Salary & Benefits Schedule and Teacher Tenure Study

Literature Review and Methods

Technical Addendum

December, 2015

Diane Hirshberg

Matthew Berman

Dayna Jean DeFeo

Alexandra Hill

UAA Center for Alaska Education Policy Research
University of Alaska Anchorage

Acknowledgements

This study would not have been possible without support from a broad array of individuals and organizations.

We would like to thank all of the individuals who completed the online survey instrument. Your candid responses and thoughtful feedback allowed us to contextualize not only the economic climate of compensation, but Alaska's needs and values.

We are grateful to all of the individuals and professional organizations who assisted us in communicating about the study and soliciting stakeholder participation, especially the Alaska Council of School Administrators, Alaska Association of School Boards, and NEA-Alaska. Your time and energies are most appreciated.

Thank you to all of the superintendents who participated in interviews. We know that your schedules are very busy, and we are grateful that you took the time to speak with us.

We also extend thanks to the school business officers, superintendents, and human resources staff members who responded to our data requests. These data informed both the district profiles and the economic analysis. We could not have compiled this information without your support.

We are grateful to the research staff in our office who worked with tremendous amounts of data over the past six months. You make our work possible, and we cannot overstate the value of your contributions to this project.

Finally, we extend our most sincere appreciation to all of the people who work every day to educate Alaska's children. This task is enormous and challenging, but essential to our state's future.

Funding

This project was conducted under contract to the Alaska Department of Administration, per Alaska State Statue Chapter No. 15, SLA 2014, known as House Bill 278 from the 28th Alaska Legislature, 2013-2014.

About CAEPR

The Center for Alaska Education Policy Research (CAEPR) is a non-partisan research organization within the Institute of Social and Economic Research (ISER) at the University of Alaska Anchorage (UAA).

More information about CAEPR can be found on our website:

http://www.iser.uaa.alaska.edu/CAEPR/

Executive summary

House Bill 278, passed by the legislature in spring 2014, instructed the Department of Administration to "present to the legislature a written proposal for a salary and benefits schedule for school districts, including an evaluation of, and recommendations for, teacher tenure" (Sec. 52). In order to meet this mandate, the Alaska Department of Administration contracted with the UAA Center for Alaska Education Policy Research (CAEPR) to develop:

1. Salary & benefits schedules for teachers and principals, including a review of current salary schedules, a profile of current benefits, geographic & job differentials, and identification of issues for consideration
2. Recommendations for teacher tenure, including a review of the current structure, a presentation of alternate models, and a review of the value of tenure to teachers as it affects the teacher labor market
3. District profiles, which will describe the complexity & diversity of district personnel, including the range of superintendent duties

The report is available on the CAEPR website (http://www.iser.uaa.alaska.edu/CAEPR/home/projects/hb278/hb278.php).

This document is a technical appendix that provides a more comprehensive literature review, detailed methods, and survey responses that informed the findings and recommendations reported in that document.

<u>Salary Schedule</u>

Our goal in this work was to propose an effective compensation system that would attract and retain quality teachers while not spending more than is needed to accomplish this. We also asked, what community differentials are appropriate to adequately compensate for differences in living costs and availability of amenities that matter to professional workers and their families?

- We don't recommend that a single teacher salary schedule be adopted by the state at this time. Salaries based on such a schedule, with appropriate community differentials, would cost more than current teacher compensation. We calculated differentials that range from 0.85 to 2.01. If our models were implemented statewide, salary costs would increase by approximately 15 percent across Alaska, while individual district salary cost changes would range from a 6% decrease to a 105% increase. Because these differentials would result in many salaries well outside the current range, we feel that while they accurately reflect teachers' preferences, we cannot be sure that implementing them would actually result in rural districts being able to attract and retain qualified teachers.

- We want to stress that the community differentials that we calculated are for the purpose of determining teacher salaries only. They are just a part of the geographic differential used to calculate state payments to districts. Most notably, energy costs are an important part of the Alaska Foundation Formula geographic differential, but not part of the differentials we calculated for teacher salaries.

- Based on our analysis of districts' historical ability to attract and retain highly qualified teachers, we have identified a salary schedule that should allow the Anchorage school district to do this, and we have also calculated community differentials that districts can apply to the salary schedule for teachers in other communities.

- If the legislature chooses to implement a single salary schedule for teachers, we can only recommend using a step-and-lane schedule. There is considerable interest in performance-based pay, but Alaska does not yet have sufficient data from the new teacher evaluation system to use that approach, nor has such a system been shown to work successfully in the Alaska context. We recommend further research around how to create an effective merit-based system, potentially including rigorous experimental designs that compare teaching effectiveness and learning outcomes for teachers working in different compensation models.

- Evidence to support a differential for math and science is weak. Using the turnover model, we did not find any meaningful difference between those positions and other teaching positions. At this time, we cannot recommend implementing a position differential for math or science. While we believe that a special education position differential might be useful in attracting and retaining special education teachers, we would need to collect additional data about teacher qualifications and create new models; the data and models we have at this time do not allow us to calculate a reliable amount.

- If the legislature wishes to pursue a statewide salary schedule, we recommend that draft schedules and cost differentials be shared with stakeholders, and that policy makers include their feedback on those drafts when creating a final proposal.

- Principal salaries are far more idiosyncratic than teacher pay, and because there are fewer than 500 principals statewide, the number of observations is too small to overcome these kinds of variations. When we sought to build and run models of principal compensation, we could not produce mathematically reliable results. Given this, it is not possible to recommend one compensation system for principals across the state that is based on evidence or data.

- Superintendent positions likewise are too few in number and vary too much in scope and responsibility to recommend a single salary schedule for these positions.

- In our statewide survey, teachers, principals, and parents favor what the current salary schedule rewards – experience and degrees. Additionally, their free responses noted that years of teaching overall – not just years accumulated in a particular district – should be considered in compensation. School business officers tended to favor quantitative metrics for output, including administrator evaluations and student growth. School board members' values bridged these two, favoring inclusion of both the current system components and output metrics. Superintendents valued multiple measures, supporting many factors including (in rank order): teaching in difficult-to-staff schools, teacher performance on administrator evaluations, teaching difficult-to-staff subjects, working with students who are low-performing, taking on additional duties or leadership roles at their schools, number of years teaching experience, growth in student learning, degrees or years of education, and teaching multiple subjects.

- When asked to rank their choices, all groups favored knowledge & skills-based pay as the first or second best structure. Step-and-lane was also ranked as most or second-most preferred by all groups except Superintendents and School Business Officers. Merit pay was ranked as least or second least preferred by all stakeholder groups except School Business Officers.

- The literature considers teacher compensation both as responsive to market demand and as a way to achieve intended performance outcomes. Though step-and-lane is the most common structure, a variety of other salary structures exist (e.g., merit pay or job enlargement) that incentivize different activities. Some of these have popular interest or support, but there are inadequate rigorous studies to definitively identify any model as superior in achieving student learning or teacher retention. Thus decisions about salary schedule structure remain, at present, largely political.

Teacher Tenure

The Department of Administration asked CAEPR to research stakeholder perceptions, tenure policy in other states, the extent to which tenure decisions are, will be, and should be based on teacher evaluation ratings and on student achievement measures; and to provide recommendations based on this research.

- The literature on teacher tenure notes that it has a significant and quantifiable monetary value. Teachers in Alaska value tenure highly. We estimate that increasing the probationary period before tenure is earned from three to five years would require teachers be paid about $16,000 more annually, and if there were no tenure salaries would need to increase on average $42,000, to keep districts' current ability to attract and retain teachers. In sum, if tenure policy became more restrictive, teacher salaries would need to increase.

- We do not recommend that the Alaska teacher tenure system be modified at this point, for the same reasons we do not recommend adopting a single salary schedule: cost and the need to understand and take advantage of the new teacher evaluation system. We recommend that the legislature re-evaluate tenure policy after districts have had at least two years to fully implement the new teacher evaluation systems and to determine how best to use student achievement data, especially that from the new Alaska Measures of Progress assessment, as part of measuring of teacher effectiveness.

- Studies of tenure note that few teachers are dismissed during the probationary period, and that the highest performing-teachers leave the teaching profession at the same rate as the lowest-performing teachers. This suggests that it may be more effective to focus efforts on retaining the best teachers, rather than dismissing low-performing ones.

- Different groups in Alaska have different perceptions about how tenure affects educational outcomes, what should influence tenure policy, and how tenure affects the state and the education system. However, it appears that many people do not fully understand what it is, how it works, or what it is intended to do. Even among those who work in K-12 schools (teachers, principals, superintendents, and school business officers), about 25% demonstrate fundamental misunderstandings of the tenure system.

- In general survey respondents feel that tenure retains teachers in the profession, allows teachers to disagree with administration, protects teachers' rights and protects academic freedom. There is less agreement around other benefits of tenure.

- About half of superintendents and school business officers supported eliminating tenure, but the other half were neural or opposed, so their interest in eliminating tenure is not strong. Principals' responses hovered around neutral. Parents, students, and community members and school board members fell between neutral and oppose, and teachers fell between oppose and strongly oppose.

District profiles

- In addition to salary, benefits are an aspect of teacher compensation that districts can use to make jobs more attractive. The only universal and uniform benefit is the retirement program, as it is set by the state. Other benefits vary by district. Health insurance and personal leave days are available in all districts, but teacher contribution towards healthcare packages and the number of leave days awarded vary considerably. Other benefits also vary significantly in their provision and extent, and include life insurance, travel support, moving allowances, housing, and tuition reimbursement.
- Superintendents are hired by, and serve at the pleasure of school boards. In general, superintendents are responsible for school district operations, budgets, curriculum standards, and external relations. However in Alaska, particularly in smaller districts, they often take on additional roles and responsibilities that are met by assistant superintendents, principals, teachers, or maintenance staff in larger districts. Compensation for superintendents also varies significantly. As pay is set by school boards, these salaries do not necessarily correlate with the magnitude of responsibilities or community differentials identified in this study. Statewide, superintendent salaries are significantly lower than national averages.
- The labor markets for classified positions (which encompass a wide range of support positions that do not require a teaching certificate) are typically local to each community, in contrast with the teacher labor market which is statewide and national. Districts acquire related service providers through a complex mix of full- and part-time employment and contracting.

Table of Contents

Acknowledgements 1
Funding 1
About CAEPR 1
Executive summary 1
Table of Contents i
List of tables iv
List of figures v
List of appendices vi
Part I: Introduction 1
Objectives 1
Context 1
The landscape of teachers in Alaska 2
Teacher Certification 3
Part II: Salary schedule 5
Introduction to salary reform 5
Goals/objectives 6
Salary schedule components 6
1. Beginning pay 6
2. Career Opportunity 6
3. Wage premiums or differentials 7
4. Variable pay (bonuses) 7
5. Working conditions 7
6. Benefits 8
Salary schedule options 8
1. Step-and-lane 8
2. Merit pay, sometimes called “performance-based pay” 10
3. Knowledge-and-skills based pay 13
4. Job enlargement 15
Alaska’s salary structure 15
1. Benefits 16
2. Performance pay in Alaska 17

Determining salary schedule and differentials for Alaska 18
1. Technical overview 18
3. Salary schedule development 28
4. Salary differentials methods summary 31
Stakeholder perceptions 35
1. Focus group & key informant interviews 35
2. Survey development 36
3. Dissemination and analysis 36
4. Participation 36
5. Compensation factors 37
6. Compensation structures 39
7. Support for a common salary schedule 42
Principal compensation 45
Implementation considerations 45
Part III: Tenure 47
Statement of purpose and research questions 47
Tenure defined 47
Historical origins & intentions of tenure 47
Contemporary trends in tenure law 48
Public perception of tenure 48
Empirical studies of tenure 48
1. Tenure and teacher evaluation 48
2. Tenure and teacher retention & dismissal 49
3. The value of tenure 49
History of tenure statutes in Alaska 50
Current Alaska tenure statute 51
Tenure compared to other public sector probationary periods in Alaska 52
Methods 53
The economic value of tenure 53
Summary thoughts – economic value of tenure 58
Stakeholder perceptions of tenure in Alaska 58
1. Methods & Participation 58
2. Findings 58

Discussion 63
Recommendations/Implications 64
Part IV: District profiles & superintendent duties 65
District Profiles 65
Superintendent duties 65
Part V: Summary 68
Limitations 68
Recommendations 69
Final thoughts 70
References 71

List of tables

Table 1	Salary structures	9
Table 2	Alaska School District Salary Schedule and Health Care Costs	16
Table 3	Summary of Empirical Investigations of Alaska Certificated Staff Salaries	22
Table 4	Estimated Values of Tenure and of Various Job Assignments	27
Table 5	Proposed base step-and-lane salary schedule for Alaska teachers	30
Table 6	Key data used to develop salary differentials	31
Table 7	Cost of Living For Selected Alaska Places	37
Table 8	Housing Costs for Selected Alaska Places	38
Table 9	Number one fuel oil costs per gallon in selected Alaska Communities	40
Table 10	Stakeholder perceptions of different factors in teacher compensation	42
Table 11	Preferred components of teacher compensation by stakeholder type	54
Table 12	Rank order of teacher compensation structure stakeholder preference	55
Table 13	Stakeholder perceptions of best salary structure to meet educational goals	57

List of figures

Figure 1 Observed and quality-adjusted salary differences between urban and rural districts 21
Figure 2 Predicting ability to attract highly qualified teachers based on district salary scales 2 29
Figure 3 Stakeholder support for teacher compensation structures 40
Figure 4 Stakeholder perceptions of the impacts of a statewide salary schedule 43
Figure 5 Stakeholder views of a legislative mandate for common statewide salary schedule 43
Figure 6 Distribution of amounts offered to teachers for different tenure options 54
Figure 7 Percent of bids accepted for each of three alternatives to the current system 56
Figure 8 Percent of stakeholders responding with misconceptions about tenure 59
Figure 9 Stakeholder perception of tenure's role in meeting educational objectives 60
Figure 10 Stakeholder support for metrics to influence tenure policy 61

List of appendices

A. Salary schedule review from other states
B. Chugach performance pay overview
C. Alaska Teacher benefits summary
D. Implications of a statewide salary schedule with community differentials
E. Variables used to calculate geographic cost differentials
F. Salary differentials
G. Stakeholder groups participating in data collection
H. Tenure review from other states
I. Alaska tenure case law
J. District profiles

Part I: Introduction

Objectives

House Bill 278, passed by the legislature in spring 2014, instructed the Department of Administration to "present to the legislature a written proposal for a salary and benefits schedule for school districts, including an evaluation of, and recommendations for, teacher tenure" (Sec. 52). In order to meet this mandate, the Alaska Department of Administration contracted with the UAA Center for Alaska Education Policy Research (CAEPR) to develop:

1. A salary & benefits schedule for teachers and principals, including a review of current salary schedules, a profile of current benefits, geographic & job differentials, and identification of issues for consideration
2. Recommendations for teacher tenure, including a review of the current structure, a presentation of alternate models, and a review of the value of tenure to teachers as it affects the teacher labor market
3. District profiles, which will describe the complexity & diversity of district personnel, including the range of superintendent duties

This report addresses each of these three topics in separate sections, followed by a summary and appendixes. In the introduction, we provide some of the context in which this research was conducted, and also an overview of teaching and teaching regulations in Alaska.

Context

The timing for this study was less than ideal. At the time of this writing, the state is experiencing a drastic decline in revenue, resulting in a significant reduction in the resources available to implement and assess properly any new compensation or tenure systems. But this is a less significant impediment to change than other shifts underway in Alaska's K-12 system at present.

Most alternative approaches to teacher compensation and tenure use some combination of tiered licensure, standardized student learning outcomes, and other measures of teacher effectiveness to determine whether teachers advance on the pay scale and/or are retained. They depend on the availability of consistent longitudinal data that is at present not available in Alaska, because there are significant changes occurring in how we assess student learning and teacher effectiveness. This constrains what we are able to address or recommend in this study.

In the spring of 2015, the Alaska Department of Education and Early Development (AK DEED) implemented new language arts and math assessments, the "Alaska Measures of Progress" (AMP), for students in grades 3-10. This year's test scores will set the new baseline against which future student growth will be measured, but these assessments will not allow a standardized measure of how students' learning has grown over the course of the current year, as they differ considerably from prior assessments, and because they are based on different content standards than the previous exams. The AMP assesses the Alaska Language Arts and Mathematics content standards that were adopted in June 2012, but not fully implemented until the 2014-15 year. Teachers have undergone extensive professional development in the new standards, but these represent a considerable shift and many are working with new curricular materials as well as new standards and expectations.

Finally, with new standards or new practices there is often an “implementation dip” which is "...a dip in performance and confidence as one encounters an innovation that requires new skills and new understandings" (Fullan, 2001, p. 40). We do not know whether this will be the case in Alaska, but given that students are taking new state standardized assessments that are both different in content due to new standards and also are fielded online rather than with paper and pencil for the first time, we would not be surprised to see a first year dip. This means that using growth in student test scores as one factor in teacher evaluation and compensation schemes will be problematic for the next couple of years.

The state also is implementing a new teacher and administrator evaluation system, which will not be fully implemented until the 2015-16 school year. The new system requires that districts use two to four measures of student growth in their teacher and administrator evaluations including, when appropriate, the statewide standardized tests now being implemented. We will not know until after our work on this project is completed the standards for performance based on student learning data adopted by each district, nor how they are incorporating student data into the overall evaluation process. These evaluation systems are anticipated to strengthen the teacher evaluation process and could impact the teacher tenure process significantly as well as improve student learning outcomes. However, it will be a few years before we know fully the impact and effectiveness of these systems.

Any significant change to compensation and tenure systems requires reliable and consistent data on teacher and administrator effectiveness. Unfortunately, while on the way to developing this, Alaska is still several years out from having this information.

The landscape of teachers in Alaska

In 2013-14, there were 8,195 full- and part-time teachers working in Alaska’s schools, serving 131,577 students[1]. Of these 1257 were Special Education teachers, 218 taught in correspondence schools, and 90 worked as Head Teacher, meaning that they fulfilled some of the responsibilities typically handled by a principal. A goal of the *No Child Left Behind Act of 2001* was that every student be taught by highly qualified teachers (HQT). Highly qualified status is determined based on the qualifications of the teacher to teach a specific class, not just overall teacher quality and qualifications. In other words, a HQT not only has a degree and certification, but also has demonstrated knowledge in the specific academic subjects he or she is teaching.

In 2013-14, 89% of core classes in Alaska public schools were taught by HQTs[2] (EED, 2014). By comparison, the US Department of Education reports that nationwide rates are 96.25%. Though Alaska has more significantly increased the percentage of HQTs since 2003 than any other state (increasing 75.49 percentage points from a rate of 12.60% in 2003), it reported a decrease in the number of classes taught by HQTs between 2012 and 2014. Alaska is one of only five states (Louisiana, Utah, the District of Columbia, and Puerto Rico) reporting less than 90% HQTs. This percentage is lower at the secondary level. While 95.48% of Alaska’s elementary teachers are HQT (95.41% in high-poverty areas and 96.06%

[1] Teacher-student ratios are frequently referenced as proxies for school quality, but these numbers are more nuanced in Alaska. Small communities, for example, may have more teachers per student than national averages, but these numbers reflect school enrollments, rather than teacher distributions. For example, though a teacher in a larger district may have 30 students in a class, a small school with 20 students nonetheless needs highly qualified teachers in various subjects.

[2] The United States Department of Education reports 88.09% for this figure. Sometimes statistics calculated by federal and state agencies differ slightly, depending on when the analysis was performed.

in low-poverty areas); HQTs at the secondary level teach 86.26% of core classes (75.21% in high-poverty areas and 86.41% in low-poverty areas). This gap between high- and low-poverty areas is the third highest in the nation, following only Missouri and New York.

In any given year, Alaska hires far more teachers from outside of the state than within. On average, from 2008 -2012, about 64% of teachers hired by districts across the state were from outside Alaska. Over the past eight years, the number of teachers prepared each year within the state has remained largely static; University of Alaska programs generally graduate between 200 and 240 teachers per year while Alaska Pacific University produces another handful of educators annually. However, turnover rates among teachers prepared in-state who have under 10 years of experience are far lower than those prepared outside (Hill & Hirshberg, 2013; Hill, Hirshberg, Lo, Morotti, & Dean, 2015).

The context for hiring teachers is also changing even as this report is being released. First, during the economic downturn at the end of the last decade and beginning of this one, teaching positions were being cut across the nation, and in some places classroom teachers faced layoffs or work furloughs. Alaska saw a reduction in its teacher turnover rate even as jobs outside of the state became scarcer. While we cannot say for sure the economic downturn outside caused less teacher turnover in Alaska, we do suspect this was a significant factor.

Now, the situation has changed, and districts across the nation are both hiring and paying higher wages as the job markets pick up. For example, in spring 2014 Oregon school districts hired over 2,000 teachers, in contrast to when they lost 3,600 teaching jobs or 12 percent of their teacher workforce (Hammon, 2014). At the same time there is a sharp drop in the number of college students pursuing a degree in teaching. California, a state that traditionally was among the largest producers of teachers in the nation, saw a 53% drop in teacher preparation enrollments between 2008-9 and 2012-13, and in many states including California, New York, and Texas the decline in teacher preparation enrollments is accelerating (Sawchuck, 2014).

These challenges combined with Alaska no longer being at the top of the pay scale for starting teachers even before accounting for cost of living issues mean that Alaska is potentially facing some very challenging issues in recruiting and retaining educators from outside the state. Indeed as of mid -July 2015, there were over 230 regular teacher vacancies across the state (ATP, 2015), meaning that many districts were facing vacancies with less than a month to the start of the school year.

Teacher Certification

In Alaska, all teachers must be certificated in order to teach. There are three levels of certification:

- **Initial** teacher certification, for those who have passed a Basic Competency Exam (i.e., Praxis I), have earned a bachelor's degree and completed an approved teacher preparation program, and are within their first two years of teaching and/or have not satisfied the content area exam requirement for the Professional teacher certificate (this includes applicants who have a bachelor's degree, are currently enrolled in a teacher preparation program, and have a certified teaching position in an Alaska public school);
- **Professional** teacher certification, for those who have completed at least at least two years of employment as a certified teacher, earned at least a bachelor's degree, completed a state-approved teacher preparation program, and passed both the Alaska Studies and

Multicultural/Cross-cultural Communications required coursework as well as a Basic Competency Exam (i.e., Praxis I) and a Content Area Exam (i.e. PRAXIS II); and

- **Master** teacher certification, which is awarded to holders of a professional certificate who complete both six credits of continuing education in the five years before applying for this status and National Board Certification or those fulfilling all the qualifications for professional certification as well as 6 credits of continuing education and National Board Certification.

Part II: Salary schedule

Introduction to salary reform

We approached the task of creating a teacher salary schedule with several questions in mind:

- What has been the experience of other states in creating and using a statewide salary schedule?
- How should a statewide salary schedule be structured?
- How shall we determine key components, such as minimum and maximum salaries?
- What differentials (if any) should the state apply for hard-to-staff position types or hard-to-staff schools?
- What are the key issues the legislature should consider when deciding whether to adopt a statewide teacher salary schedule?

We begin this section with a brief discussion of salary reform in general; define the components and how they can be assembled into a schedule; discuss different structures for teacher compensation; and review Alaska's current teacher salaries.

Teacher compensation is a highly debated and discussed topic, both in public discourse and in the empirical literature. Looking at what other states have done, we see that some states simply specify minimum salaries, and others establish salary schedules. Some states have salary schedules that are integrated into state funding formulas, and others, like Alaska, leave the determination of employee salaries at the district level. Typically, salary schedules created since 2000 are intended to address equity issues that arise due to some districts having a greater fiscal capacity to pay teachers than others. However, some efforts go back more than 50 years; Jones (1940) notes that some states set teacher salary minimums in an attempt to address teacher shortages after World War I.

For states with salary requirements, districts can typically pay more than the specified minimum. For example, in Washington State, the state salary schedule is used to calculate the amount of money provided to each district. Districts are required to have minimum salaries at least as high as those in the schedule, and the average salary actually paid cannot exceed the average calculated from it. As long as districts meet those requirements, they are free to negotiate their own schedules. In North Carolina, districts are required to pay from the legislated salary schedule; however, they may also pay additional amounts "to account for variances such as geographic location, market conditions, or school demographics" (http://www.ncpublicschools.org/fbs/finance/salary/). However, if states do not periodically reassess and recalibrate their minimum salaries, they may become irrelevant. For example, in Illinois, Kentucky, and Pennsylvania the state's minimum required salaries have become so low that they no longer directly influence amounts paid by local school districts.

A recent trend among some states is to collapse the state-designed salary schedule (e.g., Tennessee in 2013, and Idaho in 2015) or eliminate it altogether (e.g., Indiana in 2011) to allow for more flexibility at the local level. Some legislatures amend or repeal laws related to teachers' salaries so frequently that descriptions of their salary schedules are quickly obsolete (e.g., Ohio and Texas). A summary of salary schedules employed in other states is available in Appendix A.

Goals/objectives

The Alaska State Legislature, in its language calling for the development of a salary and benefits schedule, did not indicate specific goals or anticipated outcomes for this effort. We therefore have tried in this report to bring together information and evidence on potential effects of a statewide salary schedule if applied to Alaska, and the pros and cons of this approach.

Ultimately, we have tried to propose an effective compensation system that would attract and retain quality teachers while not spending more than is needed to accomplish this. Attracting and retaining good teachers could have multiple positive impacts for Alaska's schools, both in terms of improving student learning and in saving districts money by reducing costs associated with recruitment and induction of new teachers.

