identifies the differential post-2020 change in the outcome for Arkansas school districts relative to Texas school districts.

## 4.2 Border Discontinuity

In our preferred specification, we focus on a narrower sample consisting of Arkansas school districts that share a border with school districts on the Texas side. This is particularly important considering the local heterogeneity of pandemic impacts. We construct border pairs in which each Arkansas district is matched with a contiguous Texas district. A school district that is adjacent to more than one district on the other side of the state border is included in all corresponding border pairs. Therefore, our identification strategy exploits within-pair variation across contiguous school districts and relies on the assumption that districts located on opposite sides of the border are similar in relevant characteristics other than their exposure to the teacher salary increase. The treatment indicator is equal to one for Arkansas school districts in the post-increase period and zero otherwise.

We test whether salary increase had effect on teacher hiring using the following border difference-in-difference model following Dube et al. (2010):

$$Y_{dpt} = \beta \, Treat_{dpt} + \mathbf{X}'_{dpt}\gamma + \delta_d + \gamma_{pt} + \varepsilon_{dpt} \tag{2}$$

where $Y_{dpt}$ is the outcome variable in district $d$, belonging to border-pair $p$, in year $t$. $Treat_{dpt}$ is an indicator variable equal to one for Arkansas districts after the increases in teacher compensation, and zero otherwise. $\mathbf{X}_{dpt}$ is a vector of time-varying district-level controls, including total student enrollment, graduation rate, the percentage of white students, the percentage of students receiving in-school suspensions, and the percentage of homeless students. $\delta_d$ are district fixed effects, which absorb time-invariant district characteristics, and $\gamma_{pt}$ are border-pair-by-year fixed effects, which flexibly control for shocks common to districts on both sides of the same state border in a given year. Standard errors are two-way clustered at the border-pair and state level to account for spatial and serial correlation in the error term. Our coefficient of interest, $\beta$, captures the effect of the

LEARNS Act on new teacher hiring in treated Arkansas districts relative to their matched Texas border-district counterparts.

# 5 Results

In this section, we present our main results. We start by empirically confirming that the reforms increased teacher compensation, as shown in Table 2. Column (1) presents results from estimating equation (1), where all Texas and Arkansas school districts are included in the estimation sample. The reforms aimed at increasing teacher compensation led to an approximately 16 percent increase in teacher salaries in Arkansas school districts relative to Texas school districts. The estimation includes school district and year fixed effects, controlling for time-invariant differences across districts and common time-varying shocks affecting all districts. Column (2) presents results using a narrower sample of contiguous school districts along the Texas-Arkansas border. Interestingly, we observe a similar increase in the magnitude of teacher compensation for Arkansas teachers in the post-reform period, of approximately 17 percent. Both estimates are statistically significant at the 1 percent level.

Next, we turn to examining the effect of the teacher compensation reforms on the number of new teachers hired at the school district level. The results of this analysis are reported in Table 3. When estimating the effect using all districts in column (1), we observe a decline of approximately five new teacher hires in Arkansas in the post-reform period relative to Texas. When using only border districts in column (2), we observe an increase of around 3 teachers hired in Arkansas relative to Texas districts. Although the point estimates differ in sign across the two samples, neither is statistically significant at conventional levels. Thus, we find no statistically significant evidence that the reforms affected new teacher hiring. Our findings are consistent with some of the existing empirical evidence, which provides mixed results regarding the effects of teacher compensation in-

creases on hiring and recruitment. For example, examining Washington State's McCleary reform, Sun et al. (2025) find no statistically significant effect on teacher hiring during the first two years of implementation. In contrast, Falch (2017) finds that wage premiums in Norway increased teacher recruitment rates by 6–7 percentage points.

