Layered Reforms and the Structure of Teacher Pay: Descriptive Evidence from Maryland

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Abstract

States increasingly reform teacher compensation through bundles that layer across-the-board raises, credential- and role-based bonuses, and salary floors. Yet research evaluates such reforms in isolation, focusing on pay levels rather than structure. We develop a framework classifying reforms by how they act on the sources of salary variation—rescaling, introducing, or compressing variation—and apply it to Maryland's Blueprint, which enacted all three types between 2022 and 2026. Drawing on a 19-year statewide panel, we find the reforms rescaled rather than restructured pay: traditional drivers (e.g., experience, degrees) still dominate, premiums along them grew, and the $60,000 salary floor produced no detectable compression. Value-added models show reform dollars flowed partly to credentials unrelated to student achievement (e.g., master's degrees).

1. Introduction

Teacher compensation sits at the center of state education policy, and for good reason. Salaries and fringe benefits account for over 75% of public-school expenditures (NCES, 2024), and pay is among the most studied inputs in the education production function (Hanushek & Rivkin, 2007; Loeb & Page, 2000). How that money should be allocated across teachers, however, remains contested. Earlier reforms aimed to tie pay to measured effectiveness, but with mixed results and substantial political and implementation challenges (Bleiberg et al., 2025; Dee & Wyckoff, 2015; Pham et al., 2021). More recently, states have pivoted toward broader strategies: raising minimum teacher salaries, funding across-the-board raises, and building career ladders that reward credentials and leadership roles. Legislatures introduced 59 such bills in 2024 and 72 in 2026 (Moon, 2026; Thymianos & DiMarco, 2024).

A defining feature of this new generation of reform has gone largely unexamined. These policies increasingly arrive not one at a time, but bundled. States now legislate compensation packages that combine elements drawn from different eras of reform—percentage raises, credential and leadership bonuses, and salary floors—within a single statute, implemented on overlapping timelines. The empirical literature, though, evaluates compensation reforms largely in isolation and focuses primarily on levels of pay and their average effects on retention or achievement (Dee & Wyckoff, 2015; Springer et al., 2016; Zamarro et al., 2026). What bundled reforms alter, however, is not simply how much teachers earn, but the distribution of salaries and the sources of variation within it (Hanushek & Rivkin, 2007; Podgursky & Springer, 2011).

This paper develops a framework for understanding how layered compensation reforms reshape the structure of teacher pay, and applies it to one of the most comprehensive bundles enacted to date: the teacher compensation provisions of the Blueprint for Maryland's Future (H.B. 1300, 2021). The framework classifies reforms by whether they rescale, introduce, or

compress variation in pay. Variation-rescaling reforms apply multipliers to existing criteria, preserving relative rankings while widening absolute gaps. Variation-introducing reforms add new criteria to what pay rewards. Variation-compressing reforms truncate differences from below. Because the three types push the salary distribution in different directions, the framework provides insight not only about each reform in isolation but about their joint effect when layered—including the possibility that one reform neutralizes another. The framework also carries an evaluative dimension: whether the sources of variation a reform amplifies or suppresses are aligned with the characteristics that predict teacher effectiveness and student outcomes.

The Maryland Blueprint offers an unusually clean setting for this exercise because a single statute enacted all three reform types, phased in between 2022 and 2026: mandated raises of at least 10% relative to 2019-20 salaries for all teachers (variation-rescaling); career-ladder bonuses of $5,000 to $17,000 tied to National Board Certification (NBC) alongside teacher-leadership roles (variation-introducing); and a statewide minimum salary of $60,000 (potentially variation-compressing). We track the reforms' unfolding in a 19-year statewide administrative panel covering all full-time public school teachers from 2007-08 through 2025-26, providing a long pre-reform baseline and extending through the year in which all three waves had been at least partially implemented.

Across these analyses, a consistent portrait emerges. The Blueprint rescaled the structure of teacher pay without restructuring it. The traditional drivers—experience, degrees, and district—dominate salary variation as thoroughly in 2026 as in 2008, even as the dollar premiums attached to each grew substantially. The variation-introducing career ladder registers only a small, though growing, footprint. And, contrary to evidence from Arkansas (Zamarro et

al., 2026), the salary floor produced no detectable compression, plausibly because the concurrent across-the-board raises lifted salaries in many districts above the floor before it took effect. Finally, our value-added estimates reveal an asymmetry. Experience, the one factor robustly associated with student achievement, saw its premium grow only as a byproduct of the raises, while NBC, the credential the Blueprint rewards explicitly, shows at best small positive associations with achievement, consistent with prior work (Cantrell et al., 2008; Cowan & Goldhaber, 2016; Goldhaber & Anthony, 2007).

Together, the paper makes three contributions. Conceptually, the typology of variation-rescaling, -introducing, and -compressing reforms offers a lens for anticipating tensions in other states' compensation packages before they are enacted or implemented. Empirically, we revive a long-standing literature on the sources of variation in teacher pay (Hanushek & Rivkin, 2007; Walden & Newmark, 1995; Walden & Sogutlu, 2001) and repurpose it as an evaluation tool for modern, layered reform. And for policy, Maryland's experience shows that the design of a minimum-salary reform—its size, phase-in, and the reforms bundled alongside it—may determine whether the compression documented elsewhere materializes.

2. A Framework for Layered Compensation Reforms

States rarely write compensation policy on a blank slate. New reforms act on an existing structure, which in most U.S. districts is the "step-and-lane" schedule that ties pay to years of teaching experience and degrees, negotiated locally and generating further differences across districts (Podgursky & Springer, 2011). To generate expectations for a bundled reform, we classify any compensation reform by how it operates on this structure. Each type—variation-rescaling, -introducing, and -compressing—descends from a distinct era of compensation policy, and each carries its own evidence base, which we review briefly here.