Salary schedule components

We base our work in part on the work done by Odden & Wallace (2007), who advance that a teacher compensation strategy needs to:

- identify a competitive salary in the labor market
- identify what salaries are needed to attract teachers to different geographic, demographic, and content areas
- set clear student achievement goals and incorporate these into the compensation model and set goals for professional development

Within this report we address the first two points, but not the third. Setting goals for student achievement would be a worthwhile effort, but is beyond the scope of this study. These considerations should be weighed and incorporated by decision-makers. Odden and Wallace go on to describe five components of a compensation structure: beginning pay, career opportunity, additional wage premiums, working conditions, and benefits. Additionally, bonus pay (sometimes called variable pay) for additional duties factors into this discussion. Here, we explore these components of teacher compensation.

1. Beginning pay

Economic theory holds that labor markets function most efficiently when wages clear the market – they are high enough to assure enough qualified workers are attracted to fill the available positions, and low enough that not too many qualified workers apply, leaving some without jobs. Odden and Wallace note that market competitiveness can be defined in different ways, and setting appropriate beginning salaries to achieve this objective is an important focus in the development of any compensation system.

2. Career Opportunity

Joseph & Waymack (2014) remind us that when we think of teacher compensation, we cannot just look at starting and ending salaries, but also the speed of growth in the interim years. Some salary schedules have very modest incremental steps, while others have larger ones. Teaching is very different from other professions, where employees can earn promotions and bonuses that are a much higher percent of their pay than typically available to teachers through incremental steps. Earning potential and career opportunity are especially important in attracting teachers into the profession, and retaining them. Akiba, Chiu, Shimizu and Lang (2012) note that in the US, salaries for new teachers are higher than the international teacher wage (in 2006), but compensation for teachers with 15 or more years of

experience is among the lowest internationally. The impact of slow or marginal incremental growth is significant for both recruitment of teachers into the profession and for teacher retention.

3. Wage premiums or differentials

Wage premiums are market incentives or differential compensation for working in difficult-to-staff schools, or difficult-to-staff positions or subjects.

Nationally, one-third to one-half of districts offer some incentive for difficult-to-staff subjects (Joseph & Waymack, 2014; Podgursky & Springer, 2011). Many experts support pay to retain teachers in shortage subject areas (Bacharach, Lipsky, Shedd & Wood, 1984; Odden & Wallace, 2007), and some also suggest that incentives be offered to cover the costs of teachers becoming certified in difficult-to-fill positions (Bacharach et al., 1984).

In the US, 36% of districts offer incentives for working in high-needs schools (Joseph & Waymack, 2014). The logic is that teachers prefer working conditions in low-poverty/high-performing schools, and without increased compensation to offset the working conditions, high-poverty/low-performing schools have fewer teachers to choose from and therefore will, on average, employ lower-performing teachers (Odden & Wallace, 2007).

4. Variable pay (bonuses)

Another approach to differential pay is to provide periodic or one-time bonuses rather than higher salaries. Some states and districts offer signing and retention bonuses for teachers who work for high-poverty school districts (e.g., see Arkansas' High-Priority District Teacher Incentive Program). Odden and Wallace (2007) posit that to make an impact, the size of the premium needs to be substantial, and they recommend permanent wage increases (as described above) over one-time bonuses. These sorts of bonuses, like wage premiums, need to be adjusted periodically as the labor market changes. Some Alaska districts have experimented with performance bonuses for improved student outcomes (described in the section on merit pay, below). As with other bonuses, the size of the premium needs to be substantial.

5. Working conditions

Working conditions include many job attributes, some of which are discussed in wage premiums, above. Others are the length of work day and work year, class sizes, the teacher's role in school and district decision-making, physical plant characteristics, curriculum resources and supplies, technology infrastructure, and policies around leave. Some working conditions can be monetized (such as additional days of personal leave) while others are inherently non-monetary (such as class size). Districts may continue to negotiate working conditions even if the state adopts a statewide salary schedule.

In some states with statewide salary schedules, this is the case. Some economists advocate for lower salaries for teachers than for other professionals based on work hours. Podgursky (2003) notes that teachers work 9-month contracts and also asserts their work day is less than 8 hours. However, this claim has been challenged (see Prieser, 2010). Surveys of teachers' reported use of time consistently reveal that teachers average more than 2.5 hours per day beyond their contract hours grading papers, record-keeping, communicating with parents, planning lessons, and preparing materials (Ingersoll, 2007; Yuan, Le, McCaffrey, Marsh, Hamilton, Stecher & Springer, 2013). Odden & Wallace (2007) argue salaries should not be adjusted to a shorter work day or year, and note that in comparing salaries among professions, the Bureau of Labor Statistics makes no adjustments when "work" hours are difficult to

determine, such as the number of hours airplane pilots or college professors work, and suggest that salary comparisons for such jobs, including teachers, be made on an annual salary basis.

6. Benefits

Benefits are part of total teacher compensation, but not part of a salary schedule. They add substantially to personnel costs. Professional job benefits typically include health insurance (which may include dental and vision as well as medical coverage), retirement, leave (including sick leave, personal leave, and others such as maternity/paternity, military duty, and jury duty), and life and disability insurance. Other possible benefits include professional liability insurance, travel insurance, weather leave, tuition reimbursement, tax sheltered annuities, housing, and travel stipends.

Odden and Wallace note that typical teacher benefits are better than those for the average worker, but similar to those large corporations provide. Podgursky (2003) says that, in general, teachers get better retirement packages and health insurance packages than other professions. However, when Alegretto, Corcoran and Mishel (2007) compared teacher benefits with those of other professions, they found that total benefit costs as a percent of salary were similar to those of other professionals (33 percent compared to 36 percent).

Salary schedule options

With all of these considerations, even if goals are clear, the challenge is putting them into a structure that serves those objectives. The next section describes options for salary schedule structures as they appear in the literature, and these data are summarized in Table 1.

1. Step-and-lane

The most common and familiar structure for teacher compensation is "step-and-lane," sometimes called the "uniform salary schedule." The system was developed at the turn of the century, largely resulting from collective bargaining, to both resolve concerns about pay equity and create incentives for teachers to stay in the profession (Firestone, 1994; Podgursky & Springer, 2007). In this system, raises are typically earned in three ways:

- Annual adjustments - COLA and adjustments for changes to contract length
- Step increases – additional pay for another year of experience
- Lane increases – additional pay for earning credits or a credential

By 1950, step-and-lane was the model in 97% of districts (Sharpes, 1987); and researchers estimate that experience and education are used, at least in part, to determine teacher compensation in 100% of districts nationwide, while 96% of districts also do so based on advanced degrees or coursework (Joseph & Waymack, 2014; Podgursky, 2006). The system is so familiar that even in the climate of educational reform, most suggested changes leave the basic system intact but supplement it with bonuses (Firestone, 1994).

Pros

The model has continued for over a century because it is easy, stable and objective, equitable, and encourages continuing education (Odden & Wallace, 2007). As such, it has been hailed for ending salary discrimination against women and minorities (Ballou, 2001). Another advantage is that it limits bias in principal evaluations and other performance metrics (Podgursky & Springer, 2007) in that it is based on

wholly objective metrics. By rewarding education and experience, it reflects the two primary ways teachers learn to teach (Bacharach, et al., 1984).

Table 1

Salary structures

	What it rewards	Pros	Cons
Step-and-lane	Education and experience	• Familiar • Straightforward • Easy to project costs • Objective • Equitable • Experience tied to student outcomes	• Education not strongly correlated with student outcomes • Fails to reward high-performing teachers • Promotes rigidity of roles • Cannot adapt to market realities
Merit	Student performance as measured by standardized tests	• Public support • Attracts high-performing teachers • Detracts low-performing teachers • Retains high-performing teachers	• Union and employee opposition • Promotes competition • Promotes teaching to the test • Lack of validity for metrics • Costly to implement • Administrative burden
Knowledge-and-skills	Skills and learning experiences that are directly tied to performance outcomes	• Motivating for teachers • Teachers have more accountability and control • Encourages PD in a variety of areas	• Principal evaluations introduce subjectivity • PD must be funded • Training time detracts from instructional preparation • Not tied to day-to-day responsibilities of teachers
Job enlargement	Teachers taking on additional job duties	• Teacher support • Allows teachers to exercise additional skills • Keeps high-performing teachers in classroom while providing additional leadership roles & challenges	• Some duties generate competition • Some duties undesirable • Bureaucratic education system lacks flexibility to accommodate variable duties

Alternate structures for teacher compensation reward different outputs and competencies, and have different benefits and drawbacks.

Cons

One of the primary challenges to the step-and-lane model is what the system rewards (a combination experience and education) does not always correlate well with increased student achievement (Odden & Wallace, 2007; Podgursky & Springer, 2007), and this system focuses on inputs, rather than outcomes (Firestone, 1994). Other critiques are that it does not give teachers a means to accelerate their progress or reward good teachers for their accomplishments (Joseph & Waymack, 2014), it promotes rigidity of

roles (Firestone, 1994), and it does not allow districts to adjust compensation to reflect market or labor realities (Podgursky & Springer, 2007).

Impact/evidence base

Education and years of experience are proxies for effectiveness; though results vary, in general the literature documents that teaching experience is correlated with positive student outcomes. Teachers' gains in effectiveness and impact are most pronounced in the first and second years of teaching, and most teachers reach their peak after between five (Rosenholtz, 1985) and ten years (Pennucci, 2012), after which teacher growth levels off, and then increases are increasingly marginal (Clotfelter, Ladd & Vigdor, 2006; Rivkin, Hanushek & Kain, 2005). There is some debate about teachers with longer experience; Ladd (2008) found that teachers with 20 years of experience were not much more effective than those who had five years, but Huang & Moon (2009) documented significant teacher improvement each year until over 20 years in the field, with greatest effectiveness actualized between 19-24 years of experience.

The impact of education and degree attainment–the second factor rewarded by the step-and-lane schedule– is less clear. Studies have found both positive and null impacts of graduate degrees in general (Hanushek, 2003; see Pennucci, 2012, for a comprehensive meta-analysis); however, in-subject graduate degrees have been demonstrated to show marked positive improvement on student outcomes (Croniger, Rice, Rathbun & Nishio, 2007; Goldhaber & Brewer, 1997; Goldhaber & Brewer, 2000; Subedi, Swan & Hynes, 2011).

Considerations

When thinking about the utility and implementation of this model for Alaska, the literature also offers some considerations. Bacharach et al. (1984) suggest implementing reform within the unified salary schedule to align with effectiveness data. Because experience is tied to student achievement, they recommend that the model be modified to align experience with higher compensation – in other words, reward experience more, because that is where the difference is. They also suggest reconsidering incentives for education, including limiting the kinds of outside courses that are given salary credit, and granting salary credits for in-service education. As another option, Bacharach et al. recommend more discretion in implementation and suggest that, though it has not traditionally been used this way, the schedule could be more flexible, by allowing districts and teachers to negotiate salary step levels to meet labor and market demands.

2. Merit pay, sometimes called "performance-based pay"

Merit pay – compensating teachers for various performance metrics – has been used in the US education system for some time (Protsik, 1996), notably gaining popularity following *A Nation at Risk*. Recent applications focus primarily on student outcomes as measured by standardized test scores. The premise of merit pay is twofold: first, that the existing workforce will improve as teachers respond to initiatives by altering the way they teach and using more effective strategies, and additionally, the quality of the workforce will improve over time as more capable individuals are attracted to careers in teaching (Springer et. al, 2012a). Estimations of how this model is applied nationwide vary, as well as the relative amounts that teachers earn through this system. Between 10 and 45% of public schools districts have used merit pay in some form (Ballou 2001; Joseph & Waymack, 2014, respectively), and within those districts, approximately 10% of teachers have received it personally (Ballou, 2001). It is used slightly more frequently in private school systems (Ballou, 2001).

Pros

Merit pay is frequently identified as a way to increase education spending that is acceptable to and supported by the voting public (Bacharach et al., 1984, Odden & Wallace, 2007). Podgursky & Springer (2007) argue that this system attracts educators who are high-performing, and discourages those who are not. Additionally, Podgursky & Springer (2007) note that it should limit teacher attrition; in the current system, high-ability teachers are more likely to leave than others, and possibly because they are not getting compensated for their talent.

Cons

Generally, merit pay is met with strong employee and union opposition (Ballou, 2001). One of the most common criticisms is that it promotes competition instead of collaboration, and is thus deleterious to teacher morale (Bacharach et al., 1984; Firestone, 1991). By rewarding only some aspects of teaching, it has also been criticized for encouraging "teaching to the test" (Coltham, 1972; Murnane & Cohen, 1986; Pennucci, 2012; Podgursky & Springer, 2007; Protsik, 1996; Tirivayi, Maasen van den Brink, & Groot, 2014). Further criticisms note that the tests and metrics used to measure performance-related outcomes frequently present validity and reliability concerns (Bacharach et al., 1984; Lasagna, 2010; Podgursky & Springer, 2006).

Others have noted that using test scores alone fails to represent the full array of teacher duties (Goldhaber, DeArmond, Player & Choi, 2008). A response is to adapt merit pay systems to better reflect the true nature of teaching. However when considering multiple inputs and measures, systems become increasingly complicated (Fryer, 2011), costly (Bacharach et al., 1984; Ballou, 2001; Podgursky & Springer, 2007), and burdensome for administrators (Ballou, 2001; Milanowski, 2003).

Impact/evidence base

Efforts to implement merit pay have been generally unsuccessful (Ballou, 2001). Evaluating the impact of merit pay is inherently difficult because the plans vary tremendously (Ballou, 2001), and because much of the research is limited to pilot programs which are neither generalizable nor able to show long-term impacts (Pennucci, 2012). Podgursky & Springer (2007) note that the literature is not robust enough to give prescriptive designs for performance pay systems, and it is further complicated by the fact that many incentive systems are poorly designed.

The available literature yields mixed results about impacts on student outcomes. Most studies have found no discernable impact on student learning outcomes (Eberts, Hollenbeck & Stone, 2002; Goodman & Turner, 2010; Marsh, Springer, McCaffrey, Yuan, & Epstein, 2011; Springer, et al., 2012b) or negative effects on student achievement (Fryer, 2011; Goodman & Turner, 2010), even when substantial bonuses are offered (Sawchuk, 2010). However some studies document positive impacts (Figlio & Kenney, 2007; Lavy, 2002, Lavy 2004; Pennucci, 2012).

There is more agreement that teachers do not generally find the programs motivating (Marsh et al., 2011; Yuan et al., 2013), and even for teachers receiving bonuses, these systems do not seem to impact hours worked (Yuan et al., 2013). US studies that show positive results also highlight equity considerations, noting that teachers in low-performing schools and difficult-to-staff subjects are less likely to receive merit awards (Shifrer, Turley & Heard, 2013).

A compromise to individualized compensation is a group or collective incentives program that operates much like profit-sharing in the business world – everyone is rewarded when a school or program meets

a performance target. These approaches are intended to overcome the problem of competition while maintaining most other aspects of the merit pay system, and can incorporate cash or non-monetary incentives for teachers or for the school (like equipment purchases). Though this has been demonstrated to be successful in business and there are advocates for using collective incentives in the education system (see Bacharach et al., 1984), empirical research on this topic is very limited, and there is insufficient data to recommend that these programs yield significant improvements in student achievement (Tirivayi et al., 2014). Still, some studies have documented positive impacts from such programs (Clotfelter & Ladd, 1996; Ladd, 1999).

Considerations

The limited literature and lack of best practice models suggests that implementing a strong merit-based pay system would be a challenge. However, experts make some recommendations for districts wishing to do so. Odden & Wallace (2007) list 8 essential elements to consider:

1. what performance elements to include
2. how performance elements are measured
3. how annual improvement targets are set
4. how to create a level playing field so all schools have a fair opportunity to reach the targets
5. one-time bonuses versus additions to base pay (they advocate for one-time bonuses)
6. size of bonuses and whether or not to do multiple bonuses (they support multiple levels of bonuses, measured with a balanced scorecard)
7. whether bonuses should go to individual teachers or the whole school
8. other eligibility rules, including who qualifies and how to fund it

In planning a merit pay program, researchers recommend that metrics must be determined validly and reliably (Bacharach et al., 1984), and programs need to be thoughtful and evaluated well (Podgursky & Springer, 2007).

Additionally, the chances of earning the pay need to be good; if the possibility of receiving it is too far out of reach, it becomes an ineffective motivator (Ballou, 2001); and the pay increases themselves should be substantial enough to make a difference (Joseph & Waymack, 2014). These considerations are necessary for success, but will also make the program more costly. If the programs are implemented, particularly on a large scale, we should plan for years of revisions and modifications, which will incur additional costs (Kellor, 2005).

There are examples of performance-related pay initiatives in Alaska. In the Chugach School District, teachers' base salary is determined by a step-and-lane schedule. However, that is only a part of the compensation system. Performance pay and benefits are the other major pieces, in what the superintendent describes as a "hybrid" system. Teachers have chosen not to take any increase on the base salary schedule for 6 years and instead have asked to put more funds into the performance-pay component, which is related to teacher evaluation. That said, the Chugach School District system is not a "true" merit pay system where teachers receive individual bonuses based on evaluations of individual teachers' impacts on student learning outcomes. Rather, as is described in more detail in Appendix B, it is a system in which all teachers receive the same performance pay based on the average of all teachers' evaluation scores. Indeed this program does not meet the federal definition for Teacher Incentive Programs (Cope, 2012).

The state of Alaska implemented the Alaska School Performance Incentive Program in 2006 as a pilot program, with funding from the legislature and a federal TIF grant. The program rewarded employees at schools in which student test scores on the annual Standards Based Assessment improved one year to the next. According to the program's case study, prepared as part of the state's federal TIF grant participation, 796 faculty and staff members in 42 schools in 15 districts received bonuses through the program in 2007. The program also paid bonuses to 153 district-level employees that year. In 2008, 500 faculty and staff members in 32 schools in 14 districts were paid a bonus. The program made headlines in 2007 when faculty and staff members at one award school voiced discontent with the program and donated their bonuses to nonprofit organizations. In 2009, when the pilot program was scheduled to sunset, the state decided not to continue the program.

To truly understand how effective merit pay could be, we would need a rigorous experimental design to compare teaching effectiveness and learning outcomes for students taught by teachers in different compensation models. To date, no such study has been conducted in Alaska, nor has a rigorous experimental study in other US locales found a significant effect on student learning. In Alaska, the districts that experimented with TIF applied it across all educators and did not do random assignment. We know there is interest among policy makers and administrators in creating an effective merit pay system, and we recommend research around this in the future.

3. Knowledge-and-skills based pay

Knowledge- and skill-based pay is a system that rewards teachers for developing their "repertoire of capabilities" (Ledford & Heneman, 2000, p. 143). Though sometimes equated with merit pay (see Heneman, Milanowski & Kimball, 2007; Rowland & Potemski, 2009), experts make a clear distinction between rewarding performance itself and rewarding the knowledge, skills, and competencies that enable greater performance (Ledford & Heneman, 2000). In fact, some scholars (see Podgursky & Springer, 2007) advance that this system was conceptualized as a compromise to performance pay. Sometimes operationalized as career ladders, this structure for teacher compensation rewards high-performing teachers and gives them the opportunity to advance without leaving the classroom (Milanowski in Sawchuck, 2010).

Considerations for knowledge-and-skill based pay include academic concentration in the subject taught, professional development, experiences that contribute to increased performance (such as participating in a summer internship or related volunteer duties), special projects that improve student learning, and additional certifications (Odden & Wallace, 2007). Although many types of knowledge, skills, and capabilities can be rewarded, the most common example is payment for teachers who voluntarily achieve certification through the National Board for Professional Teaching Standards (NBPTS). Podgursky & Springer (2011) identify NBPTS certification as the fastest growing form of incentive pay during the last decade.

Though most measures of knowledge-and-skill based pay are based on quantifiable metrics with the assumption that they lead to student learning gains, some experts recommend evaluating teachers' actual practice using a performance evaluation or performance assessment system (Odden & Wallace, 2007). In this approach, scores on administrator evaluations serve to document teacher skills, and compensation is tied to those assessments.

Pros

This skills-oriented compensation system focuses on abilities that more directly translate to improved performance capacity (Firestone, 1994), and encourages a variety of professional development experiences in different arenas (Sawchuck, 2010). Additionally, teachers who start their career in the classroom and stay do not generally have opportunities to get promotions up a career ladder like we see in other professions. Rewarding knowledge and skills motivates teachers with a goal to work towards and get excited about (Firestone, 1994), as they can take their pay into their own hands (Sawchuck, 2010). The system has also been praised for increasing teacher accountability (Sawchuck, 2010).

Cons

Using principal evaluations as a measure of teacher skills, though generally reliable, introduces the possibility of subjectivity in the system, particularly if the evaluations are high-stakes and tied to bonuses. Podgursky & Springer (2007) remind us that this subjectivity is the reason why the profession adopted objective salary schedules in the first place. Related to that concern, teacher development within this system needs to be funded, and particularly in a time of budget shortfalls, not funding it could be an incentive to administrators to achieve salary savings (Firestone, 1994). Teachers note concerns as well, including worries that time and energy spent developing knowledge and skills happens at the expense of instructional preparation time (Rosenholtz & Smylie, 1984). Additionally, Odden and Wallace (2007) have observed that the system is often perceived as a series of hoops that need to be jumped through, and unless the link between the system and day-to-day work of teachers is clear, it may not be an effective motivator.

Impact/evidence base

There is evidence that targeted and focused professional development experiences as rewarded by the knowledge-and-skills structure correlate with student achievement. The research literature shows both positive and negative impacts for graduate degrees in general (Hanushek, 2003; Pennucci, 2012); however, more focused, in-subject graduate degrees do make a significant positive difference in student achievement (Croniger at el., 2007; Goldhaber & Brewer, 1997, Goldhaber & Brewer, 2000; Subedi et. al., 2011). The impacts of professional development are similar: though general professional development has no effect on student outcomes, content-specific professional development does have a positive impact (Pennucci, 2012). Evidence on national board certification is mixed (see Chingos & Peterson, 2011; Clotfelter, Ladd & Vigdor, 2007; Goldhaber & Anthony, 2007; Vandevoot, Amrein-Beardsley & Berliner, 2004); Pennucci (2012) documented a positive relationship between certification and test scores, but acknowledged that it is unclear if this impact is attributable to the training itself, or that the program just recognizes or identifies good teachers. Evidence for the career ladder structure for knowledge-and-skills pay is limited, but preliminary studies are encouraging, showing small but significant positive effects (Dee & Keyes, 2004), though teacher reaction to implemented programs is often mixed (Milanowski, in Sawchuck, 2010).

Considerations

If the state of Alaska wishes to have a teacher compensation system based on knowledge and skills, it will first need to identify the skills that should be rewarded, and their relative value (Firestone, 1994). Subsequently, the state will need to have a way to measure them (Odden & Wallace, 2007), and this is historically problematic. Additionally, aligned and appropriate professional development opportunities will need to be accessible for teachers (Milanowski, in Sawchuck, 2010). Though Alaska is implementing

comprehensive teacher evaluations, they were not adopted with a mind to knowledge-and-skills pay, and will need to be reviewed in consideration of their appropriateness for this context.

4. Job enlargement

Job enlargement is a teacher compensation structure that rewards teachers for developing skills or competencies that allow them to fill other needs in the schools as they arise. Those opportunities may be horizontal (developing skills to instruct additional subjects) or vertical (skills typically assigned with other jobs, like the administrative tasks of budgeting or curriculum development). In this system teachers are compensated for tasks they find interesting and rewarding – jobs that would usually go to administrators (Firestone, 1994), or to other teachers.

Pros

This system encourages and rewards teachers for taking on additional responsibilities (outside of their job scope) and recognizes those contributions through compensation. When teachers are recognized and encouraged to make needed contributions that they are capable of making, the system contributes to school/student success. This system facilitates collegiality and communication in the organization, and teachers generally support it as long as the criteria for selecting teachers for tasks are fair (Firestone, 1994).

Cons

Though teachers generally are comfortable with job enlargement, Firestone (1994) notes that some highly-coveted duties may generate competition; conversely jobs that are undesirable may not generate teacher interest as they are not perceived to be rewarding. Additionally, a job enlargement system requires some flexibility in the organization that gives teachers the chance to exercise the knowledge they develop, and this is not the bureaucratic structure of most schools.

Impact/evidence base

Little is written about the impacts of job enlargement on student learning outcomes, and the practice is more commonly studied from the perspective of worker (in this case, teacher) satisfaction and motivation. As many of the additional opportunities and duties are outside of the classroom, it makes sense that there is limited research around learning outcomes. Given its popularity among workers as a mechanism for enrichment and motivation (Firestone, 1994), this may more effectively serve as a teacher retention strategy, and learning outcomes actualized would be aligned with teacher experience.

Considerations

In Alaska, many districts already use some form of job enlargement. In rural Alaska in particular, a number of schools are staffed by principal/teachers or lead teachers, and in some districts teachers also serve as district testing coordinator or other similar positions. However, there is not adequate consistency in how these positions are structured to allow for a single statewide job enlargement salary schedule that would cover all the possibilities.

Alaska's salary structure

Currently, Alaska school boards negotiate certain elements of teacher contracts with local unions or teacher groups (with a few exceptions); thus the state has 54 unique salary schedules. All the schedules have a basic step and lane structure; most districts also provide for some modest bonuses. One district – Chugach – provides a significant percent of total salary through merit bonuses. In Alaska, schedules

range from 11 to 26 years to reach the top salary, and the average increase in salary per step is about 3.5 percent. Table 2 summarizes the characteristics of the 54 step and lane schedules, as well as information about what districts and teachers pay for health insurance.