Table 4 and Table 5 present results from estimating the effect of teacher compensation reforms on teacher attrition rate and number of teacher separations, respectively. When comparing all Arkansas school districts with Texas school districts in column (1), there is no statistically significant effect on attrition rate, while the number of teachers who leave school districts is lower in the Arkansas compared to their counterparts in Texas school districts. When examining this relationship focusing on only border school districts in column (2), there is no significant effect on either teacher attrition or teacher separations. These results provide evidence that teacher compensation reforms did not affect teacher attrition and separations. One possible explanation for these findings is that higher teacher compensation may reduce the number of teachers leaving school districts by increasing the financial incentives to remain employed. However, the absence of a statistically significant reduction in teacher attrition rates suggests that the decline in separations may also reflect changes in district staffing levels rather than improvements in retention alone.

Finally, we examine whether the teacher compensation reforms affected the racial composition of the teacher workforce by estimating their effect on the share of teachers who are White. The results are presented in Table 6. When using all Arkansas and Texas school districts in column (1), the estimated effect is small and statistically insignificant, indicating no detectable change in the share of White teachers following the reforms. In contrast, when restricting the analysis to contiguous school districts along the Arkansas-Texas border in column (2), we find that the reforms increased the share of White teachers in Arkansas school districts by approximately 3 percentage points relative to neighboring Texas districts. This estimate is statistically significant at the 1 percent level. The differ-

ence between the two specifications suggests that the effect on teacher racial composition is concentrated among geographically comparable border districts rather than being evident statewide. Taken together, these results indicate that, although the reforms do not appear to have significantly affected overall teacher hiring or attrition, they may have altered the composition of the teacher workforce in districts along the Arkansas-Texas border.

The results of the event study are presented in Figure 5. The estimates for teacher salaries show a positive and statistically significant effect beginning in 2022, with coefficients ranging from approximately 0.20 to 0.27 log points through 2024. In contrast, the estimates for new teacher hiring fluctuate around zero after 2020, with confidence intervals consistently overlapping zero, indicating no statistically significant changes in teacher recruitment. A similar pattern is observed for teacher attrition and separations, where the estimates vary across years without showing a sustained effect. For the share of white teachers, the estimates remain statistically insignificant until 2024, when the coefficient becomes positive and statistically significant, indicating an increase of approximately 5 percentage points.

Table 2: Effect of the teacher compensation reforms on salary

| | log(Salary) | log(Salary) |
|---|---|---|
| | (1) | (2) |
| Treat | 0.164*** | 0.174*** |
| | (0.053) | (0.045) |
| Homeless (%) | 0.0016** | 0.0162 |
| | (0.0007) | (0.0108) |
| Graduation Rate (%) | 0.0004*** | 0.0403* |
| | (0.0001) | (0.0235) |
| Total Enrollment | 0.0000012 | -0.000187** |
| | (0.0000012) | (0.000083) |
| In-School Suspension (%) | -0.0003** | 0.0013 |
| | (0.0001) | (0.0012) |
| White Enrollment (%) | 0.00003 | -0.0087** |
| | (0.00003) | (0.0043) |
| Constant | 10.532*** | 11.052*** |
| | (0.007) | (0.341) |
| District FE | Yes | Yes |
| Year FE | Yes | – |
| Border-Pair × Year FE | – | Yes |
| Observations | 10,380 | 152 |
| R-squared | 0.532 | 0.827 |
| Number of Pairs | – | 11 |
| Number of Clusters | 16 | 76 |

*Notes:* The dependent variable is the logarithm of teacher salary at the district-year level. Column (1) uses the full sample and includes district and year fixed effects. Column (2) uses the Arkansas–Texas border sample and includes district and border-pair-by-year fixed effects. Standard errors are clustered at the state-by-year level in column (1) and at the pair-by-year level in column (2). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 3: Effect of the teacher compensation reforms on teacher hiring