The step-and-lane baseline primarily rewards two factors with quite different evidentiary support. Teachers' effectiveness improves with experience, particularly in the first years in the classroom (Papay & Kraft, 2015; Rockoff, 2004), and annual experience steps can serve as retention incentives (Hendricks, 2015). Master's degree lanes, by contrast, reward a credential largely unrelated to teachers' effectiveness (Chingos & Peterson, 2011). Other credentials carry more signal. NBC teachers are modestly more effective than comparable non-certified peers, though certification appears to identify effective teachers rather than improve them (Cantrell et al., 2008; Cowan & Goldhaber, 2016; Goldhaber & Anthony, 2007).

Relative to this baseline, variation-*rescaling* reforms add no new criteria but instead rescale the existing criteria. Such reforms include across-the-board raises, often justified as keeping teacher salaries competitive and abreast of inflation (Allegretto & Mishel, 2018). This type of reform is rescaling because a percentage raise delivers its largest dollar gains to teachers highest on the schedule. Variation-*introducing* reforms, in contrast, do add new criteria, descending largely from the merit- and differentiated-pay era in which states and districts tied pay or bonuses to evaluation ratings (Dee & Wyckoff, 2015; McGuinn, 2012). Evidence from these reforms is mixed, suggesting modest improvements in retention and student outcomes in some contexts (Pham et al., 2021; Springer et al., 2016), with prominent successes such as Washington, DC often treated as outliers (Bleiberg et al., 2025). Though politically contentious and difficult to scale, these reforms left a legacy in the bonuses now attached to credentials and leadership roles, including the career-ladder payments Maryland mandates. Finally, variation-*compressing* reforms can truncate the salary distribution. The key example is minimum-salary laws. When Arkansas raised its floor to $50,000, most districts adjusted only as much as compliance required, raising pay for incoming teachers while mid-career teachers saw fewer

opportunities for raises (Zamarro et al., 2026). To our knowledge, Arkansas's is the only such reform studied to date, though similar reforms had been enacted in at least eight states by 2026 (Moon, 2026; Stanford, 2023; Thymianos & DiMarco, 2024).

Because all three types act simultaneously on the same underlying salary structure, expectations for a bundle differ from the sum of expectations for its parts. Some interactions are offsetting. A rescaling reform raises salaries at every step and lane, potentially lifting most teachers above a new floor and thereby muting compression. Others are reinforcing. Introducing and rescaling reforms both expand the spread of the distribution, compounding growth at the top. Which interactions dominate is an empirical question, and is the one our research design is built to observe.

Likewise, it remains an open question whether the variation that reforms amplify or suppress moves pay structures to be more aligned with characteristics predicting teacher effectiveness. The career ladder may move pay closer to teachers' contributions to student learning, but only if the credentials it rewards are themselves related to effectiveness. Across-the-board raises deliver their largest gains along dimensions weakly related to effectiveness, such as master's degrees and late-career experience. And a salary floor may attract prospective entrants while weakening incentives tied to career progression or hard-to-staff positions.

3. Policy Context, Expectations, and Research Questions

The Blueprint for Maryland's Future provides an opportunity to study a multi-pronged reform that unfolded across three waves, from summer 2022 to summer 2026. The first wave of salary reforms under the Blueprint required that, starting right after legislation passage and by summer 2024, all school districts implement *across-the-board salary increases* of at least 10% relative to their 2019-20 levels. The across-the-board raises are a variation-rescaling reform. Because a percentage increase delivers larger absolute gains to teachers further along the existing

salary schedule, we expect them to widen dollar gaps along existing dimensions—particularly experience and degrees—without introducing new sources of variation or altering the relative importance of existing ones.

Simultaneously, districts were required to implement *career ladder reforms*, which create a structure for professional development and advancement directly tied to additional teacher compensation. Specifically, by summer 2022, school districts were required to implement salary bonuses of $10,000 for NBC teachers, with NBC teachers employed in state-identified low-performing schools receiving an additional $7,000. By summer 2024, districts were further required to implement bonuses ranging from $5,000 to $15,000 for teachers assuming additional responsibilities through teacher leadership positions. Districts had discretion in defining their career ladders (except NBC), but all reward teachers who take on advanced responsibilities. Within our framework, the career ladder is the Blueprint's variation-introducing reform. It operates outside the traditional experience-degree-district structure, though with a modest overall footprint so long as NBC teachers and teacher-leaders remain a small share of the workforce.

The third Blueprint compensation reform is the establishment of a $60,000 *statewide minimum teacher salary*, which took effect in summer 2026. The minimum salary has the potential to be a variation-compressing reform. Based on the Arkansas experience (Zamarro et al., 2026), we expect it to compress pay among less experienced teachers and in traditionally lower-paying districts. Because these state reforms are unfunded, districts have an incentive to make only the changes compliance requires, raising steps below the threshold to the minimum; lower-paying districts have more such steps to raise. At the same time, Maryland's implementation context is distinct from Arkansas in ways that could mute the compression effects. Specifically, the floor phased in over four years rather than in a single summer, it arrived

bundled with a rescaling reform that raised salaries at every step, and districts retained flexibility to set starting pay above the floor.

Taken together, the framework predicts that the Blueprint's three components push the salary distribution in different directions. Because all three act at once on the same underlying structure, these predictions are not separable; one reform's compression can be offset by another's expansion. Therefore, our research questions are designed to observe the joint outcome: the distribution itself, the relative importance of each source of variation beneath it, the dollar premiums attached to each factor, and the alignment of those factors with student learning. We ask:

1. How has the distribution of teacher salaries in Maryland changed throughout the implementation of the Blueprint?
2. How has the relative importance of different sources of variation in teacher salaries changed over this same period?
3. How have the premiums associated with the drivers of teacher pay changed since the implementation of the Blueprint?
4. Are the drivers of differences in teacher salaries related to improvements in student test scores?