Table 2
Range of Alaska school district salaries and health insurance costs

	Lowest	Highest	Average
Salary			
Minimum	$ 29,915	$ 55,729	$ 44,840
Maximum	$ 64,000	$ 92,261	$ 81,456
Number of Steps	11	26	16
Number of Lanes	5	11	6
Health Insurance Premium for Single Employee			
Paid by Employee	$ 0	$ 3,794	$ 1,042
Paid by District	$ 6,392	$ 25,587	$ 13,986
Total	$ 7,539	$ 25,587	$ 15,073

Salary schedules vary widely across Alaska's school districts, as do health insurance costs.

Collective bargaining agreements typically last 3 years; sometimes key aspects are re-opened between negotiations. For example, if the district and union cannot agree on salary increases, and the future budget is uncertain, they may agree to re-negotiate salary before the end of the rest of the contract. Districts negotiate their agreements in different years; about one-third are up for renewal in any given academic year.

Step increases happen each year – thus 10 steps would take 10 years to achieve. Lanes vary in the details of their definitions, but typically start at a bachelor's degree with zero additional credits. Additional lanes represent combinations of additional credits (typically 18 additional credits to change one lane) and degrees (master's and sometimes doctorate degrees).

In 2014, Hill, Knapp and Steenhoven analyzed the earnings of University of Alaska Anchorage graduates, and found that average wages for UAA teacher graduates five years after graduation were slightly lower than for other bachelor's degree graduates and substantially lower than average master's degree graduates (secondary teacher certification usually requires a master's degree).

1. Benefits

In addition to salary, benefits are an aspect of teacher compensation that districts can use to make jobs more attractive. They may provide easily monetized compensation such as paying a greater share of the employees' health insurance premiums. They may provide more generous leave policies, tuition reimbursement, better life insurance, or opportunities to earn bonus pay. There is a broad range of benefits provided to teachers by districts, and these are detailed in Appendix C.

Although all teachers receive retirement benefits, these are not a part of the negotiated agreements. Teachers are part of the state-run Teacher Retirement System (TRS) which is determined wholly by the state.

In order to understand the range of benefits provided to teachers across the state, we analyzed collective bargaining agreements from 47 (87%) of Alaska districts. All districts provide health insurance for their employees, but the amount that teachers have to contribute toward health costs varies considerably. At least 22 districts cover full premium costs for both teachers and their spouses and dependents (another did not specify whether family members were covered at district cost or employee cost). About 24 districts cover at least 80% if not more of health insurance premiums for teachers. Thirty-nine districts provide some form of life insurance; the amount offered varies considerably.

All districts provide teachers with personal leave days. These vary by the total number of days a teacher receives annually as well as in how many leave days a teacher can accrue in total and whether or not they are paid full salary or salary minus the cost of a substitute teacher for those days. The majority of districts give three to four days of annual leave, with just a couple giving significantly more.

Fifteen districts provide some sort of travel support for teachers, ranging from a $150 stipend to travel worth several thousand dollars. Only six districts provide a moving allowance for new teachers, ranging from "as pre-approved" to $5000. A disincentive to providing moving expenses is that the state requires districts that provide a moving allowance to new educators to also cover the cost of teachers leaving the district if the teacher is leaving involuntarily (e.g., has not had his or her contract renewed or if his/her job has been eliminated).

At least ten districts offer some amount of tuition reimbursement. Many districts offer this only for recertification although some support graduate programs as well. In addition, one district reimburses half the cost for teachers who attain National Board Certification[3].

Nine districts provide housing to teachers; how much they charge and the degree to which they subsidize these rents varies widely. Six districts of these provide district housing to teachers or, if they are not in district housing, a subsidy for rent or fuel costs. Three districts provide housing subsidies but do not offer any district lodgings.

Some districts provide a longevity bonus to teachers who stay for a minimum number of years, which varies from six to ten or more years.

There are a few additional benefits that just are offered in one or two districts, such as bulk goods delivery or gym membership.

2. Performance pay in Alaska

Both the state and some districts have experimented with performance pay structures. Most of these experiments are no longer in effect. The North Slope Borough School District offered $500 bonuses to each teacher in schools that achieved Adequate Yearly Progress between 2009 and 2012. This incentive is no longer offered. Additionally, as discussed above, Chugach School District, Lake and Peninsula School District, and Kuspuk School District participated in a 5-year Alaska Teacher Incentive Project between 2006 and 2011. The project included 11 different components, including bonuses through the state-administered Alaska School Performance Incentive Program. However, not all districts offered all 11 components and some components were discontinued in the midst of the program. As noted earlier, Chugach is the only district continuing to use the performance-based structure, and while teachers earn

[3] Two districts offer salary increases of $2000 for attaining National Board Certification. While this could be considered a benefit, it shows as compensation in our data.

significant pay in addition to their base salary, the negotiated schedule has much lower base salaries than other districts.

Determining salary schedule and differentials for Alaska

The project developed a salary schedule, salary differentials, and solicited stakeholder perceptions around structures for teacher compensation. To do this, we identified data sources, identified empirical challenges, and adjusted teacher salaries for differences in quality. These quantitative analyses are detailed below, and they underlie our proposed schedule and differentials. We begin this section with a technical overview, and then discuss how we used the results of the quantitative analysis to develop a proposed salary schedule.

1. Technical overview

Creating a potential unified statewide compensation regime for public school teachers and principals requires addressing a number of important questions, including:

1. What overall salary levels are needed to attract and retain qualified teachers and school administrators in Alaska schools?
2. What community differentials are appropriate to adequately compensate for differences in living costs and availability of amenities that matter to professional workers and their families?
3. What employee benefits are most important to staff and should therefore be included in a statewide compensation package?
4. What variation in pay, if any, should be offered to compensate for specialized job characteristics or assignments, such as for head teachers, special education, or mathematics and science?
5. What variation in pay, if any, should be offered to compensate for experience, advanced education or skills, or performance?

The analysis builds from a basic empirical model of the labor market for teachers and principals. In the model, the school district sets a salary schedule and benefit package. For teachers, and in larger districts, for principals, the compensation schedule is an outcome of collective bargaining negotiations. However, the outcome of collective bargaining may not necessarily be aligned to local supply and demand conditions. Once the salary schedule has been determined, the labor market determines who gets hired; consequently, the quality of staff depends on the compensation schedule. Districts may find that they have difficulty recruiting staff if salaries are below market rates, and may offer discretionary benefits such as signing bonuses to fill all positions.

As we have noted, quantitative research on teacher compensation structures in the United States is limited. Even if such research existed, the evidence might apply poorly to Alaska, due to the state's unique mix of urban and rural communities with vast geographic disparities in types of amenities and living conditions. Consequently, quantitative analyses must be based on, and are limited by, the data available for Alaska teachers and administrators, the schools they work in, and the communities served.

Data sources

We gathered as much empirical evidence as was available to address each of the five questions from a number of sources. We relied in particular on the following data sets:

Collective bargaining agreements. We compiled collective bargaining agreements (CBAs) for teachers and principals obtained from Alaska school districts. At least one recent CBA for teachers was obtained for each district (except one that does not have collective bargaining at present). For most districts, we were able to obtain teacher CBAs covering the period from the 2009-10 school year to the 2014-15 school year. Teacher CBAs contain the complete salary schedule, employee benefits, and information about working conditions. CBAs for principals were also available for some districts. However, superintendents of smaller districts with only a few schools typically bargain individually with principals, and no school administrator CBAs were available for those districts.

Public school data. We compiled publicly available data for individual Alaska schools and school districts from School Report Cards and other reports submitted by schools and districts to Alaska DEED. One specific item that we obtained from School Report Cards was the reported percentage of core academic classes taught by "highly qualified" (HQ) teachers as defined by the federal No Child Left Behind legislation.

Certificated personnel data. The Alaska Department of Education and Early Development (DEED) provided information on all certificated personnel working in Alaska public schools assignments for the period 2005-06 to 2014-15, with limited additional data for previous years dating from 1999. Personnel information included highest academic degree, years of experience in the job class, base salary, and percentage of full-time equivalence in each specific job assignment. Data for individuals were linked across years using a unique Alaska teacher identification number.

Community data. We compiled data from the U.S. Census and other public sources and generated additional information on characteristics of the communities where Alaska public schools are located. Census community data included total and school-aged community population and its racial composition, percentage of population in the labor force, and percentage of families living in poverty. Data from school districts included total students and racial composition of students. ISER-generated community data included current air fare from the community and from the nearest hub community to Anchorage, whether the community was connected by road to a hub community and to Anchorage, heating and cooling degree days and annual precipitation (from National Weather Service climatologies), and alcohol legal status (from the Alaska Alcoholic Beverage Control Board).

Three big empirical challenges

The available data summarized above provides the raw material to address the set of questions regarding a statewide compensation regime for public school teachers and principals. Using the data to provide meaningful answers to the questions requires overcoming three big empirical challenges. First, we have data for a number of years which demonstrate the obvious: salary levels change over time. Overall, the rate of increase is modest, and is consistent with cost of living increases. However, conditions in one year may not be representative of conditions in other years, and one must be careful to distinguish short-term discrepancies from long-term trends.

A second issue that is more difficult to address is that teacher salary schedules set in CBAs may or may not reflect market conditions. If a CBA causes a district to pay less than the market rate, schools in the district will likely end up with teachers with lesser ability. If the CBA requires the district to pay more than what is needed to attract a sufficient pool of qualified teachers, there may be many qualified applicants for each opening that is filled. We do not have access to information on job queues across

schools and districts, but may be able to infer the queue status at least somewhat, using indirect methods. One simple method we used was based on whether the CBA allows schools to offer a signing bonus. Presence of a signing bonus is inconsistent with a job queue. Another method was to use the percentage of core classes taught by HQ teachers as a proxy variable for a queue. Schools consistently able to produce high HQ percentages are more likely to have a job queue than those whose HQ percentages are lower.

The third and most troubling challenge stems from the fact that teacher ability varies greatly across individuals. Comparisons of salaries across districts and over time are inaccurate if they do not control for differences in teacher quality. Analyses that fail to adjust for systematic differences in teacher quality among schools will produce biased results, underestimating the amount that salaries need to be raised in the school with lower quality teaching relative to the school with higher quality teaching to equalize educational opportunities for students in the two schools. Unfortunately, we have limited information about quality; we only have observable qualifications such as education degrees and experience. The next section discusses this issue more fully, and outlines how we adjusted for unobserved teacher quality differences.

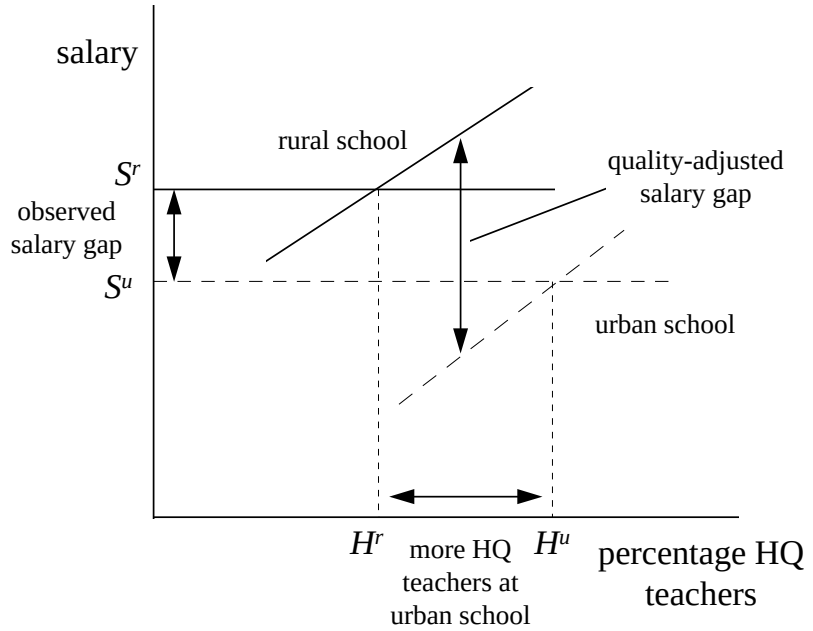
Adjusting teacher salaries for differences in quality

We observe salary differences among districts, but teachers in different districts also differ in their qualifications. To simplify the discussion, we will assume that the difference can be described as an urban-rural disparity. That is, rural districts generally have somewhat higher salaries than urban districts, but the salary difference is insufficient to attract and retain teachers as qualified as those teaching in urban schools.

Figure 1 shows an example of a rural district and an urban district with salary on the vertical axis and the percentage of teachers considered “highly qualified” (HQ) in the subjects they teach on the horizontal axis. Percent HQ is one crude measure of teacher qualifications and by no means a comprehensive indicator, but serves as a basis for the discussion because it is easy to measure. The horizontal lines represent the observed salary, adjusted for education and experience, for the rural school (S^r) and the urban school (S^u). The upward-sloping lines show the tradeoff between pay and percentage highly qualified -- the teacher supply curves -- representing the amount the rural district (solid line) and urban district (dashed line) would have to pay to attract and retain a given percentage of highly qualified teachers.

Figure 1 shows that the rural school has to pay more than the urban school. In this example, the rural school does pay more ($S^r - S^u$), but still ends up with fewer highly qualified teachers than the urban school ($H^r - H^u$). To measure the true disadvantage of the rural district, one has to control for the difference in quality. The quality-adjusted salary gap is the vertical distance between the two upward-sloping lines, which is clearly more than the simple observed salary gap.

Figure 1
Observed and quality-adjusted salary differences between urban and rural districts



Many rural districts pay more than urban ones, and even with higher pay, they attract fewer highly qualified teachers. When we adjust the data to see what districts pay for similarly qualified teachers, the salary gap is even larger.

While we do not have the ability to control directly for quality to measure the quality-adjusted salary gap, a number of indicators and methods are available that allow us to infer differences in quality and make appropriate adjustments. The presence of a signing bonus, for example, signals that the compensation offered may be too low for at least some schools in the district, with consequences for quality. Another indicator is the percentage of core classes taught by "highly qualified" teachers according to federal standards. Although the federal standard is 100 percent for the percentage of core classes taught by highly qualified teachers (percent HQ), many Alaska schools consistently fall substantially short of that goal, particularly in remote rural communities.

Two more complex but also more subtle indicators of potential quality differences include staff turnover and job changes involving moves from one community to another. We assume that teachers and principals will be more likely to move to and then stay in communities with a better package of salary, benefits, working conditions, and living conditions. In order to assure that schools in all communities are able to attract and retain comparable quality staff, compensation should be sufficient to equalize turnover rates and likelihood of job moves across all Alaska communities. This would require that compensation increases in places seen by teachers and principals as less desirable relative to compensation in more attractive places. We discuss more detail about procedures for estimating quality-adjusted salary indexes below.

Empirical analysis of salary data
We developed four separate empirical analyses of teacher and administrator salaries that address the outstanding questions about a statewide salary schedule while controlling for variation across schools in

quality of personnel. Table 3 summarizes the objective, main variable analyzed, time period, data sources, and statistical methods employed for each of the investigations. Although the various analyses rely on the same data sets, and elements of the first two studies are used directly in the latter two, each analysis stands on its own and has a unique role in the consideration of statewide salary schedules.

Table 3
Overview of the study's approach to modeling salaries and salary differentials

	Salary predictability	Attract	Retain	Highly qualified
Objective	Relate actual salaries to CBA data	Place a value on community preferences	Identify factors determining job stays in a place	Understand variation in HQ percentages
Dependent variable	Annual full-time base salary	Log of odds ratio of move from place A to place B	Employment duration in a place	Percent of core classes taught by HQ teachers
Unit of analysis	Individual	Individual	Individual	School
Time period analyzed	2005-2014*	2005-2014*	2005-2014*	2010-2013*
Main data sources	Personnel records, District CBAs	Personnel records, community data	Personnel records, community data	School report cards, community data
Statistical method	Panel regression	Logistic regression (Equation 2)	Survival analysis (Equation 3)	Censored regression (Equation 1)

*The year indicates the spring semester of the school year, i.e., 2014 refers to the 2013-14 school year.

To account for economic and geographic characteristics of districts and communities, we modeled teacher salaries and used predicted salaries to calculate the differentials necessary to attract and retain highly qualified teachers in each community.

Salary predictability. The objective of this analysis is to answer the question, to what extent are teachers actually being paid compared to what contract terms say they should be paid? The analysis aims to uncover regularities in ways that teachers and principals have adapted to the CBA system to accommodate each individual's circumstances. In particular, while contract terms specify steps for experience, some discretion remains for accounting for experience in other districts, specific job assignments, percentage of full-time equivalence, and other items that could materially influence actual salaries. The analysis therefore predicts actual salaries of individual teachers and principals based on recorded job assignments, education and experience. Because the salary data comes from a panel of teachers observed over time, we use panel multiple regression methods to obtain more precise estimates. In addition to assisting with an understanding of market conditions for teachers and principals, we use this analysis to understand how actual salaries compare to contract terms and to better predict how teacher and principal compensation changes over time and potentially affects employment decisions.

Highly Qualified *(percent "highly qualified" teachers)*. The percent HQ analysis uses school-level data to analyze the pattern of difference among schools in the percentage of core classes taught by HQ teachers. The main objective is to identify characteristics of schools historically exceeding or not meeting the threshold HQ standard. When characteristics of schools meeting the standard are paired with salary data, they approximate a salary threshold level needed for a school with a given set of characteristics to obtain qualified teachers, using the federal standard for HQ as a (minimum) measure of quality. Data from School Report Cards are available from the 2003-04 school year until 2012-13; however, percentage HQ rose steadily across the state until leveling off in 2009, so we begin our analysis with data from the 2009-2010 school year.

We explained variation in the percentage of core classes taught by HQ teachers across schools and years using the following equation:

Percent HQ = a + b(log of compensation) + c(school and community characteristics) (1)

where a, b, and c are vectors of coefficients to be estimated. We estimated the coefficients using censored regression equations for the percentage of core classes taught by HQ teachers, since the HQ percentage ranges between 0 and 100%.

Attract *(moves among Alaska schools).* This analysis uses moves from one job to another as a measure of attractiveness of compensation, working conditions, and living conditions. The objective is to determine contract provisions, job assignments, and community characteristics that are important enough to teachers and principals to have a measurable effect on choice of jobs. Because moves between districts typically involve a change in compensation and a potential loss of tenure, the analysis provides information for geographic pay differentials, the overall salary scale, and the role of tenure as an employee benefit. We assume that all job moves are voluntary. This assumption may be violated in some cases involving separation of teachers who lack tenure. However, we believe these involuntary job losses represent a small proportion of the total in our case because all the teachers we analyze moved to new teaching jobs in Alaska. For principals, transfers to different schools within the same district may also be involuntary. Moves to jobs in new districts would most likely be voluntary, but the total number of such moves is relatively small, limiting the power of the analysis.

We used logistic regression to explain the pattern of moves among communities over the period 2005-2014, estimating the following equation:

$L(A,B)$ = [a(compensation in A) + b(job characteristics in A)+ c(school & community characteristics in A)] / [a(compensation in B) + b(job characteristics in B) + c(school and community characteristics in B)] (2)

where $L(A,B)$ represents the natural logarithm of the odds ratio of moving from community A to community B, and a, b, and c are vectors of coefficients to be estimated.

Retain *(job duration)*. This analysis examines duration of teachers' and principals' employment in schools in a given community. It uses length of job stay as a measure of the attractiveness of compensation, working conditions, and living conditions associated with the job. Because we observe a large number of individual job duration intervals, this analysis has the potential to observe contract provisions and particular job assignments that matter enough to staff to have a measurable effect on job turnover. In addition, the characteristics of schools and communities that are associated with variations in job duration provide information relevant to geographic pay differentials and the overall salary scale.

We estimated multivariate equations predicting the number of years in schools a community over the period 2005-2014 using a Cox proportional hazard model. The equation for the relative hazard rate, *H*, for leaving a community was

$$\log(H) = a(\text{log of compensation}) + b(\text{individual characteristics}) + c(\text{job characteristics}) + d(\text{school and community characteristics}) \qquad (3)$$

where *a*, *b*, *c*, and *d* are vectors of coefficients to be estimated.

The next section summarizes the findings from the four different quantitative analyses. Appendix D contains additional information on the variable definitions, statistical methods, and detailed results.

Findings from quantitative studies

Salary predictability. In theory, collective bargaining contract provisions combined with education and experience should determine salary exactly for full-time teachers. In practice, the salary equations explained 78 percent of variation in salaries of full-time teaching personnel using contract provisions as well as additional characteristics of teachers and positions that are not mentioned explicitly in the contracts. Specifically, we included demographic information about teachers and information about specific job assignments. We found no significant differentials between pay of men and women and between African American and White teachers. However, American Indian and Alaska Native (AI/AN) teachers were paid 1.3 percent less (95%CI 0.4% - 2.1%) than White teachers after controlling for the other characteristics, and those of other races were paid 0.9 percent less (95%CI 0.1% -1.7%). Some differentials were also found for certain job assignments, but these were very small.

Variation in salaries of principals was much harder to explain. This may be due in part – but only in part – to the fact that many districts do not have collective bargaining agreements for principals. Principal salaries display a large range – a differential greater than 3 to one between the highest and lowest paid full-time principal. The data suggest that principal pay is highly idiosyncratic, with much of the variation determined by unobserved factors. The salary equation that includes demographic characteristics, education and experience, base and maximum pay of teachers in that district, and percentage job assignments for assistant principal, principal, and various teaching assignments (many principals teach part-time) explained only 40 percent of the overall variation. The equation explained about 70 percent of the variation among positions within a district, and only 19 percent of salary variation across districts. The salary equations found no systematic ethnic differentials in principals' salaries. However, we found a significant gender disparity: female principals were paid 4.9 percent less than male principals (95%CI 2.7% - 7.1%); after controlling for all other observable explanatory factors.

Percent HQ. The percent HQ analysis uses school-level data to analyze the pattern of difference among schools in the percentage of core classes taught by highly qualified teachers. The equation results indicate that the base salary for teachers with a master's degree was highly correlated with percent HQ, while base salary for teachers with a BA degree was not important. Existence of a signing bonus in the district contract was associated with a large negative disparity in percent HQ. Schools with the option of offering a signing bonus had 17 percent lower percent HQ (95% CI 12% - 22%) than schools in districts without a signing bonus, after controlling for other factors. This result offers strong evidence that teacher compensation in these schools is too low to attract and retain highly qualified teachers, and that the signing bonus is insufficient to offset the disadvantage these schools face.

Other contract provisions were also associated with differences in percent HQ. Schools in districts that offered some payment to teachers for college tuition increased HQ by 4.0% (95% CI 1.3% - 6.6%). This effect is quite large; it is likely that paying for tuition does not by itself cause teachers to become more qualified, but rather that such payments signal an approach by the district administration to invest in teachers' professional development. Provision of teacher housing and higher payments for health care are both associated with lower percent HQ. One should keep in mind that health care and housing represent important components of living costs, so we interpret the negative associations as indicating geographic cost of living indicators that have a greater influence on the ability to attract and retain teachers than the value of the nominal staff benefits.

As expected, community characteristics were strongly associated with the percent HQ. Schools in communities with a single K-12 school had a 13.3% lower percentage of highly qualified teachers (95%CI 8.5% - 18.0%) after controlling for other factors. Small schools -- defined as K-12 schools located in communities with a school-aged population less than 100 -- had an additional 5.2 percent lower HQ (95%CI 1.3% - 9.0%) (We know that very small schools have teachers who teach multiple subjects and grades, so this lower percentage is not surprising). Lower percentages of minority students, road access, ferry access, proximity to Anchorage or Fairbanks for road-accessible communities, and lower air fares from the regional hub community to Anchorage or Fairbanks all were significantly associated with increased percent HQ. Less regulation of alcohol was also associated with higher percent HQ. However, it is not clear whether that effect measures alcohol regulation *per se* or indicates differences in social conditions that are associated with community decisions to regulate alcohol.

Moves among Alaska schools. The results for teachers show a significant correlation between compensation and relocation decisions. The relative starting pay for teachers with the education level that the teacher possessed when he or she moved had a large positive correlation with moving decisions, while the maximum salary was negatively correlated, although with a much smaller effect. The maximum salary represents in effect the lost opportunity for higher pay in the future if the teacher remains in the old place. Existence of a signing bonus in a place is associated with a lower likelihood of moving there, providing evidence that the signing bonus amount offers an insufficient increment to compensation to offset disadvantages of the place. Percent HQ also has a strongly negative effect. This suggests that lower performing schools influence qualified teachers to want to move to higher performing schools, increasing the difficulty of these disadvantaged schools to achieve HQ goals.

Job assignments and community characteristics have significant effects, indicating that working conditions and living conditions are also important factors in relocation decisions. As was the case with the percent HQ results, relatively lower percentages of minority students, road access, proximity to Anchorage or Fairbanks for road-accessible communities, and lower air fares from the regional hub community to Anchorage or Fairbanks were significantly associated with increased likelihood of moving to a community. Milder climate (fewer heating degree days) was also preferred.

Given the salary and community and school characteristics, moving from a non-classroom assignment to become a curriculum specialist or to take any classroom teaching position is strongly preferred. The results suggest that teachers prefer positions involving regular face-to-face contact with students even though the salary equations demonstrate that there is no difference in pay associated with these assignments. The differences between regular teacher, head teacher, itinerant teacher, and English as a second language teacher are not statistically significant from each other. However, secondary

mathematics or science assignments are significantly less preferred. We interpret this finding as a reluctance of teachers who are not trained in mathematics and science to take jobs that require them to teach these subjects.

Part-time special education assignments are not preferred, but the results show that teachers are more likely to move to obtain a full-time special education position than to take other classroom teaching positions. We interpret this result as another piece of evidence for job queues caused by contract salaries not reflecting geographic differences in market conditions, rather than that teachers actually prefer special education assignments. Because special education positions are often more difficult to fill, teachers who are most anxious to change locations can more quickly do so by taking a special education position in a place they consider more desirable to live and work.