| | Teacher Count | Teacher Count |
|---|---|---|
| | (1) | (2) |
| Treat | -5.351 | 3.242 |
| | (3.084) | (3.010) |
| Homeless (%) | 0.030 | 0.641 |
| | (0.049) | (0.618) |
| Graduation Rate (%) | -0.022*** | 0.679 |
| | (0.007) | (0.817) |
| Total Enrollment | 0.009*** | 0.007 |
| | (0.002) | (0.007) |
| In-School Suspension (%) | 0.015** | -0.308*** |
| | (0.007) | (0.101) |
| White Enrollment (%) | -0.002 | 0.270 |
| | (0.002) | (0.416) |
| Constant | 15.882 | -2.969 |
| | (10.285) | (33.512) |
| Mean Dependent Variable | | |
| District FE | Yes | Yes |
| Year FE | Yes | – |
| Border-Pair $\times$ Year FE | – | Yes |
| Observations | 11,590 | 156 |
| R-squared | 0.961 | 0.977 |
| Number of Clusters | 16 | 78 |

*Notes:* The dependent variable is the number of new teachers hired at the district-year level. Column (1) includes district and year fixed effects. Column (2) includes district and border-pair-by-year fixed effects. Standard errors are clustered at the state-by-year level in column (1) and at the pair-by-year level in column (2). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 4: Effect of the LEARNS Act on Teacher Attrition

| | Attrition Rate | |
|---|---|---|
| | (1) | (2) |
| Treat | 0.0250 | 0.0465* |
| | (0.0340) | (0.0274) |
| Homeless (%) | 0.0007 | 0.0230*** |
| | (0.0004) | (0.0058) |
| Graduation Rate (%) | 0.0003 | 0.0039 |
| | (0.0002) | (0.0101) |
| Total Enrollment | -0.0000012* | 0.000035 |
| | (0.0000007) | (0.000061) |
| In-School Suspension (%) | -0.0001 | -0.0016* |
| | (0.0001) | (0.0009) |
| White Enrollment (%) | -0.00002 | -0.0057 |
| | (0.00011) | (0.0041) |
| Constant | 0.2241*** | 0.4239 |
| | (0.0051) | (0.3125) |
| District FE | Yes | Yes |
| Year FE | Yes | – |
| Border-Pair × Year FE | – | Yes |
| Observations | 11,545 | 156 |
| R-squared | 0.543 | 0.755 |
| Number of Clusters | 16 | 78 |

*Notes:* The dependent variable is the teacher attrition rate at the district-year level. Column (1) uses the full sample and includes district and year fixed effects. Column (2) uses the Arkansas–Texas border sample and includes district and border-pair-by-year fixed effects. Standard errors, reported in parentheses, are clustered at the state-by-year level in column (1) and at the pair-by-year level in column (2). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 5: Effect of the LEARNS Act on Number of Teacher Separations

| | Number of Teacher Separations | |
|---|---|---|
| | (1) | (2) |
| Treat | -7.917** | 7.665 |
| | (2.823) | (6.648) |
| Homeless (%) | 0.201** | 2.003* |
| | (0.077) | (1.089) |
| Graduation Rate (%) | -0.012 | 0.063 |
| | (0.011) | (1.739) |
| Total Enrollment | 0.005 | 0.012 |
| | (0.004) | (0.014) |
| In-School Suspension (%) | 0.008 | -0.626*** |
| | (0.012) | (0.218) |
| White Enrollment (%) | -0.027 | -0.137 |
| | (0.025) | (0.764) |
| Constant | 33.190* | 21.439 |
| | (16.107) | (65.821) |
| District FE | Yes | Yes |
| Year FE | Yes | – |
| Border-Pair × Year FE | – | Yes |
| Observations | 11,545 | 156 |
| R-squared | 0.957 | 0.907 |
| Number of Pairs | – | 11 |
| Number of Clusters | 16 | 78 |