4. Methods

4.1 Data

We analyze administrative records on all full-time teachers employed in Maryland public schools from the 2007-08 through the 2025-26 school years, drawn from the Maryland Longitudinal Data System (MLDS). These annual, person-level records include teacher salary as well as the common determinants of teacher pay: years of experience, educational credentials, certification type (e.g., Standard Professional, Conditional), NBC status, and employing district.

Our analytic sample consists of all teachers of record in Maryland public schools in a given year, yielding 1,093,929 teacher-year observations across the 19-year panel.

Three features of these data warrant explanation. First, while our data include each teacher's certification type, the collection of this information for new teachers is lagged and updated over time, resulting in a higher rate of missingness in the most recent school years. Results relying on certification data should thus be interpreted with caution in the final two years. Second, NBC status was not systematically collected by the state prior to 2022-23, when the Blueprint's career ladder provisions made it directly consequential for compensation. To identify NBC status in earlier years, we use each teacher's certification date to backfill active NBC status retroactively. This date may reflect either a teacher's first certification or a subsequent renewal. Because certificates must be renewed every 10 years (or 5 years as of 2023), our data can identify NBC teachers as early as 2013-14. However, we are not able to identify NBC-certified teachers if they left the administrative records prior to 2022-23. In total, we observe approximately 3,050 teachers with NBC in our data, with certification accelerating sharply after the Blueprint's bonuses took effect. Finally, our data do not separately identify lead, distinguished, and professor distinguished teachers as outlined under the career ladder reforms. We therefore focus our analysis of the career ladder on NBC.

4.2 Descriptive Trends

We begin our analyses by examining trends over time in teacher salaries. We adjust salary figures to constant 2007-08 dollars using the Consumer Price Index (CPI) and present both real and nominal salaries throughout. Nominal figures show whether the reforms delivered the promised raises; real figures show whether those raises increased purchasing power. Our descriptive analyses further summarize distributional changes using the 5th and 75th percentiles,

which are less sensitive to outliers than the observed minimum and maximum. The 5th percentile tracks closely with the salary for first-year teachers, and is therefore where the Blueprint's minimum salary provision should be observed most directly. The 75th percentile approximates a teacher with roughly ten years of experience.

4.3 Variance Decomposition

Beyond these distributional summaries, we conduct a series of variance decompositions to identify the factors that account for observed differences in teacher compensation. We decompose nominal teacher salaries separately for each year. We begin by including the three characteristics that define the traditional step-and-lane salary structure—years of teaching experience, educational attainment, and employing district—and add to this baseline two additional factors: certification type and NBC status.

Because these factors are correlated, sequential decompositions depend on the arbitrary order in which they are entered (Fortin et al., 2011; Shorrocks, 2013). We instead employ Shapley value decomposition, which attributes the variance explained by each factor based on its average marginal R^2 contribution across all possible orderings of the covariate set, yielding a decomposition that is order-invariant (Israeli, 2007; Shapley, 1953; Shorrocks, 2013).

A further challenge is distinguishing changes in the salary structure itself from changes in the composition of the teacher workforce. To address this, we reweight our sample using inverse probability weighting, based on the joint distribution of experience, degree attainment, and certificate type, so that the workforce composition in each school year resembles the pooled composition across all years in our sample.

4.4 Changes in Salary Premium

To estimate how the returns to an additional year of experience and to holding a master's degree have changed over time, we estimate the following model separately for each school year:

$$Y_{id} = \beta_t Exp_{id} + \gamma_t Masters_{id} + \mu_d + \varepsilon_{id} \qquad (1)$$

where Y_{id} is the salary of teacher i in district d; Exp_{id} is the teacher's years of teaching experience; $Masters_{id}$ is an indicator for holding a master's degree or higher; and μ_d is a vector of district fixed effects. District fixed effects ensure that estimated premiums reflect how teachers are compensated for experience and credentials within districts, rather than differences driven by the sorting of more experienced or more credentialed teachers into higher-paying districts. The coefficients of interest are β_t and γ_t, the experience and master's degree premiums in year t. We plot these premiums relative to their 2020-21 values, the school year the Blueprint was enacted.

We also estimate how district premiums (i.e., working in higher versus lower paying districts pre-Blueprint) have changed over time. To separate district premiums from differences in the experience and education of districts' teachers, we re-estimate Equation 1, above, excluding district fixed effects. From this model we recover the mean residual for each district and year $\overline{\varepsilon}_{idt}$, which represents the average salary paid in each district net of differences in teacher experience and education. We then place districts into terciles based on their average salary, net of experience and master's degree premiums, in 2020-21: $\overline{\varepsilon}_{id2021}$. We hold these tercile rankings fixed across our analysis. Finally, for each year, we estimate:

$$Y_{id} = \pi_t High_d + \rho_t Low_d + \varepsilon_{id} \qquad (2)$$

where $High_d$ and Low_d are indicators for districts in the top and bottom terciles of the 2020-21 residualized salary distribution, respectively, with middle-tercile districts serving as the omitted reference category. The coefficients π_t and ρ_t capture how the salary premium or

penalty associated with working in a high- or low-paying district has evolved relative to 2020-21. These estimates speak directly to whether the Blueprint has narrowed pay differences between districts across the state.