Because tenured teachers who move to take positions in another district lose their tenure rights, one can infer how loss of tenure compares to other factors in influencing teacher relocation decisions. As expected, loss of tenure is a large and significant deterrent to moving out of the district. One can use the estimated equation to derive a value for tenure based on the amount that compensation would have to increase in the new job relative to the old job to predict an equal probability of moving or staying if moving results in a loss of tenure. If the odds ratio in equation (2) is 1.0, then the value V of a difference in an job characteristic, ΔK is:

$$V_K = -b\Delta K/a \quad (4)$$

It should be noted that the value of tenure and other job characteristics measured this way represents a lump sum amount related to the change of career job rather than a recurring annual figure. In the case of tenure, the value represents the amount the teacher places on being tenured, which would be typically less than the value of tenure as an institution. That is because changing jobs does not eliminate the right to receive tenure after three years of satisfactory service in the new school district.

Table 4 summarizes estimated values of tenure and various job assignments using the method of equation (4). The estimated value of tenure is roughly comparable to the incremental value of a classroom teaching assignment relative to a non-classroom job such as a correspondence teacher.

In the top part of Table 4, the change is a loss of tenure; in the lower table, the change is a move from a regular classroom teaching position to the position stated on each row. For example, based on teacher moves, it appears that the temporary loss of tenure is equated to $34,602 in compensation. In other words, the time it takes teachers to re-earn tenure in the new district is perceived as a loss of compensation equivalent to $34,062. The large negative value of a non-classroom teaching assignment shows that teachers greatly prefer to be in the classroom. Interpretation of the special education results is not clear. Teachers moving to a full-time special education position seem to be willing to give up pay in order to do so. Teachers taking on 50% of their duties as special education need to be compensated more for doing so.

Table 4

Estimated lump sum value to teachers of tenure and of various job assignments derived from analysis of teacher job move decisions

	Mean value	95% Confidence Interval	
		Low	High
Tenure	$34,062*	$29,019	$39,106

Job assignment	Mean value relative to a regular classroom teaching assignment	95% Confidence Interval	
		Low	High
Curriculum specialist	$6,421	-$17,566	$30,408
Head/lead teacher	1,934	-8,075	11,943
Non-classroom teaching assignment**	-38,052	-43,013	- 33,091
Itinerant teacher	4,657	-20,903	30,218
Secondary math/science	-6,216	-11,459	-973
English as a second language (ESL) teacher	-4,201	-22,684	14,282
Special education, 50%	-13,508	-19,428	-7,583
Special education, 100%	5,786	676	10,895

*** Teachers have the opportunity to re-earn tenure in their new district; this number reflects the value of the temporary loss of tenure.**
** Includes correspondence teachers

Sometimes teachers move to a less desirable job in a more desirable place, and vice versa. When a teacher moves, it communicates a value on place and job assignment. Our analysis tried to separate out these factors as reflected in compensation. This table shows how much a full-time teacher would have to receive in a lump sum (not annually) for a job change. We calculated these amounts using data from teacher moves from one position to another, looking at changes in assignment, tenure, and salary.

Attempts to estimate the *attract* equation (equation 2) for principals revealed that principals' salaries are too idiosyncratic given the number of district moves to predict job moves from direct compensation measures. Instead, we used the maximum contract salary for teachers as an indicator of variation in salaries among districts, and found it significantly correlated with principal moves. The community characteristics that attracted principals were similar to those for teachers. However, the much smaller number of principals moving between communities made the estimates much less reliable than for instructional personnel.

Job duration. This analysis uses length of job stay as a measure of the attractiveness of compensation, working conditions, and living conditions associated with the job. The results of estimating equation (3) using a Cox proportional hazard model indicated that higher salaries, adjusted for inflation, significantly reduced turnover when other factors are equal. Unlike the case for the move analysis, the contract

maximum salary was highly correlated with lower turnover, but the base salary had an insignificant effect. This adds support to the interpretation that the maximum salary represents the opportunity for higher pay in the future if the teacher remains in place over the long term, while the base pay is more important for early career moves.

The analysis of job duration found only small differences in implied turnover for different job assignments after controlling for other factors. A regular classroom teaching assignment was associated with a statistically significant reduction in turnover. However, the magnitude of the effect on the annual hazard rate was less than 0.2 percent. On average, special education assignments had higher turnover, but variation among teachers made this effect not statistically distinguishable from random variation.

As with the other analyses, larger communities, communities with a milder climate (fewer heating degree days and fewer cooling degree days) and lower percentages of minority students, and more accessible communities had significantly lower turnover. In particular, road access, ferry access, commercial jet air service, proximity to Anchorage or Fairbanks for road-accessible communities, and lower air fares from the regional hub to Anchorage or Fairbanks all reduced turnover.

3. Salary schedule development

Our charge was to develop a statewide salary schedule, and though our literature review and stakeholder perceptions survey considered different models, this analysis presents a step-and-lane model. From our review of the literature, we note that it would be ideal to link together salaries with student learning outcomes we want to see, but to date, no one has produced an effective and efficient way to do this. The step-and-lane model is efficient, has some empirical support, is the familiar base that generated data for our analysis, and was the preferred model for most stakeholder groups; thus the step-and-lane model was selected to meet the need for an evidence-based recommendation.

The quantitative analysis estimated, for each community, the minimum districts would have to pay teachers in order to meet their staffing needs on three measures:

1. attract enough teachers to fill positions
2. retain teachers already working in the district
3. ensure those teachers that they attract and retain are highly qualified for their jobs

The analysis of all three measures generates relative outcomes for schools; however, the highly qualified measure can be associated with an absolute standard that can be used as the base for an overall salary schedule. Because the salary for teachers with a master's degree explained the variation in the data for the highly qualified model, the salary schedule was designed from the pay rate for a beginning teacher with a master's degree.

For the highly qualified measure, we used the results of the analysis to calculate, by community, how much the reference teacher would need to be paid for schools in the community to have 100 percent of their teachers highly qualified. Given the coefficients a, b, and c for equation (1) estimated from the data on Alaska schools, one may solve the equation for the salary that predicts 100 percent HQ; that is:

$$100\% \text{ HQ compensation} = [\, 1 - a - c(\text{school and community characteristics}) \,] \,/\, b \qquad (5)$$

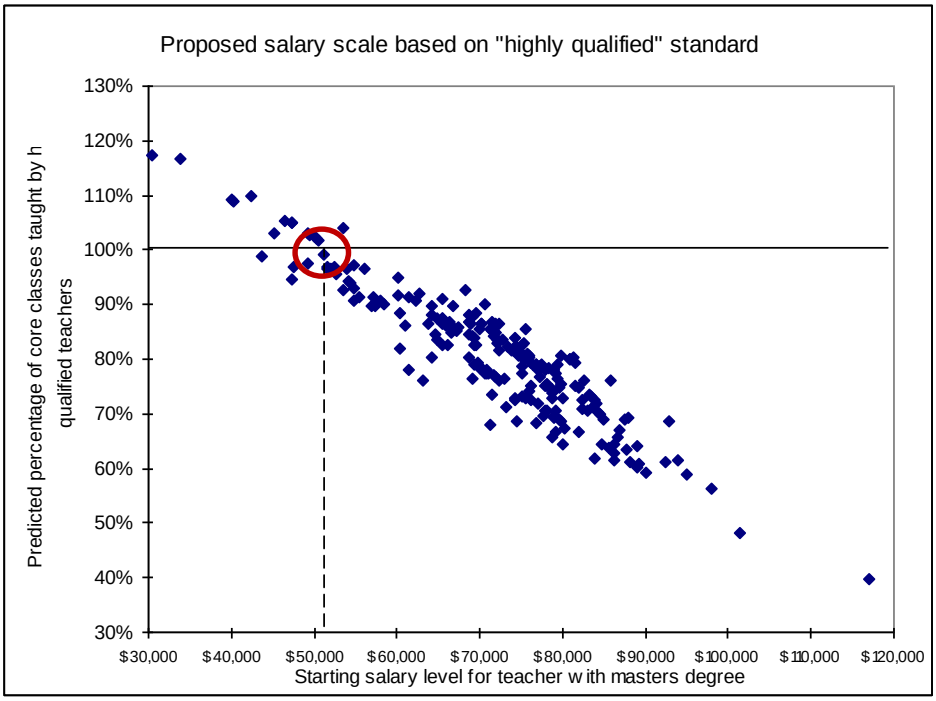
The analysis also looked at whether communities did indeed have highly qualified teachers. A few communities paid more than the model predicted they would need to pay; i.e., equation (5) generated a

compensation level achieving 100% HQ that was lower than their district's starting salary for teachers with a master's degree. The majority of communities paid less, however. One set of communities emerged as paying what the model predicted they would need to pay (but not more) and also were able to recruit and retain enough highly qualified teachers to fill their positions (meaning, these communities met the three measures). Those communities were the "central" Mat-Su School District communities of Wasilla, Palmer, Meadow Lakes, Big Lake, and Houston.

In addition, in the other two models, the Mat-Su district also met the designated measures: turnover is generally less than 10 percent each year, and teacher move data indicates that it is among the preferred districts for teacher moves.

Based on this analysis, it appears that Mat-Su School District is paying what it needs to pay to attract teachers to teach in schools in its central communities, but not more than it needs to. Figure 2 shows a scatter plot of the predicted percent HQ for every community in Alaska that has a school, along with the starting salary for teachers with a master's degree. The horizontal line represents the 100 percent HQ standard, while the vertical line shows the Mat-Su School District's pay rate for the 2014-15 school year. The horizontal (X) axis on the chart represents the salary that the equation predicts that schools in the community reach but not exceed the 100 percent HQ standard.

Figure 2
Predicting ability to attract highly qualified teachers based on district salary scales



The figure above shows the predicted percent of core classes taught by highly qualified teachers based on district characteristics and salaries. Each dot represents an Alaskan community. Since the actual percent could never exceed 100, dots above the 100% line indicate communities in districts that could pay less than they currently do and still attract enough highly qualified teachers for all of their classes. Dots below the line indicate communities where districts need to pay more. Several of the dots in the red circle are communities near Palmer and Wasilla, where

the Mat-Su district salary of just over $50,000 for a teacher with a master's degree is just enough to attract the number of highly qualified teachers needed.

There is not an available theoretical basis to determine the optimum number of steps and lanes in a salary schedule, or ranges of experience compensated, but we do see that different groups of teachers respond differently to those incentives. Mat-Su's schedule has the average number of steps for Alaska districts (13; the range is 11 to 24 and the average 13), slightly more lanes than average (7; the range is 5 to 11 and the average is 6); and close to average salary amounts as well.

Therefore, rather than trying to extrapolate a new salary schedule based on a hypothetical district and set of teacher characteristics, we believe it is better to use an actual schedule to meet our criteria. In particular, we used the most recent Mat-Su schedule (2014) included in the data analysis, scaled up to the level our analysis found would allow the Anchorage school district to attract and retain highly qualified teachers. Although this is about a 13 percent increase in the schedule, because Anchorage salaries were somewhat higher than the Mat-Su salaries, the increase over the ASD salaries was only about 10 percent. This is detailed in Table 5.

Table 5
Proposed base step-and-lane salary schedule for Alaska teachers

STEP	B	B+15	B+30	M B+45	M+15 B+60	M+30	M+45	D
0	$51,719	$53,988	$56,257	$58,527	$60,795	$63,066	$65,338	$67,608
1	$53,988	$56,257	$58,527	$60,795	$63,066	$65,338	$67,608	$69,880
2	$56,257	$58,527	$60,795	$63,066	$65,338	$67,608	$69,880	$72,147
3	$58,527	$60,795	$63,066	$65,338	$67,608	$69,880	$72,147	$74,416
4	$60,795	$63,066	$65,338	$67,608	$69,880	$72,147	$74,416	$76,686
5	$63,066	$65,338	$67,608	$69,880	$72,147	$74,416	$76,686	$78,954
6	$65,338	$67,608	$69,880	$72,147	$74,416	$76,686	$78,954	$81,224
7	$67,608	$69,880	$72,147	$74,416	$76,686	$78,954	$81,224	$83,494
8		$72,147	$74,416	$76,686	$78,954	$81,224	$83,494	$85,764
9			$76,686	$78,954	$81,224	$83,494	$85,764	$88,035
10				$81,224	$83,494	$85,764	$88,035	$90,305
11					$85,764	$88,035	$90,305	$92,573
12						$90,305	$92,573	$94,843
13						$92,573	$94,843	$97,115

Differentials can be applied to align compensation to community characteristics.

Principal salaries were far more idiosyncratic, and we were unable to produce a principal salary schedule that was reliable or evidence based. There are several reasons for this. First, when we examined the data, including that data collected in superintendent interviews, we became aware that principal positions in Alaska are extremely varied in scope and responsibility, and principal assignments and compensation vary widely. At least five Alaska superintendents also serve as principals in one or more schools, multiple principals have assignments where they oversee more than one school, and lead teacher/principal combinations are incredibly idiosyncratic; thus, given this variation, it is not possible to recommend one compensation system for the whole state that is based on evidence or data. In addition, because there are fewer than 500 principals statewide, the number of observations is too small to overcome these kinds of variations. When we sought to build and run models to accommodate for these factors, we could not produce mathematically reliable results, given the data limitations.

4. Salary differentials methods summary

There are two types of differentials that we were asked to calculate: community differentials and position differentials.

Estimation of Community Differentials Summary

CAEPR used data on teacher assignments, teacher moves, district characteristics, and community characteristics to estimate the effect of salary, district characteristics, and community characteristics on teachers' decisions to stay in districts, move between districts, or leave teaching in Alaska. We also looked at the effect of those factors in districts' ability to fill their teaching positions with staff who met highly qualified criteria for their assignments. A list of the key variables (including data sources) used in the analysis appears in Teachers' decisions to take a job, stay in a job, move to another job, or leave teaching are complex. Districts also have multiple goals for staffing their teaching positions. We built separate models to estimate three different goals:

- Retaining teachers in positions (keeping ***turnover*** low)
- Attracting teachers (making the district attractive to teachers who ***move***)
- Staffing positions with good teachers (measured using the ***highly qualified*** standard)

In each model, we asked, "How do teachers respond to predicted salary differences?" and "How do teachers respond to different community characteristics?," while controlling for teacher and district characteristics. We could then compare the response to salary with the response to community characteristics to calculate how much of a change in salary would be necessary to offset community characteristics (such as remoteness, weather, and high poverty) that (on average) make communities less attractive to teachers. The complexity of teacher job decisions is evident from the results of the different models. Differentials in the turnover model ranged from 0.63 to 5.3; in the move model from 0.99 to 2.3, and in the highly qualified model (illustrated in Figure 2) from 0.62 to 2.4. In order to include information from all three models, we constructed a final differential by averaging the three.

Table 6

Key data used to develop salary differentials

, and a complete list is detailed in Appendix E.

Teachers' decisions to take a job, stay in a job, move to another job, or leave teaching are complex. Districts also have multiple goals for staffing their teaching positions. We built separate models to estimate three different goals:

- Retaining teachers in positions (keeping ***turnover*** low)
- Attracting teachers (making the district attractive to teachers who ***move***)
- Staffing positions with good teachers (measured using the ***highly qualified*** standard)

In each model, we asked, "How do teachers respond to predicted salary differences?" and "How do teachers respond to different community characteristics?," while controlling for teacher and district characteristics. We could then compare the response to salary with the response to community characteristics to calculate how much of a change in salary would be necessary to offset community characteristics (such as remoteness, weather, and high poverty) that (on average) make communities less attractive to teachers. The complexity of teacher job decisions is evident from the results of the different models. Differentials in the turnover model ranged from 0.63 to 5.3; in the move model from 0.99 to 2.3, and in the highly qualified model (illustrated in Figure 2) from 0.62 to 2.4. In order to include information from all three models, we constructed a final differential by averaging the three.

Table 6

Key data used to develop salary differentials

Source	Data points
Alaska Department of Education & Early Development's certified staffing database	• Salary • Years of experience • Job assignment • Education • School assignment • Ethnicity • Gender • Age
National Weather Service Climatologies, compiled by American Institutes for Research	Heating and cooling degree days, and binary variable to identify communities that are exceptionally rainy
Census	Labor force participation, poverty rates, and community size and demographic composition
Alaska Department of Education & Early Development	District demographic data
ISER	Road access and road distance to Anchorage and Fairbanks, ferry access, jet service, air fares to Anchorage and Fairbanks
District salary schedule information for the past 5 years	Minimum and maximum salaries, health care costs, and a number of variables indicating the presence or absence of other benefits, such as travel, tuition, reimbursement, housing, etc.

Data collected from multiple sources were coded and used in the economic modeling for salary differentials.

Estimation of position differentials summary

CAEPR also used the same data sets and the turnover and move models that generated the community differentials to look at differentials for hard to fill positions – secondary science, secondary math, and special education. The highly qualified model did not produce information relevant to position differentials because our highly qualified analysis was at the school rather than the individual level.

Evidence to support a differential for math and science is weak. Using the turnover model, we did not find any meaningful difference between those positions and other teaching positions. Using the move model we did find a differential that indicated moving from a non-math/science position into a position teaching math or science was associated with a negative value, but the 95 percent confidence interval for the math/science position overlaps that of the regular teacher without the math/science assignment (see

Table 4). The wide confidence interval, the fact that it was associated with a move between a non-science/math and a math/science position, and the fact that the turnover model did not find any position differential may indicate that the differential we found is associated with job moves for a teacher not qualified in the subject. At this time, we cannot recommend implementing a position differential for math or science.

Modeling a special education differential revealed a different set of problems with confounding issues. In the move model but not in the turnover model, full-time special education positions were associated, on average, with a positive differential - that is, that teachers would take less pay to be able to fill those positions. This pattern contradicts the experience of district administrators, and also does not explain why teachers in special education positions are not much more likely than average to leave their communities, but are much more likely to leave their special education positions.

We hypothesized based on qualitative data that teachers are becoming qualified for and taking special education positions to get or move into a job in a district where they would otherwise be unable to secure a position. We tested that hypothesis by re-running the move model for community differentials excluding special education teachers. That modeling revealed that when special education teachers are excluded, the range the resulting differential decreases, and communities with larger differentials (less desirable communities) tended to show the largest decreases. This supports our hypothesis that teachers taking special education positions in moves may be doing so to gain the benefits of a more attractive teaching location. While we believe that a special education position differential might be useful in attracting and retaining special education teachers, we would need to collect additional data about teacher qualifications and create new models; the data and models we have at this time do not allow us to calculate a reliable amount.

The calculated salary differentials reflect the amount of salary teachers would need (on average) to be compensated for many different factors. These include climate, remoteness, and other community characteristics including cost of living. In Alaska, the cost of living varies widely from community to community, and there is no generally accepted measure that covers all communities. Most cost of living estimates are based a standard "basket" of goods, including food, housing, and other supplies and services. While there are always differences within and between communities, in Alaska these are more pronounced. For example, estimating the cost of food using market-purchased beef and farmed produce does not accurately reflect the costs to rural residents in a subsistence economy. Complicating the picture further, teachers may or may not participate in that subsistence economy.

Even with those limitations, measures of the cost of living can be informative. The tables below show some measures available for some communities. Alaska communities generally cost more than the lower 48 average; and Anchorage is the least expensive of Alaska's larger communities. However, housing in Fairbanks is much cheaper than in Anchorage. Fuel costs show an extremely wide range, with residents in the smallest, most remote communities paying more than double prices for heating fuel than those in larger road-connected communities.

Table 7

Cost of living for selected Alaska places from the Council for Community and Economic Research

Region and city	Total index	Groceries	Housing	Utilities	Transport.	Medical	Misc.

U.S. Average	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Anchorage	132.9	122.6	163.0	109.4	124.0	137.8	121.2
Fairbanks	138.6	122.6	123.0	245.3	138.0	147.9	123.8
Juneau	135.2	125.3	152.6	142.1	155.3	149.1	112.3
Kodiak	141.2	142.6	157.1	140.7	166.6	137.2	117.4

Source: Alaska Economic Trends, July 2015.

Table 8

Median housing costs for selected Alaska places, 2014

	Rent: 2 bedroom w/utilities	Home Price
Anchorage	$ 1,331	$ 360,965
Juneau	$ 1,306	$ 352,614
Kodiak Island	$ 1,420	$ 292,713
Bethel	*n/a*	$ 281,324
Ketchikan	$ 1,084	$ 277,326
Mat-Su	$ 969	$ 256,295
Kenai	$ 923	$ 246,948
Fairbanks	$ 1,228	$ 245,657
Sitka	$ 1,171	*n/a*

Source: Alaska Economic Trends, July 2015.

Table 9

Number one fuel oil costs per gallon in selected Alaska communities

Community	Price/gal	Community	Price/gal
False Pass	$3.80	Larsen Bay	$5.81
Willow	$3.81	Kake	$5.85
Talkeetna	$3.81	Old Harbor	$5.87
Anchorage	$3.83	Levelock	$5.95
Wasilla	$3.89	Galena	$6.02
Akutan	$4.00	Aleknagik	$6.07
Fairbanks	$4.09	Deering	$6.25
Wrangell	$4.14	Koyuk	$6.50
Kasaan	$4.15	Kotzebue	$6.52
Central	$4.17	Fort Yukon	$6.57
Kenai	$4.22	Saint Michael	$6.76
Ketchikan	$4.23	Unalakleet	$6.78
Hydaburg	$4.26	Buckland	$6.89
Petersburg	$4.26	Allakaket	$7.00
Juneau	$4.33	Saint Mary's	$7.17
Cantwell	$4.35	Kwethluk	$7.19

Ouzinkie	$4.44	Kasigluk	$7.22
Unalaska	$4.57	Tyonek	$7.24
Nenana	$4.80	McGrath	$7.46
Saint Paul	$5.10	Saint George	$7.74
Yakutat	$5.26	Hughes	$9.00

Source: Alaska Energy Data Gateway, data for Jan 2014

We calculated the implementation cost of the salary schedule and community salary differentials by applying them to our most recent year of teacher data. For those teachers, we used the teacher salary equation in our model to estimate their pay in 2014-2015 under current district contracts, and also using our schedule and differentials. If our models were implemented statewide, salary costs would increase by approximately 15 percent. District cost changes ranged from a 6% salary decrease to a 105% increase. These calculations are presented at the district level in Appendix F.

Stakeholder perceptions

Because education and teacher compensation are political issues, understanding the empirical literature and developing robust geographic cost differentials serves only part of the state's decision-making needs. Any new system, no matter how well designed, would need support and buy-in during the implementation stages. We sought to understand public and stakeholder views of these issues in Alaska. To collect data around public opinion and perception, the research employed:

- Focus group interviews
- Interviews with key informants
- Electronic surveys

1. Focus group & key informant interviews

To engage stakeholders in the study, we first reached out and engaged professional networks, which provided an opportunity to gather insight on teacher and principal compensation and teacher tenure from targeted leaders. We conducted focus group interviews with representatives from the National Education Association-Alaska (NEA-Alaska)[4], the Alaska Association of School Business Officers (ALASBO), Alaska Superintendents Association, the Alaska Association of Elementary School Principals, and the Alaska Association of Secondary School Principals. More than 100 education professionals participated in these focus group interviews. Key informant interviews were conducted with:

- Carol Comeau, Former Superintendent of the Anchorage School District
- Mike Dunleavy, Senator, Alaska State Senate
- Saul Friedman, attorney, Jermain Dunnagan & Owens, PC, general counsel for a number of Alaska school districts
- Mike Hanley, Commissioner of Education & Early Development
- Les Morse, Deputy Commissioner of Education & Early Development

[4] NEA focus groups, at the NEA-Alaska Delegate Assembly (Spring 2015), included: separate focus groups for teachers from the five largest school districts , retired NEA-Alaska presidents, Policy Assembly for Rural & Small Associations (PARSA - multiple groups), and Classified Employees Association members (two focus groups).

- Dr. Susan McCauley, Division Director, Teaching and Learning, Alaska Department of Education & Early Development
- Sondra Meredith, Teacher Education and Certification Administrator, Alaska Department of Education & Early Development
- Joseph Reeves, Executive Director, Association of Alaska School Boards
- Chris Simon, Rural Education Coordinator, Alaska Department of Education & Early Development

2. Survey development

From these conversations and the literature review, we were able to identify themes and topics for further exploration, which were used to develop the survey instrument. The survey instrument was developed by CAEPR researchers and vetted for construct validity by the Alaska Council of School Administrators, administrators in the Alaska Department of Education and Early Development, members of the CAEPR advisory board, and the director of the University of Alaska Office of K-12 Outreach. Items were adjusted for clarity and non-bias to ensure quality results. The entire process was reviewed for ethical conduct and approved by the University of Alaska Anchorage Institutional Review Board (IRB).

3. Dissemination and analysis

An electronic version of the instrument was developed for each unique stakeholder category, and made available by group on the CAEPR website over a six week period from March 9, 2015 through April 13, 2015. The link was left open and additional recruiting done with school board members for an additional two-week period to encourage greater participation.

To advertise the survey, we engaged stakeholder networks (listed fully in Appendix G). We asked leaders of each organization to send emails and reminders to members, and additionally made stakeholder presentations at the Association of Alaska School Boards Annual Conference, November 2014; the Center for Alaska Education Policy Research Advisory Board, December 2014; the Alaska State Board of Education, December 2014; the Association of Alaska School Boards Winter Boardsmanship Academy, December 2014; the NEA-Alaska Board of Directors, January 2015; the 2015 Alaska Superintendent's Association Legislative Fly In, March 2015; and Great Alaska Schools general meeting, March 2015.