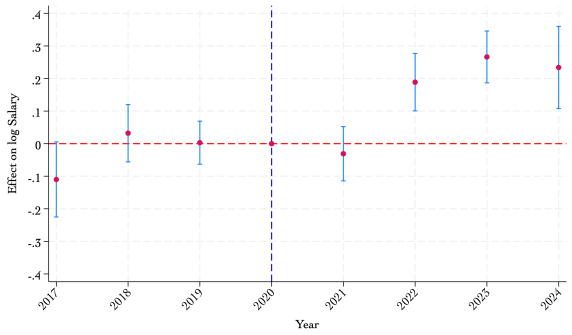
*Notes:* The dependent variable is the number of teacher separations at the district-year level. Column (1) uses the full sample and includes district and year fixed effects. Column (2) uses the Arkansas–Texas border sample and includes district fixed effects and border-pair-by-year fixed effects. Standard errors, reported in parentheses, are clustered at the state-by-year level in column (1) and at the pair-by-year level in column (2). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 6: Effect of the LEARNS Act on White Teacher Share

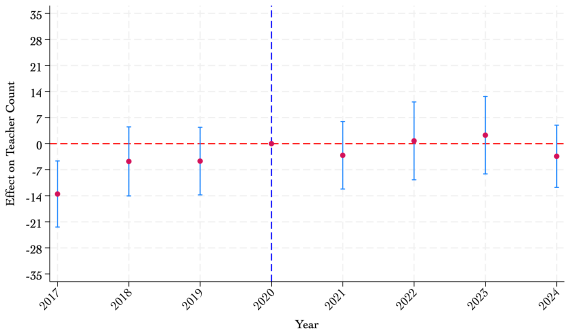
| | All districts | Border districts |
|---|---|---|
| | (1) | (2) |
| Treat | -0.0047 | 0.030*** |
| | (0.0046) | (0.010) |
| Homeless (%) | 0.0001 | 0.0015 |
| | (0.0002) | (0.0029) |
| Graduation Rate (%) | -0.0002** | -0.0008 |
| | (0.0001) | (0.0034) |
| Total Enrollment | -0.0000016*** | 0.000028 |
| | (0.0000002) | (0.000029) |
| In-School Suspension (%) | 0.0002*** | -0.00001 |
| | (0.00005) | (0.00038) |
| White Enrollment (%) | 0.00003 | 0.0013 |
| | (0.00004) | (0.0017) |
| Constant | 0.753*** | 0.746*** |
| | (0.002) | (0.114) |
| District FE | Yes | Yes |
| Year FE | Yes | – |
| Border-Pair $\times$ Year FE | – | Yes |
| Observations | 11,582 | 156 |
| R-squared | 0.974 | 0.977 |
| Number of Clusters | 16 | 78 |

*Notes:* The dependent variable is the share of all teachers who are White at the district-year level. Column (1) includes district and year fixed effects. Column (2) includes district and border-pair-by-year fixed effects. Standard errors are clustered at the state-by-year level in column (1) and at the pair-by-year level in column (2). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

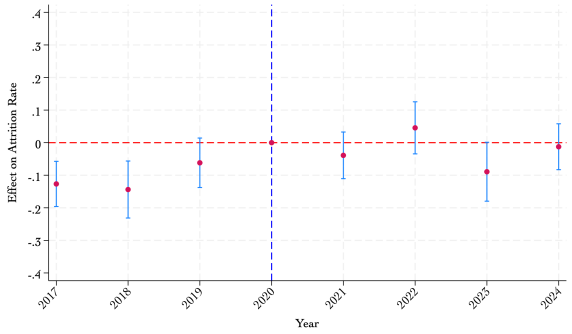
Figure 5: Event Study Graphs



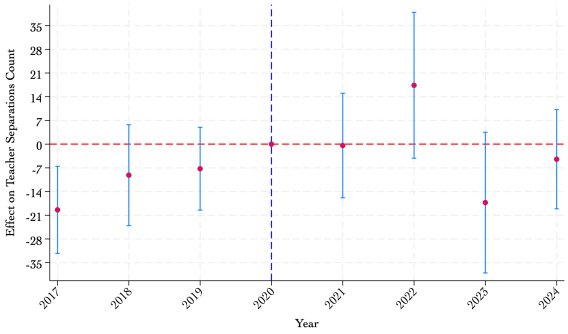

(a) Teacher Salary (log)