4.5 Value-Added to Student Achievement

Finally, to understand how the factors that determine teacher pay relate to student learning, we estimate a value-added model. Consistent with an extensive body of scholarship on estimating educators' impact on student learning (e.g., Bacher-Hicks & Koedel, 2023; Koedel et al., 2015), we estimate a model predicting students' end-of-year achievement on standardized tests as a function of teacher, student, and school characteristics:

$$A_{it} = \lambda NBC_{it} + \theta Masters_{it} + \phi Exp_{it} + \vartheta X_{it} + \alpha_i + \mu_s + \eta_g + \tau_t + \varepsilon_{it} \quad (3)$$

A_{it} is the test score of student i in year t, standardized within grade and year; NBC_{it} and $Masters_{it}$ are indicators for NBC status and master's degree, while Exp_{it} is a coarsened measure of teacher experience (1 to 4.9, 5 to 9.9, 10 to 14.9, and 15 or more years) that ensures that experience and school year are not perfectly collinear.

To limit bias due to nonrandom sorting of students to teachers, our preferred models include student, school, grade, and year fixed effects, α_i, μ_s, η_g, and τ_t respectively. This approach allows us to estimate how much an individual student's test score grew in years when they had teachers of different experience levels, or with versus without NBC or a master's degree. This approach is widely used in the literature on the test-score value-added of NBC, master's degrees, and teacher experience (e.g., Clotfelter et al., 2007; Harris & Sass, 2009; Papay & Kraft, 2015). The vector X_{it} includes additional controls for teacher covariates including race/ethnicity, sex, and certification type. In alternative specifications, we omit teacher covariates or replace student fixed effects with observable student characteristics, including

prior-year test scores (see Table 1 notes). We estimate the model separately for student math and ELA scores, and in both cases cluster standard errors at the teacher level.

5. Results

Teacher salaries have risen substantially in nominal terms, but real salaries have remained essentially flat. Figure 1, Panel A shows nominal salaries rising from roughly $60,000 in 2007-08 to $90,500 by 2025-26, with the post-Blueprint years—roughly one quarter of the panel—accounting for nearly 60% of the gains. In constant 2007-08 dollars, however, salaries were essentially flat through 2020-21, declined as pandemic-era inflation outpaced negotiated increases, and recovered thereafter. The Blueprint raises restored teachers' purchasing power to its pre-pandemic level, but not, through 2025-26, appreciably above where it stood at the beginning of our panel.

Our interest, however, is less in average salaries than in differences between them. Figure 1, Panel B tracks the 5th and 75th percentiles of the statewide distribution. The spread between them widened from about $29,000 in 2007-08 to roughly $47,000 in 2025-26, with the widening concentrated in the post-Blueprint years. This is the signature of the variation-rescaling raises, which deliver larger absolute gains to teachers further along the schedule. Compression from the $60,000 floor, by contrast, is nowhere visible. Rather than the bottom of the distribution bunching at the floor as in Arkansas (Zamarro et al., 2026), the 5th percentile reaches roughly $61,000 by 2025-26, just above the mandate, while the upper portion of the distribution continues to rise.

Figure 2 examines whether the reforms changed the relative importance of the factors that determine pay. They largely did not. In the baseline decomposition (Panel A), experience accounts for the largest share of salary variation in every year, nearly half, drifting down only modestly across 19 years with no visually discernible break at any Blueprint implementation

date. The next largest share of variation comes from degrees (15 to 20%) and district (10 to 14%), with roughly a fifth of variation unexplained. Reweighting to hold workforce composition constant across years (Panel B) shifts the shares modestly but leaves the essential finding unchanged. Because the weights use certification type, estimates for 2025 and 2026 inherit the missingness described in the data section. Adding certification type (Panel C) reallocates roughly 20% of explained variation away from experience and education—with which it is strongly correlated—while reducing the residual only modestly, indicating that it captures little variation not already explained by other factors. Adding NBC status (Panel D) accounts for less than 1% of salary variation before 2023 but rises quickly thereafter, from 1.3% in 2023 to 2.4% in 2025 and 4.1% in 2026. This is one of the few components of the decomposition to move at all, consistent with the framework's prediction for the career ladder.

Variance shares say nothing about what teachers are actually paid for a characteristic, so Figure 3 plots year-specific dollar premiums relative to 2020-21. Both traditional premiums grew steadily and significantly over the implementation period. By 2025-26, an additional year of experience paid approximately $240 more than at the Blueprint's passage (Panel A), and a master's degree roughly $3,500 more (Panel B). Both patterns follow from the variation-rescaling raises and reconcile Figures 2 and 3: variance shares held steady while dollar returns grew because a decomposition of relative shares is, by construction, insensitive to rescaling.

Pay differences across districts also widened rather than narrowed. Figure 3, Panels C and D present the premium (penalty) associated with working in a top- (bottom-) tercile district, net of workforce experience and education. Flat through 2022-23, the two series then diverge to roughly plus and minus $4,000 by 2025-26; confidence intervals are wide and include zero throughout, reflecting variation in how districts responded. The direction is nonetheless the

opposite of what compression would produce. Districts paying more before the Blueprint have continued to pay above the statewide minimum, and the floor has functioned less as a leveling mechanism than as a baseline from which existing district differences persist.

Finally, we ask how the drivers of salary differences relate to student learning, measured by end-of-year test scores. In our value-added models (Table 1), experience predicts achievement gains; credentials largely do not. The experience gradient is clear and monotonic in both subjects, rising from 0.038 standard deviations (SD) in mathematics for teachers with one to five years of experience, relative to first-year teachers, to 0.061 SD for those with fifteen or more years. Consistent with prior work (Papay & Kraft, 2015; Rockoff, 2004), the returns are steepest early in the career.