Unfortunately, we found it challenging to get many stakeholders to focus on this project, particularly once the legislature began discussions of education funding in spring of 2015. Despite our presentations and outreach to a number of professional organizations, we were unable to get as many responses to our survey as we had hoped.

Analysis of quantitative survey results included counts, rank order, and measures of central tendency, as described where the results are presented. Free response data from the surveys and focus group interviews were analyzed categorically, and the major themes and findings provide context and explanation for some of the observed quantitative results.

4. Participation

Survey participation included input from various stakeholder groups. The quantitative data presented in the analysis reflect participation from:

- 553 Teachers
- 98 Principals

- 44 Superintendents
- 80 Other education positions
- 28 School Business Officers
- 70 Parents, Students, and Community Members
- 32 School Board members

Other elected officials were also invited to participate in the survey, but we did not receive sufficient participation to draw averages.

The respondents represent a wide range of community perspectives. Eight hundred and nineteen (819) individuals reported their Alaskan community affiliation, and those responses represent 103 different Alaskan communities. Sixty-six percent of responses represented communities in "the big 5" Alaskan districts (Anchorage, Mat-Su, Kenai Peninsula, Fairbanks, and Juneau; the remaining 34% represented smaller districts. Thus the distribution reflects large and small Alaskan communities.

5. Compensation factors

Scholarly literature documents many considerations for structuring a teacher compensation system, and our preliminary key informant conversations and focus group interviews identified additional considerations, some more unique to Alaska. Thus when we surveyed the public, we inquired about what factors should be considered in a teacher compensation system, and their weight. Table 10 represents these data by stakeholder group. The shading in the boxes represents the intensity of stakeholder support.

Table 10

Stakeholder perceptions of relative importance of different factors in teacher compensation

	Teacher	Principals	Superintendents	Other education positions	School Business Officers	Parents student, community	School Board members
Years teaching	2.71	2.43	2.06	2.48	1.86	2.52	2.29
Education & degrees	2.49	2.34	2.03	2.23	1.86	2.43	2.29
Working in difficult-to-staff schools	2.01	2.25	2.45	2.10	2.10	2.03	2.11
Administrator evaluations	1.63	1.96	2.24	2.06	2.33	1.98	2.39
Growth in student learning	1.38	1.83	2.06	2.02	2.20	1.79	2.29
Teaching difficult-to-staff subjects	1.78	1.89	2.21	1.97	1.85	1.93	1.89
Working in low-performing schools	1.84	1.91	2.18	1.94	1.67	2.07	1.75
Teaching multiple subjects	1.68	1.51	2.00	1.90	1.67	2.03	1.93
Teaching multiple grades	1.71	1.53	1.97	1.87	1.62	1.97	1.96
Taking on additional duties	1.50	1.87	2.09	1.76	1.62	1.89	1.68
Peer evaluations	1.22	1.15	1.09	1.91	1.48	1.86	2.00
Parent perception of teacher quality	0.74	0.78	1.24	1.41	1.37	1.37	1.54

Student perception of teacher quality	0.71	0.88	1.27	1.29	1.20	1.21	1.64
Community perception of teacher quality	0.59	0.59	1.00	1.20	1.16	1.10	0.79
Class test scores	0.46	0.90	0.85	0.57	1.19	0.60	0.79
School test scores	0.29	0.61	0.85	0.57	1.19	0.60	0.79

Though stakeholder groups disagreed on the intensity to which some factors should be considered in teacher compensation, there was general agreement about what factors should be considered. This table shows average responses by stakeholder group on a 0-3 Likert scale (3 – should count a lot, 2 - should count some, 1- should count a little, and 0 - should not factor into compensation decisions).

Though responses varied by stakeholder type, there were some areas of common agreement. Across stakeholders, there is general agreement that the following should *not* be included in considerations of teacher compensation (demarcated in boxes with no shading in Table 10):

- Student standardized test scores for the teacher's class (class scores)
- Student standardized test scores for the whole school (school scores)
- Student perception of teacher quality
- Parent perception of teacher quality
- Community perception of teacher quality

There is general agreement that these things *should* factor (indicated by blue shading in Table 10):

- Number of years teaching experience
- Administrator evaluations
- Degrees or years of education
- Teaching in difficult-to-staff districts or schools

Weaker support, but still positive responses include:

- Teaching difficult-to-staff subjects
- Working in low-performing schools
- Teaching multiple subjects
- Teaching multiple grades

Areas of significant disagreement (stakeholder groups had markedly different responses) include:

- Growth in student learning

Two of the highest areas of agreement (years teaching and degrees earned) align with the current step-and-lane salary structure employed by most districts. The support for administrator evaluations is tacitly addressed in retention decisions, but is not accounted for on the traditional step-and-lane schedule. Teaching in difficult-to-staff schools is not addressed by this model. Another way to present and analyze these findings is to look at rank order of preference. Data are presented this way in Table 11.

Table 11

Preferred components of teacher compensation by stakeholder type

	First	Second	Third
Teachers	Years teaching	Degrees	Difficult-to-staff schools
Principals	Years teaching	Degrees	Difficult-to-staff schools

Superintendents	Difficult-to-staff schools	Administrator evaluations	Difficult-to-staff subjects
Other education positions	Years teaching	Degrees	Difficult-to-staff schools
School Business Officers	Administrator evaluations	Student growth	Difficult-to-staff schools
Parents, Students & Community members	Years teaching	Degrees	Low-performing schools
School Board Members	Administrator evaluations	Years teaching Degrees Student growth	.

All stakeholder groups indicated that school placement should be considered in teacher compensation; other facets differed by stakeholder type.

Though superintendents and school business officers supported years of teaching experience and education/experience in their Likert ratings, when presented in rank order, they differ markedly from teachers, principals, other educators, and parents/students/community members in that they do not rank experience and education/degrees as top priorities for teacher compensation. However, it is interesting that, across stakeholder groups, compensation that considers difficult-to-staff schools ranked in all groups' top three choices.

The variations in responses by stakeholder group are indicative of their differing perspectives:

- Teachers, principals, and parents favor what most current salary schedules reward – experience and degrees. Additionally, their free responses noted that years of teaching overall – not just years accumulated in a particular district – should be considered in compensation.
- School business officers tended to favor quantitative metrics for output, including administrator evaluations and student growth.
- School board members' values bridged these two, favoring both the current system components, as well as output metrics.
- Superintendents valued multiple measures, supporting many factors including (in rank order): teaching in difficult-to-staff schools, teacher performance on administrator evaluations, teaching difficult-to-staff subjects, working with students who are low-performing, taking on additional duties or leadership roles at their schools, number of years teaching experience, growth in student learning, degrees or years of education, and teaching multiple subjects.

In free responses, all stakeholder groups noted the need to consider community characteristics, including remoteness, as additional compensation considerations beyond addressing the increased cost of living in these areas. Additional pay for larger class sizes and working with Special Education students were also identified as compensation considerations in free responses.

These perceptions show some common ground and some differing priorities. Aligning compensation to any factor should not only consider the empirical support for that metric, but also how stakeholders would respond to its inclusion (or exclusion) in a compensation system.

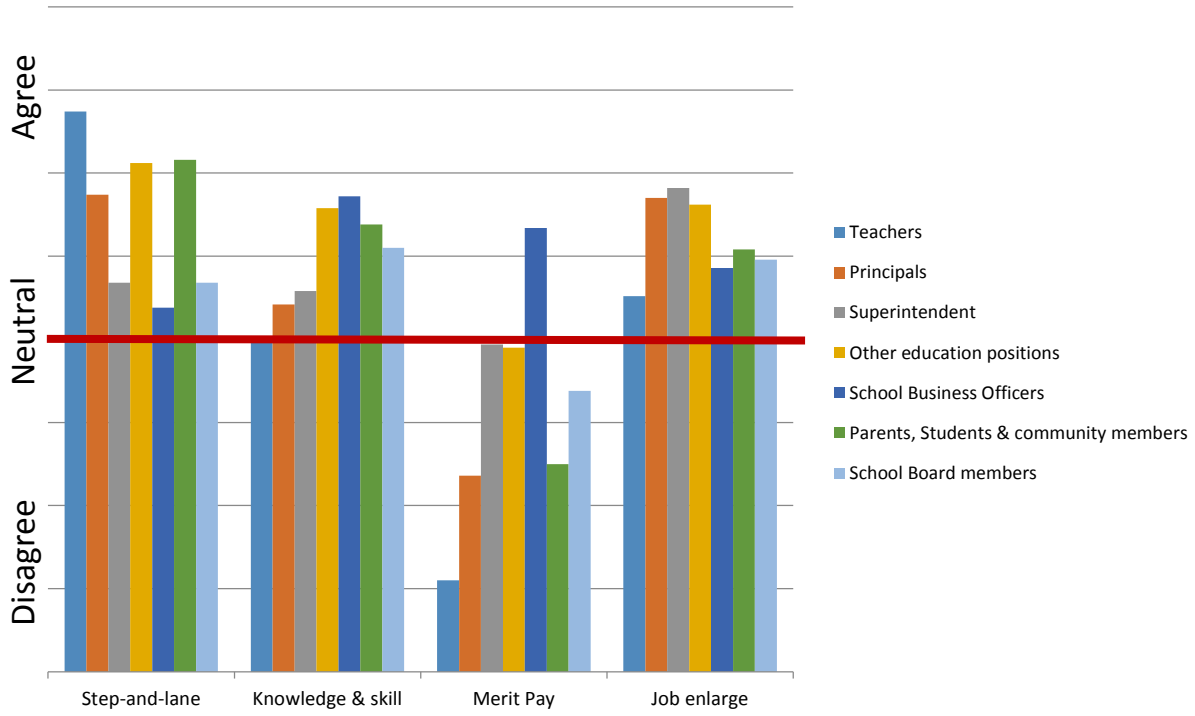
6. Compensation structures

The different salary structures are designed to incorporate the various components that are both valued and aligned with goals and objectives. Each of these structures was described in the literature review. Here, we explore how different stakeholders perceive these compensation options.

Preferences for compensation structures seems to align with the components valued in the previous section. For example, teachers and principals highly value experience and education, and when presented with structures, they preferred step-and-lane, which rewards those components. This is unsurprising; Firestone (1994) notes that when teacher opinion is solicited in designing a pay system – and he noted that it should be – they will generally be conservative in their recommendations and preferences.

School business officers value performance metrics, and selected knowledge & skills-based pay and merit pay as their preferred structures. Superintendents and principals also support job enlargement, likely because it would encourage teachers into leadership roles without removing them from the classroom. Figure 3 represents support for different structures by stakeholder type, and Table 12 presents their preferences in rank order.

Figure 3
Stakeholder support for teacher compensation structures



Support for different salary schedule models differs by stakeholder types; the red line indicates neutrality/no opinion. These preferences align with the values stakeholders identified in Table 11.

Table 12
Rank order of teacher compensation structure stakeholder preference

	1st choice	2nd choice	3rd choice	4th choice
Teachers	Step-and-lane	Knowledge & skills	Job enlargement	Merit
Principals	Step-and-lane	Knowledge & skills Job enlargement	.	Merit
Superintendents	Knowledge & skills	Job enlargement	Merit Step-and-lane	

Other education positions	Step-and-lane	Knowledge & skills	Job enlargement	Merit
School Business Officers	Merit	Knowledge & skills	Step-and-lane	Job enlargement
Parents, students & community members	Step-and-lane	Knowledge & skills	Job enlargement	Merit
School board members	Knowledge & skills	Step-and-lane	Merit	Job enlargement

When asked to rate their preferences in rank order, preferences varied slightly from numeric scores solicited in the Likert instrument, indicating some in-group variation in preferences.

When asked to rank their choices, all groups favored knowledge & skills-based pay as the first or second best structure. Step-and-lane was also ranked as most or second-most preferred by all groups except superintendents and school business officers. Merit pay was ranked as least or second least preferred by all stakeholder groups except school business officers.

Stakeholder comments further illuminated their perspectives, concerns, and priorities. Though all stakeholder groups generally support the idea of rewarding good teachers, there is debate and skepticism about how to best do that, which is also reflected in scholarly literature. Themes identified concerns about the models conceptually, as well as pragmatic concerns about how to implement them equitably and with fidelity. Significant themes and feedback included:

- **Blend models** – All stakeholder groups suggested the models are not mutually exclusive, and the best salary schedule would incorporate the "best parts" of each model to make a compensation structure that could be more equitable and comprehensive.
- **Note that multiple models are currently in use** - Stakeholders noted that current compensation systems do employ certain elements of these models; for example, job enlargement is frequently used with additional contracts.
- **Concern for how to measure merit** – Teachers, principals, superintendents, other educators, and parents/students/community members expressed significant concerns around merit pay, citing that test scores are inaccurate measures of what is going on in a classroom, and may favor "teaching to the test" at the expense of other necessary instructional and learning activities.
- **Concern that merit pay would broaden inequities** – Another strong theme in was that merit pay disadvantages students and teachers at low performing/high poverty schools – if implemented, stakeholders predict that higher-performing teachers will pursue teaching positions in more affluent/higher-performing schools, therein widening the teaching gap.
- **Concern for rural areas –** Many stakeholders noted that the needs and appropriate/responsive solutions for bush Alaska differ significantly from other parts of the state; they were concerned in particular that metrics used for merit pay would be inappropriate for bush Alaska.
- **Concern that merit pay disadvantages other academic subjects** – Questions and concerns arose around compensation for positions that are compensated through a teacher salary schedule, but whose duties or opportunities do not necessarily align with changes to the scale. Examples included teachers whose subjects are not assessed on standardized exams (e.g., Spanish, physical education, or welding) or who do not do classroom instruction directly (e.g., guidance counselors or librarians).

- **Concern for using student, parent, and community perception in teacher evaluations** – Although state statute requires community members to be given an opportunity to provide information on the performance of teachers and administrators (AS Sec. 14.20.149(b)(7)), this was identified as problematic, as many factors unrelated to teaching quality (including race and gender) influence such evaluations.
- **Market competitiveness** – School board members and school business officers in particular noted that market competitiveness should be an aim of the compensation structure.

Stakeholder concerns suggest that the best solutions for Alaska, just like the state's educational needs, are neither simple nor straightforward. Stakeholder concerns represent differing priorities, and the most appropriate structure should align with Alaska's educational goals and objectives.

Thus we made this inquiry. When we asked stakeholders to consider models as they align with educational objectives, some differences of opinion emerged. Table 13 shows which structure each stakeholder group perceived most appropriate for meeting an array of educational goals.

Table 13
Stakeholder perceptions of best salary structure to meet educational goals

	Step-and-lane	Knowledge & skills	Merit	Job enlargement
Attract new teachers to the profession	T P S O C R	B		
Attract out-of-state teachers	T P S O C R	B		
Retain teachers	T P S O B C R			
Retain good teachers	T O C	R	S B	P
Improve student learning*	T	O C R	P S B	
Be cost effective**	T C			

Though step-and-lane is the most preferred, some stakeholder groups perceived that other structures would be more effective in meeting some educational objectives.

T = Teachers
P = Principals
S = Superintendents
O = Other education professionals
B = School business officers
C = Parents, students & community members
R = School board member

**Though teachers voted highest for step-and-lane, their votes for knowledge and skills were almost as high for the outcome of improving student learning.*
***Nearly 50% of respondents answered this question as "I don't know," indicating a general lack of clarity around how the structures would align with cost savings. If votes of "I don't know" were higher than the model preference, the group is not reported.*

When considering educational outcomes, teachers perceived that step-and-lane was most effective for all goals, and generally, all stakeholder groups agreed that this model would be most attractive to teachers. However, principals and superintendents did stray from step-and-lane's effectiveness when it comes to retaining good teachers, and all groups except teachers thought that other models may be more effective at improving student learning outcomes. These data suggest that these different stakeholder groups perceive limitations in the step-and-lane structure for retaining the best teachers.

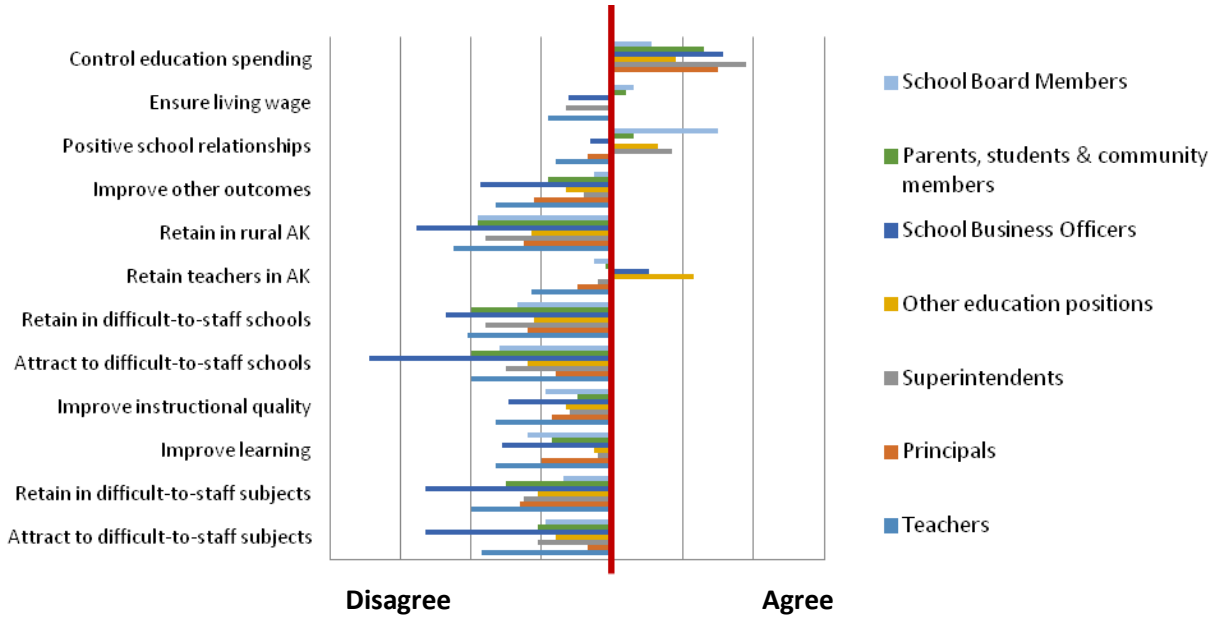
These data suggest opportunity for further study around how different structures could be implemented.

7. Support for a common salary schedule

The HB 278 legislation requires DOA to produce a statewide salary schedule, and it was developed as described in this document. However, general support for the schedule will be an important consideration around implementation. Though they were unable to review the actual schedule itself (as it was still in development as survey data were collected and informed by those data), we did solicit stakeholder perception around what goals a common step-and-lane statewide schedule would achieve. The perception is that the statewide schedule would not do much except maybe save costs. These data are represented graphically in Figure 4. Figure 5 shows stakeholder views on a legislative mandate for a statewide salary schedule.

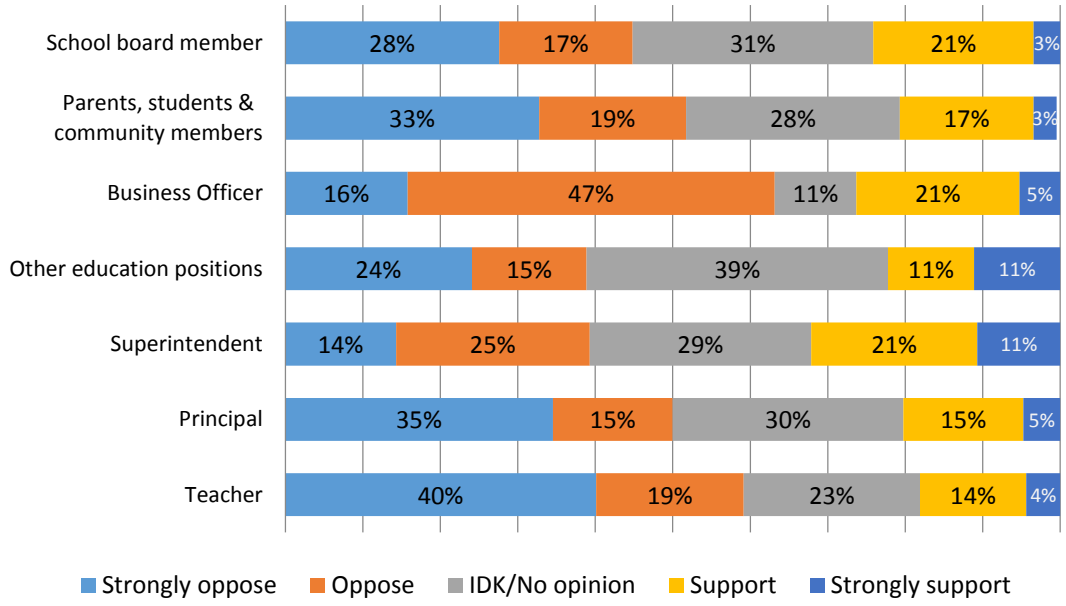
Figure 4

Stakeholder perceptions of the impacts of a statewide salary schedule



When asked how a statewide step-and-lane salary schedule would impact educational outcomes, stakeholder groups agreed that it would have a negative impact in all areas, with the exception of controlling education spending. Some groups perceived that it may promote positive relationships among school personnel. The red line indicates neutrality, with bars to the left indicating negative impacts, and to the right, positive.

Figure 5
Stakeholder views of a legislative mandate for common statewide salary schedule



This figure shows the percent of each stakeholder group favoring or opposing a legislatively mandated common statewide salary schedule. Responses of opposition were stronger than support for all groups.

Aligned with the quantitative responses, the majority of qualitative feedback around the possibility of a statewide teacher salary schedule was not positive. However, stakeholder groups' free responses and comments illuminated the complexity of this issue. Several themes emerged, including impacts on collective bargaining, consistency of wages, and impacting teacher movement between districts.

In some areas, the predicted impact of a statewide salary was unclear, even within stakeholder groups. For example, some perceived that a statewide salary schedule would reduce teacher movement between districts (because they would have comparable wages and would not be moving for higher salaries), while others thought that it would encourage teacher movement between districts (allowing teachers to move to areas where they were more needed or that better aligned with their skill set). Respondents did perceive that a statewide schedule that would allow teachers to transfer years of experience would have significant impact on teacher mobility. They also felt that capping years of experience that are credited to teachers when they start in a new district is deleterious to recruitment.

Though some felt that a statewide salary schedule could benefit rural districts, the overwhelming majority of respondents perceived that this would disadvantage rural districts' ability to recruit and retain teachers, particularly because these districts use other benefits and incentives to attract teachers. At present, districts have flexibility to adjust workloads and benefits in ways that serve students and teachers, and these needs are highly specific to individual communities. Many respondents indicated that districts need to be nimble in their ability to anticipate and respond to needs, and that a large, statewide structure would impede this capacity. A prominent question was whether or not districts would be able to supplement a statewide minimum, or be held to a fixed rate.

A recurring theme was concern for the loss of local control; it was noted that a statewide model would not respect the relationship between schools, teachers, and communities. There was also a perception that this would infringe on the unions' ability to advocate for teachers, and several respondents labeled the proposition as "union busting."

Another recurring theme was the inability of this system to recognize/reward good teachers, or to address difficult-to-staff schools or subjects. Respondents also questioned where benefits would fit into the model, and contended that the retirement package is equally responsible for teachers' decisions to stay in teaching and/or in Alaska, and the retirement package should also be considered in compensation discussions.

Additionally, there were questions about whether the state would fully find this initiative, as some communities levy taxes for education purposes. Some respondents indicated that this is a poor time to be making such considerations, in light of unfunded statewide education mandates.

Many respondents indicated that they could not make a determination with the information given. They wondered whether a statewide salary schedule would result in a net pay increase or decrease for teachers, and were very clear that their support would hinge on the actual salaries paid to teachers.

It is important to note that many teachers, superintendents, parents/students/community members and principals felt insulted and disrespected at the suggestion that teachers' salaries are too high or that they are not performing adequately, and asked for better professional treatment and respect from the legislature. They implore the legislature to focus on students and learning, rather than cost savings.

Many respondents wanted to know the motivation or reason for a common schedule and what goals the legislature hoped to achieve. It seems that this was a quintessential example of the adage that "the devil is in the details" and that stakeholders should be engaged in further discussions if and when the legislature wishes to pursue such a mandate.

Principal compensation

Stakeholder perceptions and feedback around principal compensation was not markedly different from their feelings about teacher compensation. In general, they believe that principal compensation should be based on experience as a teacher and as an administrator, and noted that the responsibilities for principals in different types of schools and districts (e.g., urban versus rural, Title I versus school that serves higher socioeconomic echelon, small versus large schools) would make standardization exceptionally difficult. On average, all stakeholder groups opposed using such metrics as community perception, student or parent opinion, or school test scores in compensation calculations.

Regarding support for a statewide salary schedule for principals, stakeholder responses were similar to the suggestion of a standardized teacher schedule: all groups responded that they would oppose such a measure. It is important to note that stakeholder comments around principal compensation were fewer than comments about teacher compensation; many indicated that they had addressed these concerns with their comments about teacher salaries. Additionally, it should be noted that principal compensation was assessed later in the survey instrument, and survey fatigue may have limited participants' motivation to write extensive free responses.

Implementation considerations

Changing the current structure and/or moving to a statewide salary schedule would be a significant change for Alaska. Here, research provides some recommendations and guidelines to inform change processes. Odden & Wallace (2007) identify 3 steps to designing and implementing changes to teacher pay:

1. Design – The design process should be inclusive of all who will be affected by the change, and be democratic and transparent. This study sought stakeholder perceptions and the public comment period will allow for further stakeholder input, but more and ongoing participation would be needed.
2. Implementation – Before a structure can be implemented on a large scale, it needs to be piloted, and needs clear communication with teachers to incorporate feedback and modifications.
3. Evaluation and change – If Alaska adopts a statewide salary schedule, evaluation of the schedule and opportunities to use the data to modify it would be critical.