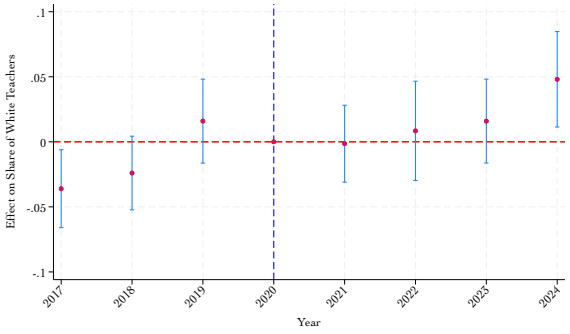

(b) New Teacher Count




(c) Teacher Attrition Rate




(d) Teacher Separations (Leavers)




(e) Share of White Teachers

# 6 Alternative specification: Synthetic difference-in-difference

The event-study results presented in Figure 5 suggest that pre-treatment trends are not consistently parallel across outcomes, raising concerns about the parallel-trends assumption underlying the conventional difference-in-differences approach. To address these concerns, we additionally employ a synthetic difference-in-differences (SDID) estimator, which assigns weights to comparison districts and pre-treatment periods to improve the alignment of outcome trajectories before the reform. The results for the border-district sample are presented in Table A.1. Consistent with the conventional DiD estimates, we find a positive and statistically significant effect on teacher salaries, with a coefficient of 0.217 log points compared with 0.174 under DiD. The estimated effect on teacher attrition is also positive and statistically significant, increasing from 0.0465 under DiD, significant at the 10 percent level, to 0.069 under SDID, significant at the 5 percent level. For new teacher hiring, the SDID estimate is negative (-7.182), compared with a positive coefficient of 3.242 under DiD, although neither estimate is statistically significant. Similarly, teacher separations remain statistically insignificant under both estimators, with coefficients of 4.760 and 7.665 under SDID and DiD, respectively. Finally, the estimated effect on the share of White teachers is similar in magnitude across the two approaches (0.035 under SDID and 0.030 under DiD), but it is statistically significant only under the conventional DiD specification. Overall, the SDID results are consistent with the positive effects on teacher salaries found under conventional DiD, while providing less consistent evidence of changes in teacher hiring, separations, and racial composition.

# 7 Conclusion

Teacher salary has historically been constrained by rigid salary schedules that decouple pay from individual productivity and local labor market conditions. The less competitive salary schedule has been one of the contributing factors to persistent teacher shortages and contractions. To what extent does raising teacher salary attract and keep new teachers? Evaluating the causal impact of teacher compensation has long presented an empirical challenge due to the lack of exogenous local wage variation within these traditional frameworks. This paper addresses this gap by exploiting plausibly exogenous policy shifts in Arkansas beginning in the 2019–2020 school year. By implementing a spatial border discontinuity design combined with a difference-in-differences framework along the Arkansas–Texas border, we mitigate local heterogeneous Covid impacts and isolate the local labor market effects of a targeted starting salary floor.

Given a brief post-treatment window, our empirical analysis documents a robust first-stage effect, demonstrating that the Arkansas initiative increased teacher compensation significantly. However, short-run findings regarding new hires, teacher attrition and separations remain less conclusive. As labor market dynamics evolve past the initial policy window, future research will be essential to track whether these wage increases yield longer-run adjustments in teacher retention and pipeline stability.