Credentials tell a different story. The master's degree coefficient is near zero in mathematics and small in ELA. NBC point estimates are positive but small and imprecise, and not statistically significant in either subject. In alternative specifications that remove observable teacher characteristics or replace student fixed effects with observable student characteristics, including prior-year test scores, magnitudes are qualitatively similar, though precision differs. For math, the model that controls for observable rather than fixed differences between students documents a positive and statistically significant association for NBC status of 0.03 SD. Appendix Table A1 goes one step further with the NBC analyses, replicating prior work showing that NBC teachers, on average, were more effective prior to being certified (Goldhaber & Anthony, 2007; Harris & Sass, 2009). In both subjects, effectiveness does not appear to increase after certification. In math, future NBC teachers outperformed their peers by roughly 0.03 to 0.04 SD before certification and about 0.02 SD after, while ELA differences remain small throughout.

6. Discussion

The Blueprint for Maryland's Future represents one of the most substantial reforms to teacher compensation in the state's history, and its design is increasingly typical: a single statute layering reforms from different eras with potentially competing implications for how pay varies. Our central finding is that the bundle rescaled the structure of teacher pay without restructuring it. Salaries rose considerably, but the factors that determine them, and their relative importance, remain essentially unchanged—an outcome that reflects how the three reforms interacted, not any one alone.

The framework's predictions for the rescaling and introducing reforms are largely borne out. The across-the-board raises widened the gap between the 5th and 75th percentiles and increased the dollar premiums for experience and master's degrees while leaving their variance shares intact, amplifying the step-and-lane factors that have long defined teacher pay (Podgursky & Springer, 2011). The career ladder introduced a new source of variation, though NBC so far accounts for only a small share of salary differences, roughly 1% to 4%. That share will likely grow as certification accelerates.

The prediction for the salary floor, by contrast, is not borne out. Unlike in Arkansas (Zamarro et al., 2026), the bottom of Maryland's distribution did not bunch at the floor, and pay in high- and low-paying districts moved apart rather than together, though these estimates are imprecise. Two design features plausibly explain the difference. First, the floor phased in over four years, giving districts room to raise salaries gradually rather than only as much as compliance required. Second, the rescaling raises lifted salaries at every step and lane, so that by 2025-26 the 5th percentile already sat just above $60,000. In other words, the rescaling reform absorbed the compressing one. Whether a floor compresses pay thus depends on its size relative to the existing

schedule, its phase-in, and the reforms bundled with it. A floor enacted alone, or set well above prevailing starting salaries, would more likely resemble Arkansas than Maryland.

Read against prior literature, this interaction was favorable. The concern motivating the compression prediction was that a floor might erode the differentials districts use to staff higher-cost or harder-to-staff settings (Clotfelter et al., 2008; Hanushek et al., 2004) and flatten the experience gradient (Hendricks, 2015). Neither has occurred. Gains in pay levels were more modest than nominal figures suggest, however. The raises restored purchasing power lost to pandemic-era inflation but did not lift it appreciably above its 2007-08 level, which may limit gains in teaching's competitiveness with other occupations (Allegretto & Mishel, 2018; Hendricks, 2014).

The framework's evaluative dimension yields a less favorable picture. Because rescaling reforms add no new criteria, they amplify whatever the existing schedule rewards, whether or not it is aligned with student learning—a long-standing critique of step-and-lane pay (Hanushek & Rivkin, 2007; Podgursky & Springer, 2011). Experience, the factor most robustly associated with achievement here and elsewhere (Papay & Kraft, 2015; Rockoff, 2004), saw its premium grow only as a byproduct of the raises, and percentage raises direct their largest dollar gains to late-career steps, where returns to experience are flattest. Hendricks (2015) suggests that schedules rising with experience at a diminishing rate could raise achievement at no added cost. Uniform raises, though, do not move schedules in that direction. Master's degree premiums also grew, despite our near-zero estimates predicting student achievement gains and a long literature finding little relationship between advanced degrees and effectiveness (Chingos & Peterson, 2011; Clotfelter et al., 2007; Harris & Sass, 2011; Roza & Miller, 2009).

The career ladder is the Blueprint's deliberate attempt to tie pay to a characteristic linked to effectiveness, and the evidence here is mixed. NBC is associated with higher achievement in some specifications, as in prior work (Cantrell et al., 2008; Cowan & Goldhaber, 2016), but the magnitudes are small relative to bonuses of $10,000 to $17,000. Consistent with earlier studies (Goldhaber & Anthony, 2007; Harris & Sass, 2009), our event-time estimates suggest that certification identifies teachers who were already more effective rather than making them more so (Appendix Table A1). The bonus may thus function more as a reward for effective teachers than as a lever for improvement, and a payout this large may change who pursues certification, and what it signals, over time. Credentials are a less contentious basis for differentiating pay than the evaluation ratings of the prior reform era (Dee & Wyckoff, 2015), but arguably a looser proxy for teachers' contributions to student learning.

Several caveats apply. Our analyses are descriptive. They document how the structure of pay changed, not the bundle's causal effects on recruitment, retention, or learning, and our value-added estimates for credentials are associations. Our data do not identify leadership roles, certification records are incomplete for recent entrants, and our panel ends as the floor's final deadline arrives. Later district responses, including any compression through subsequent bargaining, remain unobserved. Finally, aligning pay with effectiveness is one goal of the Blueprint, but not the only one. Raising pay overall and building career pathways are aims we do not evaluate.

More broadly, our results argue for a shift in how compensation reform is evaluated. As states legislate bundles rather than single policies, the relevant question is not only what each reform does on average, but how a package reshapes the structure of pay and whether the dimensions it amplifies matter for students. Maryland's experience offers two lessons for the many

states weighing similar legislation (Moon, 2026). First, reforms in a bundle can neutralize one another, so a component's effects cannot be read from its design alone. Second, rescaling is not restructuring. Across-the-board raises, however large, preserve the existing schedule's priorities, so states seeking closer alignment between pay and effectiveness will need to change what the schedule rewards, not only how much it pays.