Experts caution that implementation will be more costly, at least upfront, even if the ultimate objective is cost savings (Firestone, 1994; Odden & Wallace, 2007). Additionally, ensuring that the plans will be funded and sustainable will be a critical component to teacher buy-in (Kellor, 2005). Because in-service teachers will be affected by plan modifications, Odden & Wallace (2007) recommend that salary levels be guaranteed if there is a transition to a new system so current teachers do not experience major pay decreases; if the new structure differs significantly from what is currently in place, they suggest slowly transitioning to a new model, and implementing the new system in stages. Changes should also be well communicated, including terminology, goals, and design features of the program (Rowland & Potemski, 2009).

Odden & Wallace's (2007) recommendation seems apropos:

> Remember, a new salary structure is designed to support and reinforce a state's or district's strategic education goals, but a changed compensation structure alone will not renew an education system. Clear goals are required, good leadership is needed, sufficient new training will be crucial, an aligned HR system is important, and other working conditions impact whether overall goals are met and whether the more specific goals for the compensation system are met. (p. 64)

Whether or not such a measure would have long-term cost-saving impacts is also unclear; there are no empirical studies of this nature. As an example, Washington's statewide salary schedule has been in place for over 40 years as a result of a court ruling. When instituted, there were not adjustments for geographic cost differences and this created many problems with implementation over time, including teacher strikes. Because districts can raise more money on their own, many have found ways to get teachers to "do more work" to supplement pay, and as a result, actual average salaries exceed those instated by salary schedules (A. Odden, personal communication). Given the complexity and challenges, whether or not Washington's statewide salary schedule saved money could not be reliably predicted or calculated.

Odden & Wallace (2007) argue that policymakers need to identify the problems they are trying to fix with changes to the salary schedule, and we believe there is still an opportunity to do that more clearly

for Alaska. If the problem is the cost of education, a statewide salary does not appear to be the solution. As discussed earlier, if Alaska implemented the base salary and the community differentials in this, it would cost about 15% more than districts currently pay for teacher base salaries. This would not be a cost-saving measure.

There are other ways for districts to attract and retain teachers besides salary. Within the models that created the geo cost differentials, we can see that other aspects of teaching positions that districts control – such as investment in professional development and travel allowances – can be as effective as salary increases at lesser cost. Policymakers should consider these and other cost effective options.

Part III: Tenure

Statement of purpose and research questions

In HB 278, the Alaska Legislature tasked the Department of Administration with "an evaluation of, and recommendations for, teacher tenure" (Sec. 52). The Department asked CAEPR to research stakeholder perceptions, tenure policy in other states, the extent to which tenure decisions are, will be, and should be based on teacher evaluation ratings and on student achievement measures; and to provide recommendations based on this research.

Tenure defined

According to Corpus Juris Secundum, a legal encyclopedia, "Tenure statutes are designed to protect teachers against board action or actions of supervisors which are arbitrary, capricious, unjust, or politically motivated. … [S]uch legislation has been said to be fundamentally in the public interest, the purposes of tenure laws being to achieve permanency in the teaching force, to preserve the integrity and freedom of the educational process, to insure a competent and efficient school system, to establish a uniform system of permanent contracts for all schools of the state, and to obtain a better education for the children" (78 C.J.S. Schools and School Districts § 334). In short, tenure protects teachers who have earned this status from being fired or laid off without cause.

Historical origins & intentions of tenure

In the 19th Century, a system of patronage was common across the U.S., in which elected officials rewarded their political supporters with government jobs. The Pendleton Federal Civil Service Act of 1883 was enacted to restrict the use of this spoils system, transforming the nature of public service by requiring federal government employees to be hired on the basis of their merit, and prohibiting the federal government from firing or demoting employees for political reasons.

The concepts contained in the Pendleton Act caught on with state and local governments. In 1886, the state of Massachusetts passed the first state law extending the principles of civil service to the teaching profession. The law allowed districts to enter into contracts with teachers for periods longer than one year. "It was thought that for the good of the schools and the general public the profession should be made independent of personal or political influence, and made free from the malignant power of spoils and patronage" (McSherry v. St. Paul, 202 Minn 102, 277 NW 541, 1938). In 1889, the Boston School Committee "suggested a tenure law providing for a probationary period … and thereafter permanent tenure subject to removal for cause after proper hearing. The bases for recommendations were that … annual contracts theretofore in vogue had not resulted in the elimination of poor, incompetent, and inefficient teachers; that the principle of annual election or appointment was not generally applied to policemen, firemen, or judicial officers, and in the very nature of things should not apply to teachers; that not infrequently the best teachers were discharged for inadequate reasons" (McSherry v. St. Paul, 202 Minn 102, 277 NW 541, 1938).

By 1975, 46 states and the District of Columbia had enacted tenure laws (Hazard, 1975). Generally, tenure laws established in the 20th Century provide eligible teachers with continuing employment status, just cause for termination, and specific procedural safeguards, and were intended to prevent teacher dismissals based on personal, political or cost-saving reasons.

Contemporary trends in tenure law

In 2010, Brunner and Imazeki compiled data on tenure policies across the nation. As of that date, the majority of states had a 3-year probationary period before teachers could earn tenure, while eight required two years, five mandated four years, and two set their probationary period at five years. Six states increased probation periods during the 1990s (Brunner & Imazeki, 2010). However, in the five years since this research, states have implemented even more changes to their tenure policies. A more comprehensive overview is available in Appendix H.

- Three states – Florida, Kansas and North Carolina – have eliminated tenure. Idaho tried in 2011, but voters repealed the law.
- Sixteen states, including Alaska, require the results of teacher performance evaluations be used in making decisions about granting tenure. In 2011, ten states had this requirement.
- Seven states have laws that return tenured teachers to probationary status if they are rated unsatisfactory on performance evaluations.
- In May 2012, the parents of nine California public school children filed a lawsuit against the State of California, claiming that the state's tenure policies prevented them from receiving a quality education by requiring districts to retain ineffective teachers. Five state statues were determined to be unconstitutional in Vergara v. California, including those related to tenure, dismissal, and layoff. The decision of the California Superior Court was identified as a landmark case that would affect the way the nation regarded tenure statutes, although the decision is being appealed. Soon thereafter, a similar lawsuit was filed in New York State.

Public perception of tenure

There is a perception that teacher tenure threatens teacher quality by making it impossible to fire bad teachers. Stories like the New York Times' exposé on the "rubber room" for unsuccessful teachers (Freedman, 2007) served to bolster those views. Teacher tenure has also been linked with negative views of teacher unions and assumptions that unions want to protect teachers regardless of how well or poorly they teach. It is these perceptions that have spurred tenure reform policies in different states (Bruner & Imazeki, 2010).

Empirical studies of tenure

In addition to popular and political conversations, tenure has also been heavily studied in the empirical literature. The next section of this report reviews studies of tenure and teacher evaluation, retention and dismissal, and monetary value/economic impacts as they relate to tenure.

1. Tenure and teacher evaluation

One of the objectives of tenure is to retain high-quality teachers. The awarding of tenure in Alaska and elsewhere is supposed to be tied to evidence that teachers are effective, but how effectiveness is defined and determined is often unclear. The link between teacher quality and to student achievement is not well understood or demonstrated. In recent years, teacher evaluation has become the focus of reform efforts, with major research efforts like the "Measures of Effective Teaching" initiative funded by the Bill & Melinda Gates Foundation (http://www.metproject.org/). In particular, the use of "value-added" models (VAM) using student standardized test data have been looked at closely. However, these measures are highly controversial, with some recent large scale studies discrediting the link between VAM and the quality of classroom instruction (Polikoff & Porter, 2014). Nationally, classroom

observations continue to be the primary method used for teacher evaluations. This method has empirical support: principal evaluations are a reliable way to identify low-performing teachers (Jacob & Lefgren, 2005).

A pilot program using the Danielson's Framework for Teaching teacher evaluation in Chicago found the evaluations to be more impactful and accurate at higher-achieving, lower-poverty schools (Steinberg & Sartain, 2015). Researchers suggest this is because these schools attract better teachers in the first place, so principals are better able to implement the framework, and teachers are better able to receive and incorporate feedback. An area of noted concern is that this system requires a significant time commitment from principals – both to get the training and to implement it – and Chicago discontinued the program, citing difficulties of "sustaining large-scale policy changes that require ongoing support from the central office and significant investment on the part of educators in specific schools" (p. 76).

Thus, though teacher evaluation is valuable and has been shown to be valid, it is not a simple or low-cost solution to the challenges of identifying high- and low-performing teachers.

2. Tenure and teacher retention & dismissal

Tenure systems generally involve a probationary period of two to five years, after which a teacher judged to be performing satisfactorily is awarded tenure. The intended benefit of the probationary period is that, before making long-term employment commitments, districts should have ample time to determine teacher quality, and dismiss teachers who are low-performing. Chingos (2014) studied rates of teacher retention and dismissal in North Carolina, where teachers could earn tenure after four years in the classroom, and noted that highest and lowest performing teachers are retained at a similar rate. Of top-tier teachers, only 54% remained employed with the state as educators after four years of service. Chingos concluded that administrators do not appear to be letting teachers go before they earn tenure, and suggested three likely reasons for this:

1. There are not better teachers in the pool that could replace the ineffective ones.
2. Administrators are ineffective in evaluating teacher quality.
3. It is generally uncomfortable to fire someone, and administrators do not like to do it.

Dismissing ineffective teachers is confounded by the challenge that it is often difficult to retain the effective ones. Replacing an ineffective teacher with another whose quality is unknown is a less effective use of resources than trying to develop and retain the effective ones. Given the data, Chingos (2014) suggests that reforming tenure will not have much impact on educational outcomes unless districts actually fire poor-performing teachers; these data suggest that districts do not make use of their current power to do so before tenure is awarded. Other studies have confirmed that ineffective teachers are rarely dismissed (Gordon, Kane & Staiger, 2006). Scholars in this area suggest that reforms should focus more on developing and retaining good teachers than figuring out how to fire the ineffective ones.

3. The value of tenure

Tenure is only useful in retaining good teachers to the extent that they themselves value it (Chingos, 2014), and the perceived value of tenure is not well explored in the empirical literature. Still, if teachers place a high value on tenure, changes to it will impact Alaska's ability to recruit teachers into the profession, particularly as it competes for out-of-state teachers. In the business world, longer probationary periods correlate with higher post-probation wages (Groshen & Loh, 1993; Wang & Weiss, 1988). Bruner & Imazeki (2010) argue that if this is also true in education, changes to tenure policy

would need to be accompanied by salary adjustments in order to maintain market competitiveness. Their rationale is that a longer probationary period reduces the probability of tenure and/or creates more risk for teachers, so districts would need to offset this with higher salaries. Additionally, Angrist and Guryan (2008) and Hanushek and Pace (1995) note that teacher testing and certification requirements are a significant financial burden on teachers before they enter the profession, and these decrease the ratio of prospective teachers to graduates with teaching degrees. Longer probation is not a direct cost, per se, but it causes risk and uncertainty, which can be regarded as a teacher cost.

By studying markets in a geographic region where teachers could choose between districts with differing tenure policies (e.g., where a state line crossed through a major city), Bruner & Imazeki (2010) found that longer probationary periods correlate with measureable higher salaries, especially where there is collective bargaining. They caution,

> our results highlight the importance of the local nature of teacher labor markets. State policymakers considering proposals to increase the length of teacher probationary periods should be aware that districts closer to neighboring states with shorter probations will likely bear costs that may not be felt as strongly by districts elsewhere in the state. This may be particularly true if those districts also engage in collective bargaining. (p. 179)

Though Alaska does not have neighboring states, it does recruit much of its teacher workforce from the Lower 48 (Hill & Hirshberg, 2013) and, thus, impacts could be significant.

History of tenure statutes in Alaska

Teacher tenure laws in Alaska predate statehood. In territorial Alaska, individual school districts had the ability to determine their own rules for teacher tenure. However, even then school districts were required to notify teachers and administrators in writing by March 15 if they were intending not to offer the employee a contract for the subsequent year (Chapter 71, Section 138, SLA 1957). Post statehood, tenure law in Alaska has continued to evolve:

- Policy language was amended in the 1960s to provide clearer language regarding what constitutes immortality and acts of moral turpitude for reasons of dismissal. There was a controversy in Seward (Watts v. Seward School Board, 454 P.2d 732, 1969) that sparked some of the interest in drafting clearer language; however, other states were also modifying their statutes in ways similar to Alaska in response to disputes regarding civil liberties.
- In 1995, the Alaska legislature passed HB 217, which was vetoed by Governor Knowles. The bill would have lengthened the probationary period from two to four years, among other changes.
- In 1996, after convening a work group of stakeholders from around the state, Governor Knowles introduced a compromise bill, HB 398, which failed to move out of committee. The bill would have required each school district to adopt a professional assessment system to evaluate its teachers and would have replaced the statutory term "tenure" with the phrase "continuing employment status," among other changes.
- About the same time, Representative Ivan introduced HB 465, which passed and was enacted. HB 465 included many components of Governor Knowles' compromise bill; it:
    - Extended the probationary period required before a teacher can achieve tenure status from two years to three years in Sec. 14.20.150(a)(2);

    - Required an evaluation that states a teacher's performance meets the district's performance standards as a condition of achieving tenure status in Sec. 14.20.150(a)(3);
    - Removed the trial de novo option (Sec. 14.20.205), which allowed for a trial in superior court based on a new points of fact if a school board reached a dismissal or non-retention decision was unfavorable to a tenured teacher;
        - Instead, under Sec. 14.20.180(c) and within 15 days of an unfavorable decision, a teacher can request a hearing before the school board or invoke a grievance procedure that ends in binding arbitration if an agreement is not reached;
    - Required districts to use an employee evaluation system that meets specific standards set in statute and regulations approved by the State Board of Education;
    - Required districts to implement a plan to remedy deficiencies exhibited by teachers whose performance evaluation states that they do not meet the district's standards;
        - If the district demonstrates the teacher's performance does not meet professional performance standards and objectives defined in the plan of improvement, the teacher can be legitimately non-retained for incompetency.
    - Created specific conditions by which a district can lay off teachers with tenure status, including a drop in enrollment or a drop in revenues.
- In 1999, Senate Bill 98 was signed into law. The bill extended the probationary period for a teacher who had previously acquired tenure in a school district in Alaska and subsequently becomes employed by another school district in Alaska from one year to two years.
- In 2013, Senate Bill 57 revised Sec. 14.20.140 to extend the time districts have to notify tenured teachers of their layoff or non-retention from March 16 to May 15.

Current Alaska tenure statute

Requirements for teachers to attain tenure status in Alaska are defined in AS Sec. 14.20.150. Under the current statute, teachers who have acquired tenure rights can expect the school district they work for to offer them an employment contract for the following school year. In Alaska, a teacher acquires tenure rights on the first day of his or her 4th consecutive year of teaching in the same school district, as long as the teacher received a satisfactory performance evaluation the prior year. Tenure in Alaska does *not* mean a teacher cannot be dismissed. Rather, it means that the district must demonstrate that it has a legitimate cause for firing a tenured teacher. There are a number of situations in which a tenured teacher can be fired or non-retained:

- Under AS Sec. 14.20.170, a teacher with tenure may be dismissed at any time for
    (1) **incompetency**, which is the inability or the unintentional or intentional failure to perform the teacher's customary teaching duties in a satisfactory manner;
    (2) **immorality**, which is the commission of an act that, under the laws of the state, constitutes a crime of moral turpitude; or
    (3) **substantial noncompliance** with school laws of the state, the regulations or bylaws of the department (AK DEED), the bylaws of the district, or the written rules of the superintendent.

- A teacher with tenure rights can be non-retained if the school district demonstrates that the teacher's performance, after completion of a plan of improvement, failed to meet objectives and a performance evaluation established that the teacher does not meet district standards.
- A school district may lay off teachers with tenure rights if school attendance has decreased or state funding for the school district decreases by 3% or more from the previous year.
- A school district may lay off teachers with tenure rights only after the district has given notice of non-retention to all probationary teachers. However, a school district may retain a probationary teacher and place a tenured teacher on layoff status if there is no tenured teacher in the district who is qualified to replace the probationary teacher.
- A school district that decides to dismiss or non-retain a teacher with tenure must provide the teacher with written notice, including a statement of cause and a complete bill of particulars, and a due process hearing before the school board.

Tenure compared to other public sector probationary periods in Alaska

Generally, there are two mechanisms by which a school district can terminate an employment relationship with a certificated employee: non-retention or dismissal.

- Non-retention is defined in Sec. 14.20.215(5) as "the election by an employer not to reemploy a teacher for the school year or school term immediately following the expiration of the teacher's current contract." It occurs when an employee is not offered an employment contract for a subsequent term, but remains employed through his or her current contract.
- Dismissal is defined in Sec. 14.20.215(2) as "termination by the employer of the contract services of the teacher during the time a teacher's contract is in force, and termination of the right to the balance of the compensation due the teacher under the contract." In other words, dismissal occurs when an employment contract is terminated in its midst.

Educators can also have their state certificate revoked, effectively ending their eligibility for employment as an educator.

Most public sector employees outside the K-12 system are not employed through specific contracts; when an employer finds legitimate cause, those employees are dismissed. Educators, on the other hand, are employed through individual contracts, which are limited to one school year by AS Sec. 14.20.130 (except for superintendents, whose contracts are limited to no more than three school years by the same statute.) So, unlike most other public sector employees, school districts have the option to non-retain teachers, but still keep them through the completion of their current contract year. Even when a school district finds legitimate cause to terminate an employment relationship, the school district can decide whether the cause is so egregious immediate dismissal is warranted or to allow the teacher to finish his or her contract in force. Some districts indeed do decide it is better for students if the employee is allowed to serve the remainder of the school year.

Some public and private sector employees in Alaska are subject to a list of legitimate causes for dismissal defined in their collective bargaining agreements, contracts, or within their employer's policies. For teachers, statute instead defines legitimate causes for dismissal and non-retention in Sec. 14.20.170(a) and Sec. 14.20.175(b), respectively. Compared to legitimate causes to dismiss most other public sector employees in Alaska, those specified in statute for teachers are broader and fewer.

Case law around teacher tenure in Alaska is summarized in Appendix I.

Methods

Following and the comprehensive literature review, to develop a basis for making recommendations around tenure in Alaska, we:

- Modeled the economic value of tenure
- Sought public and stakeholder opinion and perception around tenure policy and its ability to facilitate state educational outcomes, using focus group interviews, key informant interviews, and an electronic survey

The economic value of tenure

The teacher survey contains a question at the end that provides the opportunity to estimate a dollar value that teachers subjectively place on the tenure system as currently implemented in Alaska. This value corresponds to the amount that school districts or the state would have to pay teachers to give up the right to tenure in a voluntarily arms-length transaction.

At the end of the survey, respondents were randomly asked one of three questions that elicited a binary response (yes or no). All three questions took the following form:

"Would you be willing to change from the current system to *XXX* in exchange for a salary increase of *YYY* percent?" Each question had a different alternative for *XXX*. The three alternatives were as follows:

1. "tenure with the current protections, but earned after 5 years rather than the current three;"
2. "limited tenure, earned after 3 years, but only in 5 year increments; districts could decline to renew contracts at 5-year intervals;"
3. "no tenure, just a year-to-year contract."

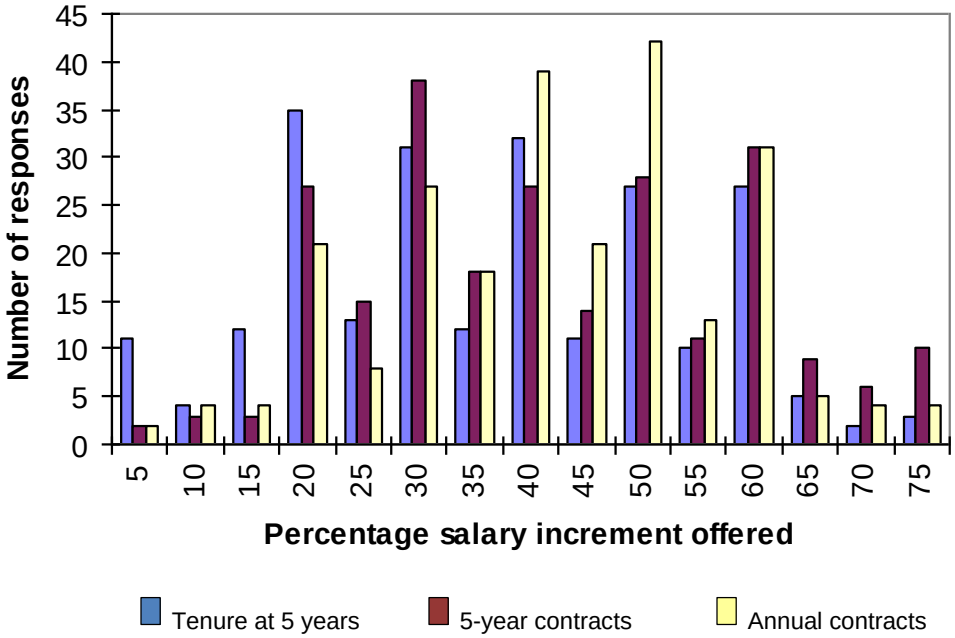
The phrasing of the question implied that the hypothetical salary increase was permanent, so that the teacher's salary would move to a higher lane-equivalent for the duration of his or her career. However, the wording is not explicit to this effect, and it is likely that many teachers answered thinking of the percentage increase as a one-time bonus.

The bids, *YYY*, were randomly generated in the survey with equal probability of being 20%, 30%, 40%, 50%, or 60%. After answering the question yes or no, the survey then asked whether the answer would be the same under a second bid. If the respondent had declined the first bid, the second bid offered was randomly increased by either 5%, 10%, or 15%. If the respondent had accepted the offer, the second bid was generated that was randomly either 5%, 10%, or 15% lower than the first bid. The distribution of bids was determined by analyzing information gathered from pre-testing the survey.

Figure 6 summarizes how the bids were distributed from a low of five percent to a high of 75 percent of the annual salary for each of the three tenure modification alternatives.

Figure 6

Distribution of amounts offered to teachers in return changing tenure policy to different options



Teachers were randomly offered a percent of their salary in exchange for changing tenure policy. About one-third of teachers were presented tenure at 5 years, one-third were offered 5-year contracts, and one-third were offered annual contracts. The range of salary increases was from 5-75%.

366 respondents completed the entire survey and therefore provided answers to one of the tenure value questions. We dropped one of the respondents, who was currently working in a private school, from the statistical analysis. This left 365 respondents, nearly equally divided among the three questions, as shown in Table 14. About 80 percent of the respondents had tenure at the time of the survey.

Table 14

Number of respondents answering each tenure question

	Not tenured	Tenured	Total respondents
Tenure earned after 5 years	25	95	120
Tenure only during five-year contract	20	102	122
No tenure, year-to-year contracts	28	95	123
Total respondents	**73**	**292**	**365**

The questions were asked of teachers with tenure, and teachers who had not yet earned tenure; the options were evenly distributed across both groups.

Since the number of survey respondents represented less than four percent of active teachers in Alaska public schools, we were concerned about possible over-representation of the population in a way that could bias the results.

We compared characteristics of the survey respondents answering the tenure questions to those of the population of Alaska teachers in the 2014-15 school year. Table 15 shows that compared to all Alaska teachers, respondents were more likely to have a Master's degree, but were otherwise relatively similar to the population as a whole.

Table 15

Characteristics of survey respondents answering tenure questions

	Survey respondents	Alaska teachers
Percent male	26.6%	30.0%
Percent white, non-Hispanic	92.1%	88.4%
Percent tenured	20.0%	26.2%a
Percent with Master's degree or higher	67.1%	48.7%
Median years total teaching experience	16	10b
Median age, years	49	46
Percent teaching in rural schools[c]	26.3%	24.4%

[a]Teachers with three or more years of experience in the district, possibly overstating the proportion actually tenured

[b] Experience in current job class (possibly less than total teaching experience)

[c]Schools in communities with population less than 1,000 or not connected by road or ferry to Anchorage, Fairbanks, Juneau

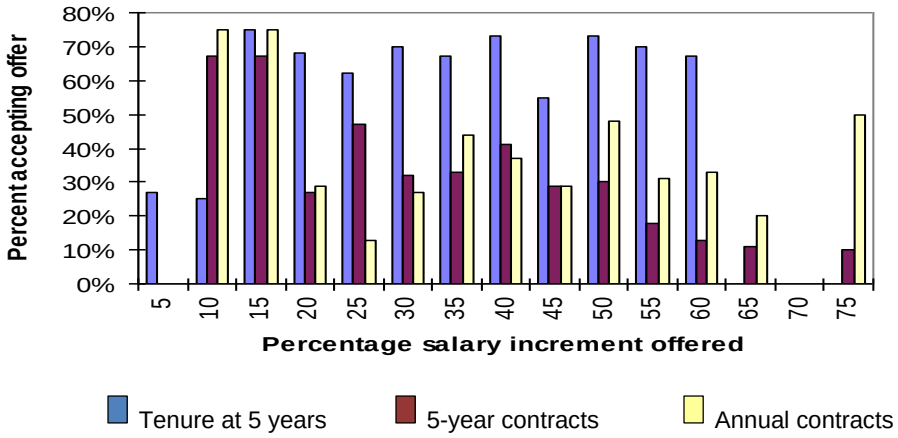
The characteristics of our survey respondents were similar to Alaska teacher demographics statewide.