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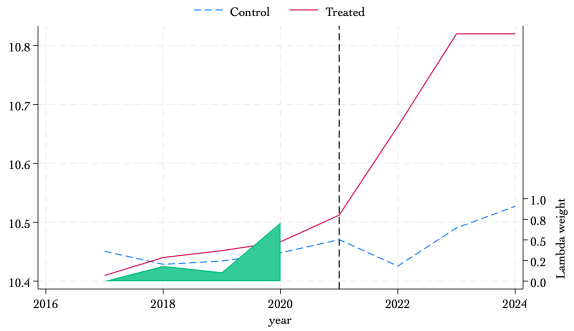
# A Appendix

Table A.1: Effect of Salary Increase: Synthetic Difference-in-Differences Estimator

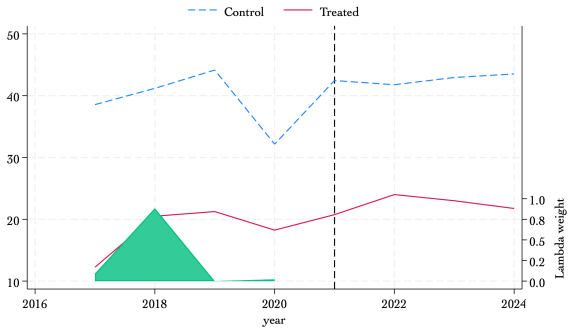
| | Border districts |
|---|---|
| Log Salary | 0.217*** |
| | (0.083) |
| New Teachers | -7.182 |
| | (5.040) |
| White Teacher Share | 0.035 |
| | (0.032) |
| Attrition Rate | 0.069** |
| | (0.029) |
| Teacher Separations | 4.760 |
| | (5.092) |
| District-level covariates | Yes |

*Notes:* The table reports synthetic difference-in-differences estimates for the Arkansas–Texas border-district sample. All specifications include the percentage of homeless students, graduation rate, total enrollment, in-school suspension rate, and White student enrollment as covariates. Standard errors are obtained using 50 placebo replications with seed 1213. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

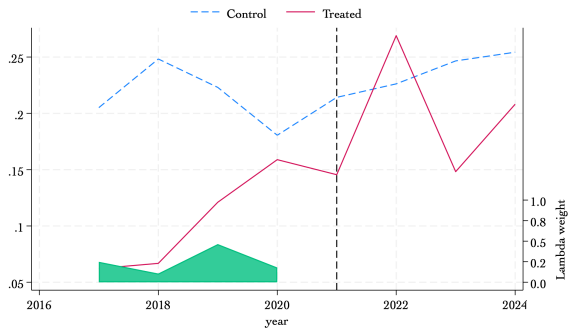
Figure A.1: Effect of salary increase: Synthetic Difference-in-Differences Estimates



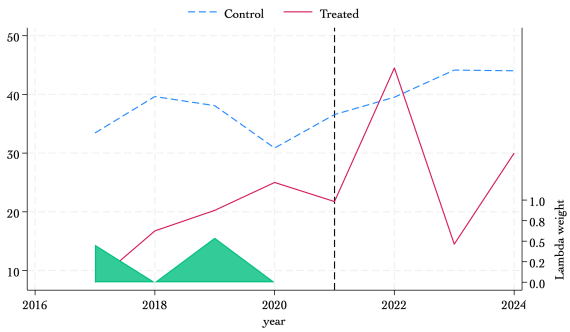

(a) Teacher Salary



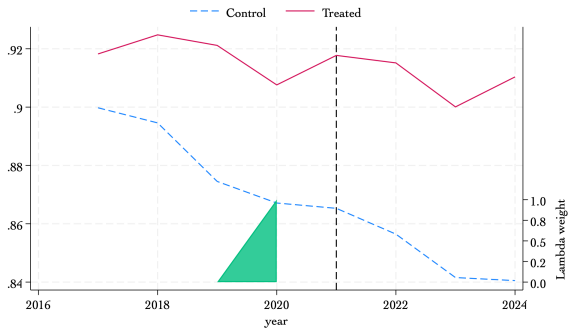

(b) New Teacher Hires




(c) Teacher Attrition




(d) Teacher Separations




(e) White Teacher Share