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Tables and Figures

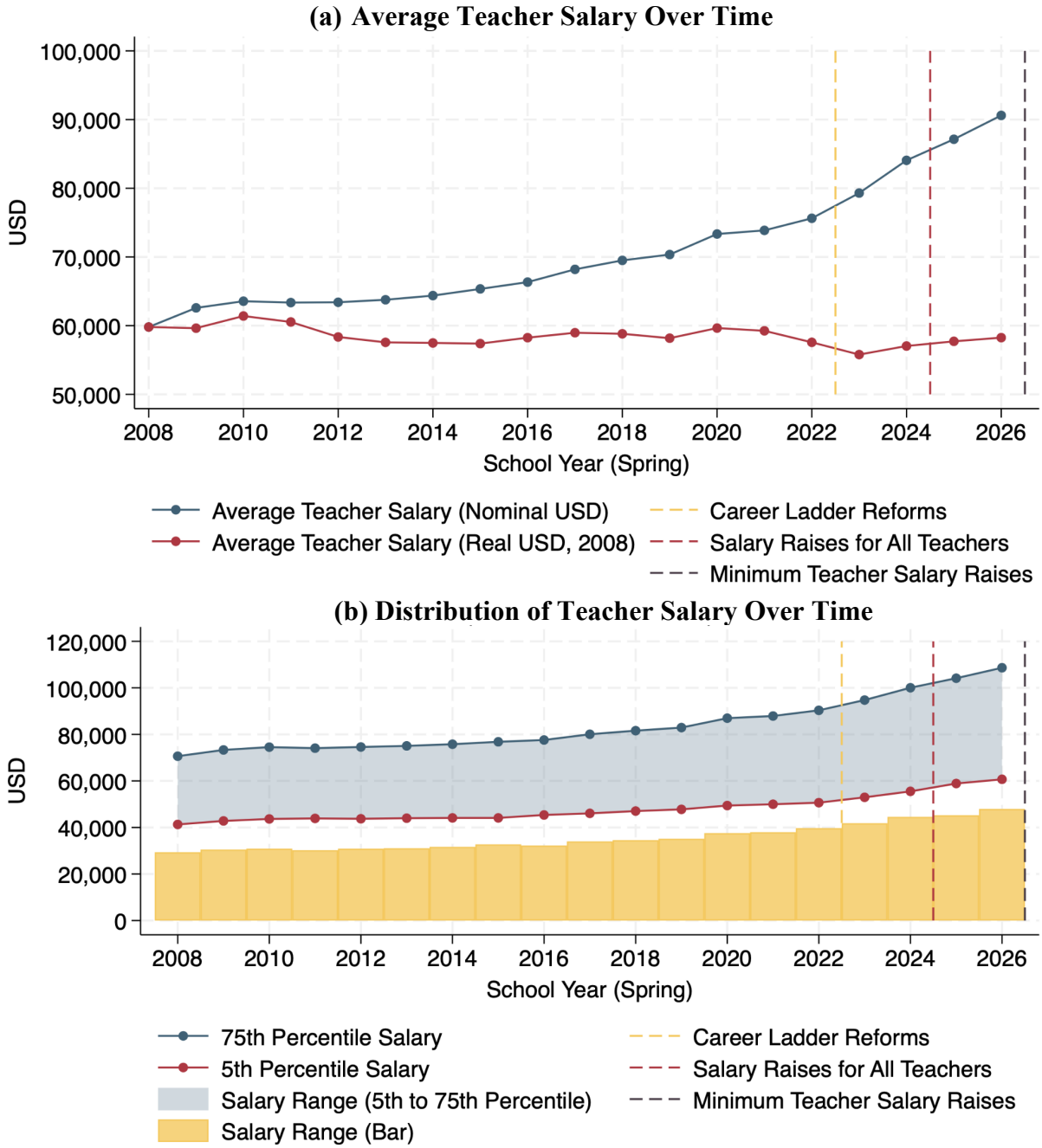
Table 1. Associations between Salary Determinants and Student Achievement in Math and ELA

Teacher credential	Math			ELA		
	(1)	(2)	(3)	(4)	(5)	(6)
NBC	0.018	0.020	0.033*	0.005	0.008	0.016
	(0.011)	(0.011)	(0.013)	(0.009)	(0.009)	(0.011)
Master's Degree	0.000	0.004	0.000	0.005*	0.009**	0.003
	(0.003)	(0.003)	(0.004)	(0.002)	(0.002)	(0.003)
Years of Experience:						
(1 - 4.9)	0.038**	0.043**	0.052**	0.028**	0.034**	0.022**
	(0.004)	(0.003)	(0.005)	(0.003)	(0.003)	(0.004)
(5 - 9.9)	0.045**	0.058**	0.060**	0.029**	0.048**	0.027**
	(0.005)	(0.004)	(0.006)	(0.004)	(0.003)	(0.005)
(10 - 14.9)	0.049**	0.062**	0.063**	0.035**	0.054**	0.034**
	(0.005)	(0.005)	(0.006)	(0.004)	(0.003)	(0.005)
(15+)	0.061**	0.074**	0.078**	0.039**	0.058**	0.037**
	(0.005)	(0.005)	(0.006)	(0.004)	(0.003)	(0.005)
Student FE	X	X		X	X	
Teacher Covariates	X		X	X		X
Student Covariates			X			X
N. of observations	3,576,297	3,576,297	2,890,458	3,013,923	3,013,923	2,485,995

Notes. NBC = National Board Certification. Estimates come from Equation 3, predicting end-of-year student achievement standardized within grade and year. Models are estimated separately for mathematics and English language arts and all include school, grade, and year fixed effects. Columns (1) and (4) include student fixed effects and teacher covariates (race/ethnicity, sex, and certification type); Columns (2) and (5) include student fixed effects only; and Columns (3) and (6) replace student fixed effects with observable student characteristics, including prior-year test scores, and include teacher covariates. The omitted category for experience is zero years (first-year teachers). Standard errors, clustered at the teacher level, are in parentheses. ** $p<0.01$ and * $p<0.05$.