Figure 7 illustrates the distribution of affirmative responses to each of the three tenure questions. The first question, which involved keeping tenure but increasing the probationary period, had a high proportion of accepted bids for bids about 10 percent of the current salary. The distribution of accepted bids was more skewed for the other two questions, which involved more fundamental changes to tenure.

Every teacher could have a different subjective value on changing from the current tenure system to a hypothetical new system. To derive a measure suggesting an estimate for the population as a whole, it is necessary to construct a logically consistent model of the valuation process. We represent the problem by defining individual teacher *i*'s value, Y_i, which has two components: a function V of measurable characteristics x_i, and an idiosyncratic amount, u_i, that is specific to the individual and not observed in the survey data. The survey offers the teacher a bid, B_i, in exchange for making the change to the new system. If B_i turns out to be greater than or equal to the subjective value, then the respondents answers affirmatively. if B_i is less than Y_i, the respondent declines the offer.

Figure 7

Percent of bids accepted for each of three alternatives to the current system



Teachers were more likely to accept compensation for increasing the time to tenure to 5 years than the other two options.

The unobserved component of the value, u_i, is unknown, and therefore assumed to be randomly distributed. If we assume that u_i has a lognormal distribution, then the probability is that $\log(B_i) \geq V(x_i)$ is normally distributed. If we assume that the function of observable characteristics, $V(x_i)$, is linear, the probability of an affirmative response can then be estimated easily by maximum likelihood. This is essentially a probit equation with independent variables of $\log(B_i)$ and the individual characteristics, x_i, with the coefficient on $\log(B_i)$ constrained to one.

In the teacher survey, the bid was expressed as a percentage of current salary rather than as a lump sum amount. Current salary was not asked in the survey. That is, $B_i = a_i S_i$, where a_i is the percentage offered, and S_i is the teacher's current salary. Since the $\log(B_i) = \log(a_i S_i) = \log(a_i), + \log(S_i)$, the equation can be estimated by constraining the coefficient on $\log(a_i)$ to equal one, even if S_i is unobserved. The problem is only in the interpretation of the effect of the observable characteristics, x_i, on the implied value of tenure. The interpretation problem arises because these characteristics might be correlated with the teacher's salary as well as with the percentage increment required to cause the teacher to accept the change.

To adjust for this potential issue with interpretation, we estimated an equation from the DEED certification database of all Alaska public school teachers that predicted salary of full-time teachers as a function of the seven individual characteristics observed in the survey shown in Table 15. As expected, advanced degrees earned, years of experience overall, and years in the district were associated with higher salaries. We applied the equation that predicted salary for all Alaska teachers to the teacher survey respondents, to estimate a predicted salary for each respondent, and then constructed bid, B_i,as the product of the percentage bid offered in the survey and the predicted salary.

Table 16 summarizes the results estimating the amount Alaska teachers would require to give up their current tenure rights voluntarily in exchange for each of three alternatives. The table displays the mean and 95 percent confidence intervals for each of the two specifications for the three tenure alternatives. The results indicate that increasing the probationary period from three to five years is the least onerous,

with a mean estimate of 23 percent of salary or about $16,000. The average teacher would need more than a 50 percent salary increase to accept either of the two more fundamental reforms.

Table 16

Estimated subjective value of the current Alaska teacher tenure policy compared to each of three alternatives

	Mean estimate	Lower 5 percent	Upper 95 percent
Expressed as a percentage of salary			
Tenure earned after 5 years	23%	18%	29%
Tenure only during five-year contract	65%	51%	82%
No tenure, year-to-year contracts	56%	44%	70%
Expressed as a total dollar value			
Tenure earned after 5 years	$16,236	$12,462	$21,154
Tenure only during five-year contract	$48,808	$37,746	$63,110
No tenure, year-to-year contracts	$42,050	$32,541	$54,337

Teachers prefer the current tenure system to all three of the options presented. This table presents a different estimate than the one presented in Table 4. Whereas the analysis in Table 4 estimated the value of a temporary loss of tenure when individual teachers move to another district (and have the opportunity to re-earn tenure after their probationary period), this reflects the value as annual salary increases in response to statewide policy changes. It seems counterintuitive that teachers would rather have no tenure than tenure restricted to 5-year increments, but this is what the data reflect.

Whether or not the survey respondent already had tenure was not associated with a significant difference in the subjective value of the change for any of the three tenure alternatives. Some of the other measured individual characteristics were associated with a change in the estimate of value, and these characteristics differed among the three options. For the first question regarding the length of probation, the only characteristic that was significantly associated with the estimated value was the level of education. Teachers with master's degrees needed 12 percent more to agree to an additional two years of review for tenure than teachers with bachelor's degrees.

For the change to a periodic review of tenure every five years, older teachers and teachers who had a greater misunderstanding of the rights offered by tenure (as determined from the survey questions) had higher values, while charter school teachers had lower values. The mean estimate for a teacher who was 50 years old and had two false tenure perceptions was 20 percentage points higher than that of an otherwise similar teacher who was 30 years old (57% vs. 37%). Compared to a system with no tenure and just year-to-year contracts, male teachers placed a significantly lower value on the current system than female teachers (37% vs, 64%). Non-white and Hispanic teachers, on the other hand, valued the current system much more, so that a male non-white teacher valued current tenure about as much as a white female teacher, and non-white female teachers would need a very large increment (more than 100%) to accept the change. Alaska Native language teachers provided an exception to this rule, and had much lower values. There are relatively few such teachers in Alaska, and only seven respondents to the

survey questions on tenure fit this category, which is not enough to provide an estimate of the value for this group.

In Table 4 we calculated the value to teachers of temporarily losing tenure – that is, what value do teachers place on the temporary loss of tenure when they move from one district to another? In that case, tenure policy does not change, and they (likely) assume that they can re-earn tenure in their new district.

Summary thoughts – economic value of tenure

The range of our calculated values across the four estimates – from a lump sum of $34,000 to annual amounts from $16,000 to almost $50,000 - illustrate the sensitivity of the value to the specifics of the situation. In all cases, though, these analyses suggest that Alaska teachers regard tenure as a significant employee benefit. As long as Alaska imports teachers from other states, those states' salary and tenure policies will affect how much Alaska districts have to pay, and at the moment, most states still offer tenure similar to Alaska's current system. Moving to any one of the hypothetical options we analyzed might not have a large immediate effect on teachers deciding to leave the state or the profession. However, over the long term, school districts could find themselves having to pay significantly more than they currently do to attract and retain qualified teachers, especially if either of the more fundamental reforms is implemented.

Stakeholder perceptions of tenure in Alaska

As noted in the literature review, many states' changes to tenure policy in the past decade have been spurred by public opinion. Thus, as Alaska considers what to do with its own tenure statute, understanding how it is regarded provides valuable context for legislative conversations. This section of the report describes how we sought this input from stakeholders, and what their perspectives are.

1. Methods & Participation

Methods to solicit stakeholder input included focus group interviews, an electronic survey, and key informant interviews. The complete methods and overview of participants are described in Part II of this report.

2. Findings

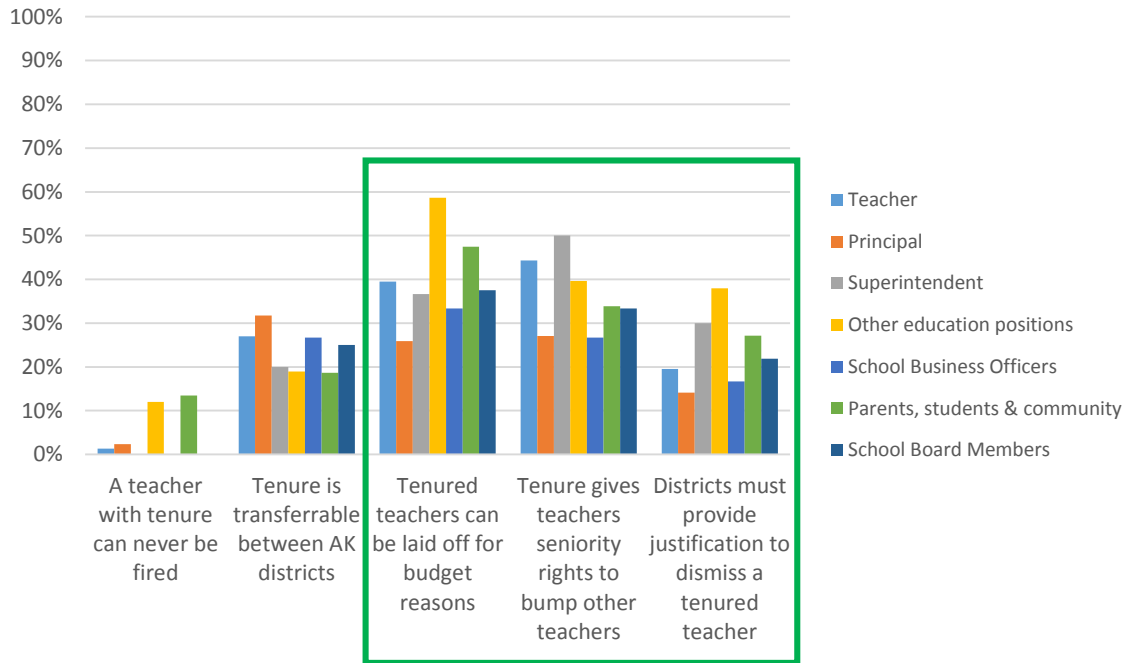
The data indicate that different stakeholder groups have different perceptions about tenure; however, their understanding of what tenure is in a k-12 context and how it is implemented (per statute) may be somewhat limited. Different groups have different perceptions about how tenure impacts state outcomes, what should influence tenure policy, and how tenure impacts the state and the education system.

Understanding of tenure

In our review of the literature and current events around tenure law, and in our focus group interviews with teachers, we ascertained that many individuals with strong opinions about tenure may not fully understand what it is, how it works, or what it is intended to do. Thus we began our study by asking some true/false questions about tenure to ascertain the public's level of awareness around tenure policy. The results are displayed in Figure 8, and the findings are interesting: even in the realm of individuals who work within k-12 schools (teachers, principals, superintendents, and school business officers), about 25% demonstrate fundamental misunderstandings of the tenure system. Thus the public

opinion around tenure law and policy presented in the subsequent sections of this report should be considered with caution. Though opinions around tenure are often strong, the public understanding of the system is moderate at best, and opinions reflected in this report may be based on misunderstandings or misconceptions. These data also suggest an opportunity to explore the nomenclature around tenure (as it is often confused with tenure in the postsecondary system, which is entirely different), and to consider options for informing and educating the public about the system.

Figure 8
Percent of stakeholders responding with misconceptions about tenure



This figure shows the percent of stakeholders who responded incorrectly to statements about tenure. Statements in the green box were true and bars show the percent of respondents who answered "false"; the first two statements are false, and the bars indicate responses of "true." These data suggest significant misconceptions about tenure.

Tenure serving educational objectives

In its historical context and in the literature, tenure is intended to serve discrete purposes. However, the first tenure laws were created nearly a century ago, and much has changed with regards to employee protections (other laws) and school administration (new goals and aims) since that time. Thus, beyond our literature review, we sought to understand the public's perception of tenure's effectiveness around these goals in a contemporary Alaskan context. Figure 9 provides an overview of these data.

In general, parents and teachers see tenure as more effective in meeting certain goals and objectives than other groups. They perceive that it serves all objectives surveyed.

Across all stakeholder groups, there seems to be consensus that tenure **does**:

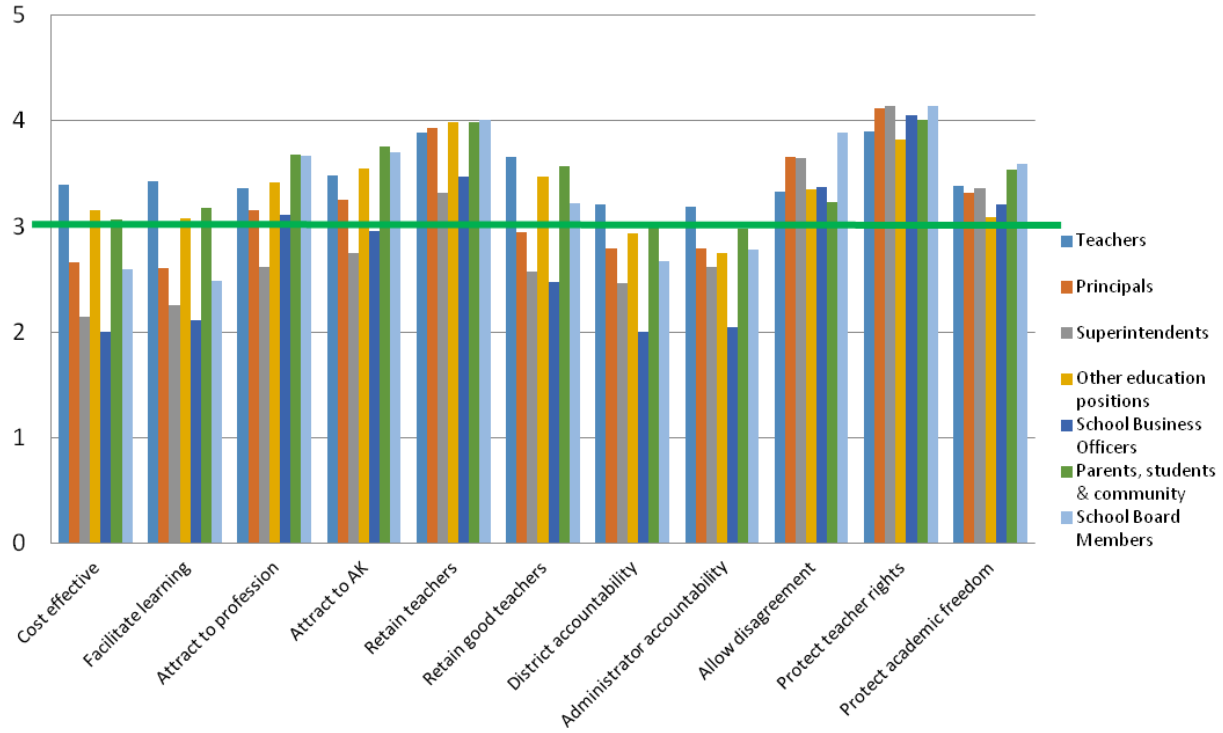
- Retain teachers in the profession
- Allow teachers to disagree with administration
- Protect teachers' rights
- Protect academic freedom

Excluding teachers and parents/students/community members, there is general agreement that tenure **does not**:

- Contribute to cost effectiveness
- Facilitate learning
- Retain good teachers in the profession of teaching
- Ensure district accountability
- Ensure administrator accountability

Of all stakeholder groups surveyed, school business officers tended to regard tenure more negatively (with regard to its ability to serve educational outcomes) than any other group.

Figure 9
Stakeholder perception of tenure's role in meeting educational objectives



This figure depicts stakeholder perceptions of the degree to which tenure meets various educational objectives. The green line indicates a perception of neutrality, with 5 indicating strong agreement.

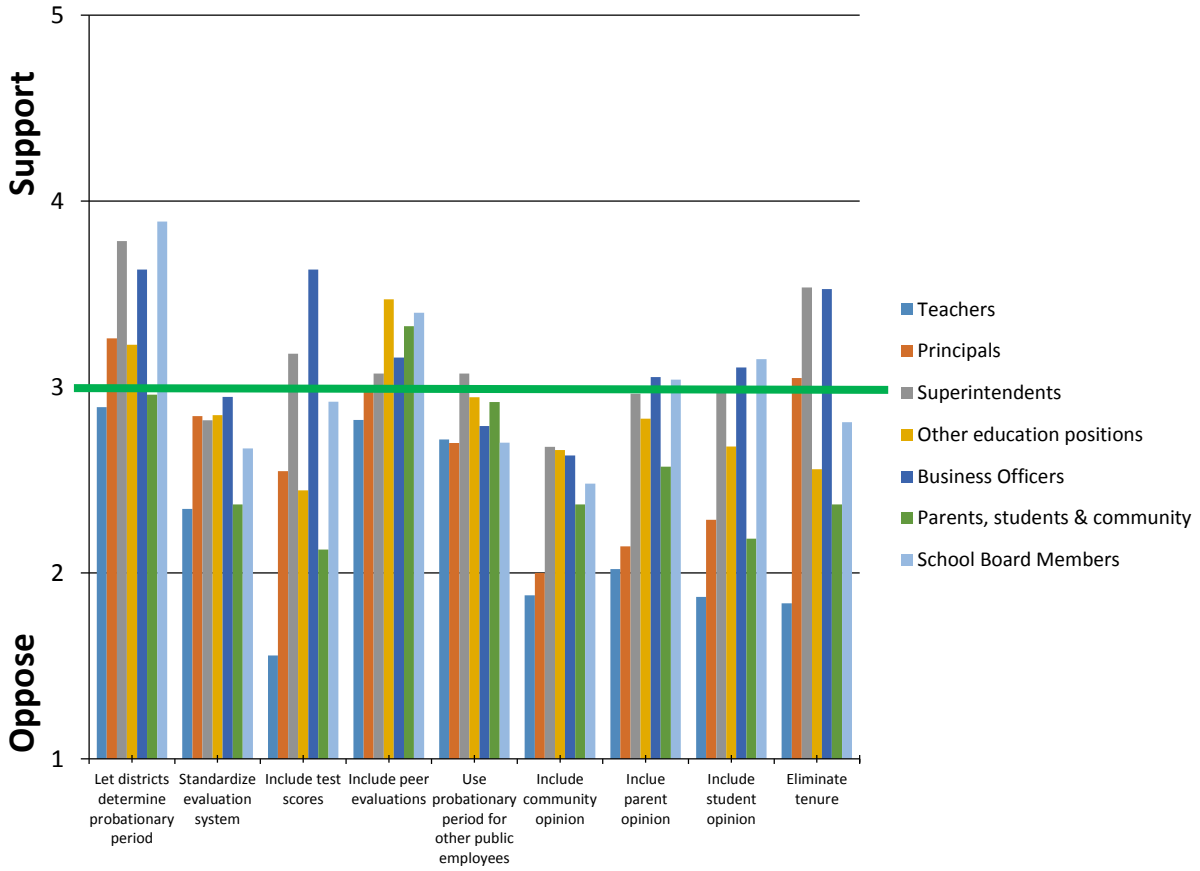
In some of our teacher focus groups, we heard stories about seemingly arbitrary and capricious dismissals of teachers pre-tenure, such as when a school board overrode a principal and superintendent's recommendation to retain a teacher who had taught one of the board members' children. These educators saw tenure as necessary to protect them from potential unreasonable demands. At the same time we heard concerns from school business officers and principals about tenured teachers who were no longer teaching well. That said, the majority of superintendents and principals we spoke with agreed that Alaska's tenure law does not prevent dismissal of teachers; it instead requires administrators to properly monitor employee performance and document systematically any problems.

One challenge in examining this issue is that the state does not track the numbers of tenured teachers dismissed or non-tenured teachers non-retained. The Alaska Department of Education and Early Development recently changed regulations so that it will be able to track data on dismissals and non-retention. We will be interested in these data when they become available.

Tenure eligibility

Currently, Alaska statute specifies how tenure is earned, though districts determine the criteria by which teachers are judged as meeting performance standards. Superintendents, school business officers, and school board members moderately support giving more control to local districts in setting tenure policies. Interestingly, though teachers and principals are the strongest proponents of tenure, they did not, on average, support any of the proposed considerations for changing tenure. This suggests that teachers and principals generally support keeping current tenure policies. School business officers show modest support for including test scores and peer evaluations in tenure decisions. With this exception, there is little support among survey respondents for changing the mechanisms by which teachers earn tenure from the current guidelines. All stakeholder responses are represented in Figure 10.

Figure 10
Stakeholder support for metrics to influence tenure policy



Stakeholder responses did not generally indicate strong support for changing existing tenure policy. The green bar indicates neutrality, with 4 and 5 indicating support and strong support, respectively.

About half of superintendents and school business officers supported eliminating tenure, but the other half were neural or opposed, so their interest in eliminating tenure is not strong. Principals' responses hovered around neutral. Parents, students, and community members and School Board members fell between neutral and oppose, and teachers fell between oppose and strongly oppose.

Free responses and focus group interviews identified some additional considerations that give light to the complexity of the issue.

Support for tenure includes:

- It allows teachers to take on additional duties and assignments – which may be challenging and fill a district need – and develop additional skills over time. Without tenure, teachers could not take on such tasks and risk their jobs.
- Tenure allows teachers to advocate on behalf of students and academics in the case of poor or unethical administrators.
- It facilitates continuity and community-building within the school, as relationships develop over time and enhance the learning environment.
- When teachers have a sense of security, they invest in their communities – purchase homes, etc.
- Tenure protects teachers from political whims and nepotism. A strong theme was that teachers are frequently dismissed pre-tenure for personality conflicts or other "excuses" to let the teacher go (e.g., teaching evolution in a conservative community, making room for a "crony", or not sleeping with an administrator).
- Tenure makes teachers feel appreciated.
- Especially for attracting teachers from the lower 48, the cost of moving to Alaska is high. Some opportunity for security is needed to make that worth the risk. Changes to tenure policy that weakened protections would be a disincentive for out-of-state professionals and discourage bright young people from pursuing careers in education.
- Every professional has a "bad year" or an "off year" from time to time, and tenure ensures that one challenging year will not override a career of quality working.
- Tenure guarantees teachers due process – they deserve to know why they are being let go, or to have the opportunity to improve following a poor evaluation. All professions have steps and protocol for dismissing employees, and those used for teachers are not markedly different than other public sector processes.

Concerns around tenure noted:

- High principal/administrator changeover impacts quality evaluation.
- Tenure keeps teachers in districts, and does not facilitate teacher mobility around the state, even when there is a high need, for example in rural districts.
- Tenure keeps districts from hiring teachers with less experience because they are cheaper.
- Tenure does not guarantee teacher quality, and may protect teachers who are poor-performing. In the current form, tenure offers protection to teachers who are just satisfactory, mediocre, or adequate, rather than celebrating strong, highly competent teachers.
- Some respondents perceived that once tenure is earned, teachers "slack off" or become "complacent" in their responsibilities; the system does not encourage teachers to continually strive for excellence.

- Given the small applicant pool for many communities, many districts are unable to recruit the top candidates, and then award tenure to teachers because there is not a more qualified person to take on the position.
- Teacher dismissal is an administrative issue, not a teacher issue, but many respondents cited poor administrators, poor evaluations, or high administrator turnover as impediments to the way that tenure is intended to work.
- The concept of tenure is widely misunderstood, and that creates challenges in communities. The idea that teachers with tenure have a "job for life" even if they commit egregious unethical acts is still widely held, albeit untrue.

It was the overwhelming perception of survey respondents that teacher dismissals, without tenure, would result from factors unrelated to job performance. The due process component of tenure was critical.

Suggestions included:

- Include other inputs in evaluations, so they are more dynamic and representative of teacher quality. Some suggestions included peer evaluation, multiple administrator evaluations, and subject/content area input.
- Document the different ways that teachers contribute to their school (outside of the classroom).
- Include mentorship opportunities for new teachers.
- Reconsider the word "tenure" because it is often misunderstood; there is some support, especially among teachers, for changing to a more apropos term, such as "probationary period."

Discussion

Stakeholder recommendations for tenure ran the gamut of options. Some feel that tenure should be eliminated, some said it should not be changed from its current form. Some suggested that the probation period be lengthened, some that it be shortened. Some suggest making it more difficult to earn, some suggested giving districts more control in tenure decisions. Some advocate for a right-to-work approach, others are staunchly opposed to that suggestion.

Whatever is done, it is clear that the topic is complex and controversial. Actions would need to be thoughtful and careful. A common comment was that Alaska's policy is similar to other states, and lacking an alternative for replacement, this should not be a high priority for the state at this time.

With regard to both compensation (salary schedules) and tenure, stakeholders raised questions and concerns about retirement packages, particularly the shift from a defined benefit plan to a defined contribution plan, and noted that this system may have more impact on teacher retention than changes to salary structure. However, a recent CAEPR analysis (Hill, 2014) did not identify a large effect from the change. Using four cohorts of teachers entering Alaska's public schools in AY2005 and 2006 (under the defined benefit plan) and in 2007 and 2008 (under the defined contribution plan), Hill ran a logistic regression on the teachers' decision each year on whether to stay teaching in Alaska. The independent variables were years teaching in Alaska at that point; whether they received teacher preparation in Alaska; whether they taught in urban or rural districts; and whether they started teaching in Alaska when the retirement system was a defined benefit or defined contribution model. That regression showed that being in the defined contribution group was slightly associated with higher turnover than the defined benefit group but the effect for the retirement system was smaller than that for the other

variables in the model. In other words, the impact of where a teacher received their training, where they taught, and how long they had been teaching had a greater impact in the model than the retirement system. While the impact of the retirement system was statistically significant, on a practical level it may be much less important than other factors influencing teachers' decisions. Still, this is an area that is worth more exploring.

Recommendations/Implications

Alaska policymakers have many options in terms of teacher tenure policy. The first and most obvious option is to do nothing, and have the system remain as it is. The second is to change the length of the probationary period between when teachers are hired and when they earn tenure, by making the time to tenure longer, shorter, or by making it a flexible decision, like that for university faculty, who have a window of several years in which to decide to apply for tenure. A third option is to allow districts to set their own tenure policy rather than keeping it as a statewide policy decision. A fourth is to require tenured teachers who receive an unsatisfactory performance evaluation to return to probationary status for some period of time until their performance is rated as improved. And a fifth is to eliminate tenure altogether. There are still more ways that tenure could be modified than those we list here.