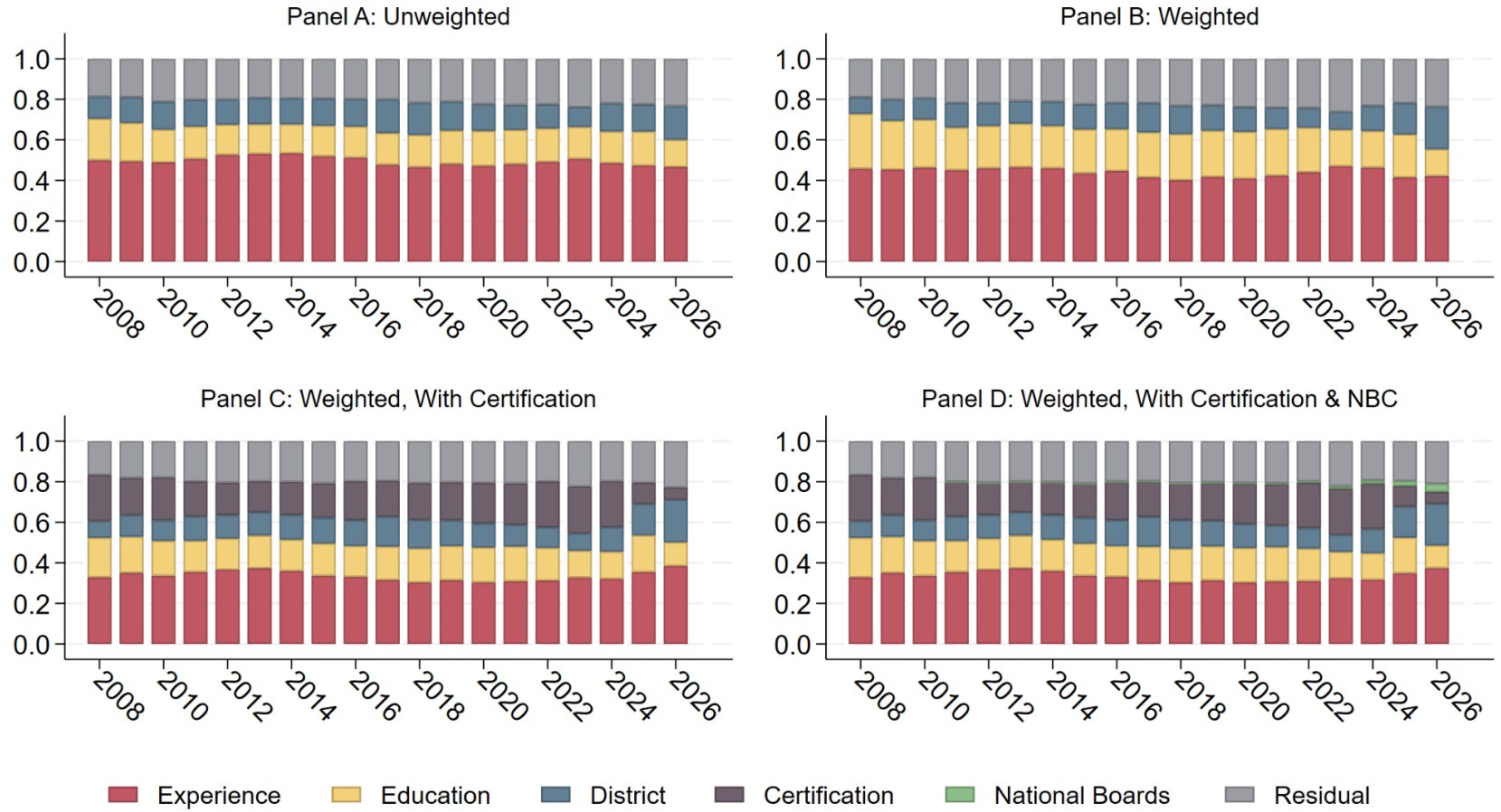
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Figure 1. Time Trends in Teacher Salaries



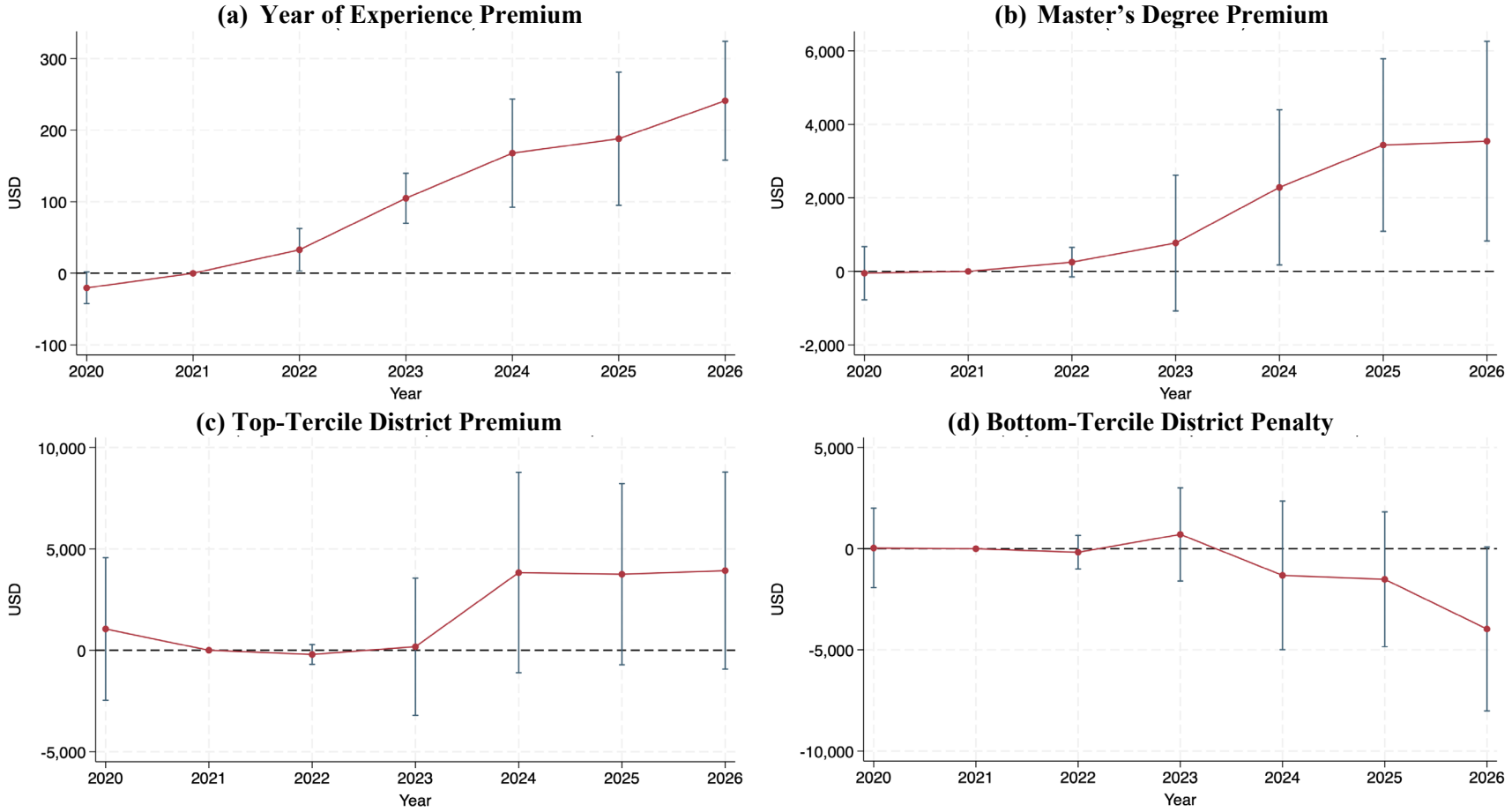
Notes. Data are person-level administrative records on all full-time teachers in Maryland public schools from the Maryland Longitudinal Data System (N = 1,093,929 teacher-year observations). Real salaries are adjusted to constant 2007-08 dollars using the Consumer Price Index. Vertical dashed lines mark the implementation dates of the three Blueprint compensation reforms: career ladder (summer 2022), across-the-board raises (summer 2024), and minimum salary (summer 2026). Panel B shows the 5th and 75th percentiles of the statewide nominal salary distribution; the shaded region and bars are the same size and represent the difference between these percentiles.

Figure 2. Variance Decomposition of Teacher Salaries



Notes. Bars show the share of variance in nominal teacher salaries attributable to each factor, estimated separately by year using Shapley value decomposition. Shares sum to one within each year; "residual" is variance not attributable to any observed factor. Panel A is unweighted. Panels B through D reweight the sample by the joint distribution of experience, degree attainment, and certification so that workforce composition in each year matches the pooled composition across all years. Panel C adds teacher certification type and Panel D adds National Board Certification status, backfilled to earlier years using teachers' certification dates. Certification records are incomplete for teachers entering in 2024-25 and 2025-26; estimates in Panels B through D for these years should be interpreted with caution.

Figure 3. Estimated Premium Associated with Different Salary Determinants



Notes. Each panel plots year-specific coefficients from models estimated separately by school year, expressed relative to their 2020-21 values, the year the Blueprint was enacted. Panels A and B come from Equation 1 and include district fixed effects, so premiums reflect within-district compensation for experience and master's degree attainment. Panels C and D come from Equation 2 and show the salary premium (penalty) for working in a top- and bottom-tercile district relative to middle-tercile districts, net of teacher experience and education. District terciles are based on average district salary residualized on experience and education in 2020-21 and are held fixed across years. Salaries are nominal. Vertical bars are 95% confidence intervals.

Appendix

Appendix Table A1. Time Series Analysis of Associations between National Board Certification and Student Achievement based on National Board Certification Date

Year to NBC:	Math	ELA
$t \leq -3$	0.027**	0.018**
	(0.008)	(0.006)
$t = -2$	0.037**	−0.002
	(0.013)	(0.011)
$t = -1$	0.028*	0.014
	(0.013)	(0.010)
$t = 0$ (Cert. Year)	0.015	0.013
	(0.014)	(0.013)
$t \geq 1$	0.021	0.003
	(0.013)	(0.011)
N. of observations	3,576,297	3,013,923

Notes. Estimates come from a variant of Equation 3 that replaces the National Board Certification indicator with indicators for a teacher's year relative to the year their national certification began, with $t = 0$ indicating the school year their certification began. The comparison group is teachers who do not earn National Board Certification during the sample period. Models are estimated separately for mathematics and English language arts using the full sample of teachers. Standard errors, clustered at the teacher level, are in parentheses. ** $p<0.01$ and * $p<0.05$.

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