That said, making any recommendations using the data we gathered, though collected with utmost integrity, is especially problematic given the current context. Until we know the effectiveness of the state's new teacher evaluation system in particular, we can make no recommendations for changing tenure policy.

After the new evaluation system is implemented, if it demonstrates effective identification of strong teachers, it may be appropriate to recommend shortening the probationary period, as it may also more efficiently and effectively identify struggling teachers. Additionally, if the new Alaska framework yields a more comprehensive teacher evaluation system, this process may facilitate ways to support promising but struggling teachers, and perhaps this might lead to calls for a more flexible probationary period to allow promising novice teachers extra time to qualify for tenure.

Though states across the US have made significant changes to tenure policy, there is not yet enough data about the effectiveness and unintended consequences of such changes to make an empirical recommendation. However, it should be noted that states that changed tenure policy to make it more restrictive, unlike Alaska, are not places that generally have difficulty recruiting qualified teachers.

Part IV: District profiles & superintendent duties

District Profiles

In our initial discussion about this project, we were asked whether we could develop a statewide salary schedule for all school district employees including those in classified positions. We responded that this was not feasible, noting that (unlike for teachers), there is not a statewide or national market for classified positions (most are local hire), meaning that we could not run the same sorts of models we used to develop the teacher salary schedule. Moreover, different districts use very different approaches to staffing the roles classified positions typically fill; in some districts services such as student transportation, building maintenance or food services are contracted out, while other districts operate most of these duties in-house.

To begin developing an understanding of how districts fill all their varied operational needs, we created district profiles which include information on the number of schools, student demographics, data from the certificated and classified databases as well as from the surveys completed by school business officers on the number of teachers and administrators, instructional support staff, extra-curricular funded positions, non-instructional school personnel, and related services, including whether or not the latter are contracted out. The district profiles are provided in Appendix J.

Though we were not able to obtain all components from all districts, the wide number of participating districts provides a nice overview of the breadth and scope of school districts in Alaska , and they demonstrate clearly that districts vary enormously in their staffing structures.

In our conversations with superintendents and school business officers and other administrators, it was clear that many of the smaller and more remote districts face challenges in finding staff for different kinds of positions such as maintenance or administrative assistant help, in part because they often cannot pay competitive wages.

Superintendent duties

As with the classified staff positions, there was also interest in having us develop a statewide salary schedule proposal for district superintendents alongside schedules for teachers and principals. We pointed out that there were too few superintendents to allow for us to create the sorts of models and analyses that we used to develop our teacher salary scale. Moreover, the roles and responsibilities of superintendents vary too widely across Alaska's diverse school districts to permit development of a schedule that accounted for all the different duties superintendents might fulfill.

Instead, we proposed to describe the broad variation in the way superintendents jobs are structured across the state. To do this, we interviewed 44 of Alaska's 53 superintendents about what they have direct responsibility for versus what they delegate, what kind of administrative support they have, and what is unique about being a superintendent in their district. While we did not speak with every superintendent in the state, we did talk with superintendents from a broad range of districts, from the leader of the largest district in terms of enrollment, over 48,000 students, to the smallest district with just 13. We talked with superintendents from the largest districts geographically as well as the most isolated. And as we talked with them, we found even more diversity in their roles and responsibilities than expected.

First, we provide a bit of context. Alaska school districts are quite diverse in terms of size of enrollment as well as geographic size, and the ethnic, linguistic and economic composition of the student bodies. Districts can be grouped into four categories based on student enrollments: large, medium, small and very small. The largest districts – Anchorage, Kenai Peninsula Borough, Mat-Su Borough and Fairbanks North Star Borough School Districts – have between 9,000 and 48,000 students. These four districts are also "on the road" between Southcentral and Interior Alaska. The next group of districts enroll between just under 5,000 students and about 1,000 students. Twelve districts fall into this range. The small districts have between 100 and 900 students. There are 32 districts in this group, the largest category. Finally, there are five very small districts enrolling between 13 and 86 students K-12. Several district offices are not located within the physical boundaries of the school district, but are rather located in nearby hubs or cities, including Chugach School District (in Anchorage), Yukon Koyukuk (in Fairbanks), Aleutian Region (in Anchorage), Southwest Region (in Dillingham) and Lake and Peninsula (in King Salmon). Given that schools are funded based on a formula that combines student size with geographic cost differentials, the student enrollment combined with the location of the districts can have a significant impact on how a superintendent's job is structured.

The salaries for superintendents also vary considerably in Alaska. In 2013-2014, for those who had positions listed at 100% FTE (e.g., excluding those who had superintendent/principal or other split positions), the range was $88,888 to $180,000, meaning that the high end of salaries is more than twice that of the low end.

The structure of district offices and superintendent responsibilities vary on a number of factors, including whether or not there are assistant superintendents and directors for different areas (e.g., curriculum, special education, facilities, human resources, assessment, business officers and so on), and around how many hats superintendents themselves wear, from serving as directors of special education or federal programs to holding multiple school administrator roles (such as being both principal and superintendent, principal/counselor and superintendent or even teacher and superintendent). In addition, some of the districts contract out some of the administrative duties, in particular business office and accounting, as well as special education and technology.

Generally, superintendents in the larger districts have multiple directors and/or assistant superintendents in their central offices. They described spending a lot of time on public and political relations, working with the school board, dealing with crises, and meeting with administrators in the district, from directors to principals. Those in medium districts have a handful of directors, but also tend to pick up a few of the direct oversight responsibilities for which larger districts have intermediary (director level) administrators. Those in small and very small districts end up wearing the most varied hats in district operations. For example, eight superintendents in our study are also the Special Education Coordinator for their district. Five superintendents we talked with are also principals. In some cases they were the only principal as well as superintendent in the district, while others oversaw principals for some schools in their district but served as principal for others. One of these superintendents oversees two districts in addition to serving as a principal in one of the districts. Several superintendents described creative ways of managing responsibilities, from having principals also wear numerous hats such as testing and assessment or federal programs to, in one case, sharing central office staff between two districts (Lake & Peninsula and Bristol Bay School Districts).

Administrative support for superintendents also varies considerably. Many have part-time administrative assistants who also support the district school board (nine mentioned this specifically). At least three share their administrative assistants with schools or with other divisions of the district. And a few have no administrative assistant at all.

An issue several superintendents pointed out is that compliance and paperwork requirements are the same across all districts, regardless of size. Superintendents in small districts often have little or no support (either at the managerial level or from administrative assistants) for meeting these requirements, and have to complete the paperwork themselves. One superintendent talked about how there were times when paperwork just did not get done, because of all the other duties that had to be fulfilled.

Regardless of the size of their district, superintendents have to manage external relationships both with the community and with local and state policymakers. However some of the superintendents in the smaller districts talked of having to forego participation in the superintendents' meetings in Juneau or in other statewide gatherings and activities because of district demands.

Superintendents described having to be adaptable and several noted that that there was no such thing as a typical day or set of duties, especially those working in smaller and more remote districts. One superintendent talked about "other duties as assigned," which means dealing with whatever comes up, whether it be moving freight that has arrived when no one else is around, helping with shipping supplies out to schools, ordering food for in-service meetings or taking the garbage out. Another superintendent in a very small district said that she had driven the school bus and cleared clogged toilets, while another also in a very small district described having to travel with students as a chaperone because there were not enough parents or teachers to do this. Another superintendent talked about having to know load bearing maximums for snow on building roofs.

The information we gathered from superintendents across Alaska confirms that their roles and responsibilities vary considerably and that in many cases their jobs are quite idiosyncratic, determined by the unique needs of their particular districts.

Part V: Summary

The issues around teacher salary and tenure are complex. Because education is such a large component of state and local spending, and teacher salaries are the largest component of education budgets, decisions around teacher compensation have a large effect on state and local budgets.

Recognizing the importance of the issue, the Alaska Legislature tasked the Alaska Department of Administration with advising the legislature on teacher compensation and tenure. This report is part of that effort.

In this report we tried to model an appropriate teacher base salary and additional compensations for some communities. We also examined teacher tenure and modeled its value to teachers, compared to specific alternatives. To help policymakers understand the context for their decisions, we also included details on stakeholder perceptions on these issues, and developed district profiles to show the variety across Alaska districts of needs, priorities, and solutions.

Limitations

Though the data were collected with integrity and following established methods, this study presents some significant limitations.

- Regarding the survey data, participation was not randomized. Though the number of participants was fair (819) and represent a good cross-section of Alaskan communities, the non-random assignment means we cannot intuit that they represent the opinions of the general public. Moreover, limited participation from some key stakeholder groups (particularly school board members and other elected officials) limits our ability to draw conclusions about their perceptions and sentiments. However, because communication and advertising of the instrument was so strong, the instrument was made broadly available to stakeholders, and the choice to participate (or not) was not attributable to limited access to the survey instrument. These data thus serve to inform and provide context for decision-making and complement the statistical analyses.
- The cost differentials, though developed using appropriate economic modeling, reflect present economic circumstances and school-community trends. As such, they have a limited “shelf life.” The more time that passes, the less likely they are to account for new and changed circumstances. After a maximum of five years, they would need to be recalculated using updated data.
- Each data source has its own flaws and limitations. For example, the data on teacher assignments and characteristics are sometimes incorrect; districts may have failed to update information from a previous year, entered incorrect information, or in a few cases, not submitted data at all. Data on benefits, much of which we collected from negotiated agreements, are sometimes not described in those agreements, but rather in other documents to which we did not have access. Finally, we are often using data that are available as a proxy measure for something else, for which there is no direct measurement available. Teacher quality is among these; we used the federal 'Highly Qualified' definition because there is no direct measure of teacher quality available. We hope that in most cases, errors in one direction are cancelled by those in the other direction. We have built the best models possible, given the

time, resources, and data available; but models can always be improved, and ours is no exception.

Even with these limitations, the study presents a solid and evidence-based salary schedule, set of differentials, analysis of tenure, and overview of public opinion on these topics. These data are suitable and intended to inform legislative discourse and public conversation.

Recommendations

Below are the major recommendations from this work:

- If the Alaska Legislature wishes to adopt a single teacher salary schedule, we recommend the 2014-15 salary schedule adopted by the Mat-Su Borough School District serve as the base. Our model indicates this schedule would pay enough to attract qualified teachers without paying more than is necessary.
- We calculated community differentials that range from 0.85 to 2.01. Because these differentials would result in salaries well outside the current range, we feel that they accurately reflect teachers' preferences but cannot be sure that implementing them would actually result in rural districts being able to attract and retain qualified teachers[5].
- Teachers respond to many things besides salary, and changes in working conditions, housing, or professional development might provide other ways for districts to attract and retain teachers, besides just raising salaries.
- We do not recommend that a single teacher salary schedule be adopted by the state at this time for several reasons:
    - It would cost more than current teacher compensation
    - There is interest among some state policy makers in performance-based pay, but Alaska does not yet have sufficient data from the new teacher evaluation system to use that approach
    - It does not have stakeholder support
    - Though teacher compensation is an important issue, there is a need to first clarify goals
- If the legislature wishes to pursue a statewide salary schedule, it is recommended that draft schedules and cost differentials be shared with stakeholders and that more specific feedback be solicited when stakeholders have the opportunity to review the actual proposal.
- Teachers value tenure highly. We estimate the value of tenure means that the state would have to pay teachers on average an additional $42,000 per year if tenure were removed, and $16,000 per year if tenure were awarded at the end of five years instead of three years, or face greater difficulty attracting and retaining teachers.
- We do not recommend that the Alaska teacher tenure system be modified at this point, for the same reasons we do not recommend adopting a single salary schedule: cost, lack of stakeholder support, lack of empirical support, and the need to understand and take advantage of the new

[5] We want to stress that the community differentials that we calculated are only a part of the geographic differential used to calculate state payments to districts. Most notably, energy costs are an important part of the Alaska Foundation Formula geographic differential but not part of the differentials we calculated for teacher salaries.

teacher evaluation system. We do recommend that the legislature re-evaluate tenure policy after districts have had at least two years to fully implement the new teacher evaluation systems and to determine how best to use data on student achievement, especially that from the new Alaska Measures of Progress assessment, as part of the measure of teacher effectiveness.

Final thoughts

There is real interest across Alaska in improving teacher compensation and tenure structures. The work the state has done in modifying the teacher evaluation and student assessment systems will provide valuable data to accomplish this. However, the state needs to ensure that those new systems are working as intended before they are used to revise compensation and tenure.

Given the high salary costs that our models indicate are needed to attract and retain high quality teachers in some of our most rural and remote communities, we suggest that stakeholders and policymakers consider other, less costly approaches both to attract and retain teachers, and also to provide rural education. Do we continue with the same model we have had in place for nearly forty years, or do we think differently and perhaps more creatively? There are many options being discussed or piloted across the state, from hybrid learning opportunities with greater use of distance technologies, to more flexible mixing of short term boarding school experiences with in-village schools. There are also experiments underway around how better to attract young educators to the state (such as providing student teaching and technology-based tutoring opportunities for students in outside universities to work with Alaska students), and to find more effective ways to enable local citizens to become teachers. Given the state's current and future fiscal challenges, the status quo is not going to suffice for our rural schools.

References

Allegretto, S. A., Corcoran, S. P., & Mishel, L. (2004). *How does teacher pay compare? Methodological challenges and answers.* Washington, DC: Economic Policy Institute.

Akiba, M., Chiu, Y., Shimizu, K., & Liang, G. (2012). Teacher salary and national achievement: A cross-national analysis of 30 countries. *International Journal of Educational Research*, *53* 171-181. doi:10.1016/j.ijer.2012.03.007

Anrist, J. & Guryan, J. (2008). Does teacher testing raise teacher quality? Evidence from state certification requirements. *Economics of Education Review 27*(5), 483-503.

ATP (2015). Summary of K-12 Vacancies for certificated staff, 7-18-15 from the ATP Website.

Augenblick, J. & Rose, D. (2004). *Recommendations for Louisiana's salary schedule: The minimum level of salaries, alternative statewide salary structures, and including the schedule in the Minimum Foundation Program.* Denver, CO: Augenblick, Palaich and Associates, Inc.

Bacharach, S. B., Lipsky, D. B., Shedd, J. B., & Wood, K. H. (1984*). Paying for Better Teaching: Merit Pay and its Alternatives*. Organizational Analysis and Practice, Inc. Monograph Series: Ithaca, New York.

Ballou, D. (2001). Pay for performance in public and private schools. *Economics of Education Review*, *20*(1), 51-61.

Brunner, E.J. & Imazeki, J. (2010). Probation length and teacher salaries: Does waiting pay off? *Industrial and Labor Relations Review 64*(1), 164-180.

Chingos, M.M. (2014). *Ending teacher tenure would have little impact on its own.* Washington, DC: Brookings Institution Brown Center on Education Policy.

Chingos, M.M. & Peterson, E.E. (2011). It's easier to pick a good teacher than to train one: Familiar and new results on the correlates of teacher effectiveness. *Economics of Education Review 30*(3), 449-465.

Clotfelter, C.T., & Ladd, H.F. (1996). Recognizing and rewarding success in public schools. In H. Ladd (Ed.), *Holding schools accountable: Performance-related reform in education.* Washington, DC: The Brookings Institute.

Clotfelter, C.T., Ladd, H.F. & Vigdor, J.L. (2006). Teacher-student matching and the assessment of teacher effectiveness. *Journal of Human Resources*, *41*(4), 778-820.

Clotfelter, C.T., Ladd, H.F. & Vigdor, J.L. (2007). Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review 26*(6), 673-682.

Coltham, J. B. (1972). Educational accountability: An English experiment and its outcome. *School Review, 81*(1), 15-34.

Cope, D. (2012). *Alaska Teacher Incentive Fund 2006 - 2011 Final Report.* Anchorage, AK

Croniger, R.G., Rice, J.K., Rathbun, A. & Nishio, M. (2007). Teacher qualifications and early learning: effects of certification, experience, and degree on first-grade student achievement. *Economics of Education Review 26*(3), 312-324.

Dee, T. & Keyes, B.J. (2004). Does merit pay reward good teachers? Evidence from a randomized experiment. *Journal of Policy Analysis and Management 23*(3), 471-488.

Eberts, R., Hollenbeck, K. & Stone, J. (2002). Teacher performance incentives and student outcomes. *Journal of Human Resources 37*(4), 913-927.

Figlio, D. N., & Kenny, L. W. (2007). Individual teacher incentives and student performance. *Journal of Public Economics*, *91*(5), 901-914.

Firestone, W. A. (1991). Merit pay and job enlargement as reforms: Incentives, implementation, and teacher response. *Educational Evaluation and Policy Analysis*, *13*(3), 269-288.

Firestone, W.A. (1994). Redesigning teacher salary systems for educational reform. *American Educational Research Association 31*(3), 549-574.

Freedman, Samuel G. (October 10, 2007). "Where Teachers Sit, Awaiting Their Fates". The New York Times.

Fryer, R. G. (2011). *Teacher incentives and student achievement: Evidence from New York City public schools.* (NBER Working Paper No. 16850). Cambridge, MA: National Bureau of Economic Research.

Fullan, M. (2001). *Leading in a culture of change.* San Francisco: Jossey-Bass.

Goldhaber, D. & Anthony, E. (2007). Can teacher quality be effectively assessed? National Board Certification as a signal of effective teaching. *The Review of Economics and Statistics 89*(1), 134-150.

Goldhaber, D.D. & Brewer, D.J. (1997). Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity. *The Journal of Human Resources 32*(3), 505-523.

Goldhaber, D.D. & Brewer, D.J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis 22*(2), 129-145.

Goldhaber, D., DeArmond, M., Player, D., & Choi, H. J. (2008). Why Do So Few Public School Districts Use Merit Pay?. *Journal of Education Finance*, 262-289.

Goodman, S. F., & Turner, L. J. (2010). *Teacher incentive pay and educational outcomes: Evidence from the New York City bonus program.* New York: Columbia University.

Gordon, R., Kane, T., Staiger, D. O. (2006). Identifying effective teachers using performance on the job. Working Paper 2006-01. Washington, DC: The Brookings Institution.

Groshen, E. L., & Loh, E. S. (1993, January). What Do We Know about Probationary Periods?. In *Industrial Relations Research Association Series: Proceedings of the Forty-fifth Annual Meeting,* 10-19.

Hammon, B. (April 15, 2014) The Oregonian. Accessed July 25, 2015 from http://www.oregonlive.com/education/index.ssf/2014/04/oregon_schools_hiring_by_the_h.html

Hanushek, E. A. (2003). The failure of input-based resource policies. *The Economic Journal 113*(485), F64-F98.

Hanushek, E. A. & Pace, R. R. (1995). Who chooses to teach (and why)? *Economics of Education Review 14*(2), 101-117.

Hazard, W. R. (1975). Tenure laws in theory and practice. *Phi Delta Kappan*, 451-454.

Heneman III, H. G., Milanowski, A., & Kimball, S. (2007). *Teacher performance pay: Synthesis of plans, research, and guidelines for practice (CPRE Policy Brief RB-46).* Philadelphia, PA: Consortium for Policy Research in Education.

Hill, A. & Hirshberg, D. (2013). *Alaska teacher turnover, supply and demand: 2013 highlights.* Anchorage, AK: UAA Center for Alaska Education Policy Research.

Hill, A., Hirshberg, D., Lo, D., Morotti, A. and Ryan, H. (2015). *Alaska's University for Alaska's Schools 2015.* Fairbanks: University of Alaska.

Hill, A., Knapp, G., & Steenhoven, B. (2014). UAA graduates: How many stay and work in Alaska? Research Summary No. 80, ISER-UAA.

Huang, F. L., & Moon, T. R. (2009). Is experience the best teacher? A multilevel analysis of teacher characteristics and student achievement in low performing schools. *Educational Assessment, Evaluation and Accountability*, 21(*3*), 209-234.

Ingersoll, R. (2007, September). Short on power, long on responsibility. *Educational Leadership, 65*(1), pp. 20-25.

Jacob, B. & Lefgren, L. (2005). *Principals as agents: Subjective performance measurement in education.* Working Paper No. 11463. Cambridge, MA: National Bureau for Economic Research.

Jones, R. E. (1940). *A study of teachers' salaries, minimum salary laws, and retirement systems for white teachers in the public schools of the United States.* Indiana State Teachers College, Department of Education.

Joseph, N. & Waymack, N. (2014). *Smart money: What teachers make, how long it takes and what it buys them*. Washington, DC: National Council on Teacher Quality.

Kellor, E. M. (2005). Catching up with the Vaughn express: Six years of standards-based teacher evaluation and performance pay. *Education Policy Analysis Archives, 13*(7).

Ladd, H.F. (1999). The Dallas school accountability and incentive program: An evaluation of its impacts on student outcomes. *Economics of Education Review 18*(1): 1-16.

Ladd, H. F. (2008, November). Value-added modeling of teacher credentials: Policy implications. Proceedings from the 2nd annual conference of the Center for Analysis of Longitudinal Data in Educational Research, Washington, DC.

Lasagna, M. (2010). *Executive summary: Lessons learned from the Center For Educator Compensation Reform's first 10 case summaries.* U.S. Department of Education, Office of Elementary and Secondary Education. Washington, D.C.: Center for Educator Compensation Reform.

Ledford, G. E., & Heneman, R. L. (2000). Pay for skills, knowledge, and competencies. In L. A. Berger, & D. R. Berger (Eds.), *The Compensation Handbook* (pp. 143-155). Mcgraw-Hill.

Lavy, V. (2002). Evaluating the effect of teachers' group performance incentives on pupil achievement. *Journal of Political Economy 110*(6), 1286-1317.

Lavy, V. (2004). *Performance pay and teachers' effort, productivity and grading ethics*. Working Paper No. 10622. Cambridge, MA: National Bureau for Economic Research.

Marsh, J. A., Springer, M. G., McCaffrey, D. F., Yuan, K., Epstein, S. (2011). *A big apple for educators: New York City's experiment with schoolwide performance bonuses. Final evaluation report.* Santa Monica, CA: RAND Corporation.

Milanowski, A. (2003). The varieties of knowledge and skill-based pay design: A comparison of seven new pay systems for K-12 teachers. *Education Policy Analysis Archives, 11*(4).

Murnane, R. J., & Cohen, D. K. (1986, February). Merit pay and the evaluation problem: Why most merit pay plans fail and a few survive. *Harvard Educational Review, 56*(i), 1-17.

Odden, A. & Wallace, M. (2007). Redesigning teacher salary structures: A handbook for state and local policy makers.

Pennucci, A. (2012). *Teacher compensation and training policies: Impacts on student outcomes. Document* No. 12-05-2201). Olympia, WA: Washing State Institute for Public Policy.

Podgursky, M. (2003). Fringe benefits: There is more to compensation than a teacher's salary. *Education Next 3*(3), 71-76.

Podgursky, M. (2006). Teams versus Bureaucracies: Personnel Policy, Wage-Setting, and Teacher Quality in Traditional Public, Charter, and Private Schools. *Education Working Paper Archive*.

Podgursky, M., Mishel, L., & National Council on Teacher, Q. (2005). NCTQ Square-Off: Are Teachers Underpaid? Two Economists Tackle an Intractable Controversy. National Council on Teacher Quality.

Podgursky, M., & Springer, M. (2011). Teacher compensation systems in the United States K-12 public school system. *National Tax Journal*, *64*(1), 165-192.

Podgursky, M.J. & Springer, M.G. (2007). Teacher performance pay: A review. Journal of Policy Analysis and Management 26(4), 909-949.

Polikoff, M. S. &. Porter, A. C. (2014). Instructional alignment as a measure of teaching quality. Educational Evaluation and Policy Analysis 36(4), 399-416.

Prieser, C. F. (2012). Measuring Teacher Pay. Monthly Labor Review, 135(2), 39-41.

Protsik, J. (1996). History of teacher pay and incentive reforms. *Journal of School Leadership, 6*(3), 265-289.

Rivkin, Hanushek, and Kain (2005). "Teachers, Schools, and Academic Achievement." Econometrica, 73(2), 417-458

Rosenholtz, S. J. (1985). Effective schools: Interpreting the evidence. *American Journal of Education*, *93*(3), 352-388.

Rosenholtz, S. J., & Smylie, M. A. (1984). Teacher compensation and career ladders. *The Elementary School Journal*, *85*(2) 149-166.

Rowland, C., & Potemski, A. (2009). Alternative Compensation Terminology: Considerations for Education Stakeholders, Policymakers, and the Media. Emerging Issues. Report No. 2. *Center for Educator Compensation Reform*.

Sawchuk, S. (2010). Study throws cold water on bonus pay. *Education Digest: Essential Readings Condensed for Quick Review, 76*(4), pp. 8-11.

Sawchuk, S. (October 21, 2014) Steep Drops Seen in Teacher-Prep Enrollment Numbers. *Education Week.* Downloaded from http://www.edweek.org/ew/articles/2014/10/22/09enroll.h34.html on July 25, 2015.

Sharpes, D.K. (1987). Incentive pay and the promotion of teaching proficiencies. *The Clearing House 60*(9), 406-408. doi: 10.1080/00098655.1987.9959387

Shifrer, D., Turley, R. L., & Heard, H. (2013). *Houston Independent School District's ASPIRE program: Estimated effects of receiving financial awards.* Kinder Institute for Urban Research, Rice University, Houston Education Research Center, Houston, Texas.

Springer, M. G., Ballou, D., Hamilton, L., Le, V., Lockwood, J., McCaffrey, D. F. & Stecher, B. M. (2012a). *Final report: Experimental evidence from the Project on Incentives in Teaching.* Vanderbilt University, National Center on Performance Incentives, Nashville, TN.

Springer, M. G., Pane, J. F., Le, V., McCaffrey, D. F., Burns, S. F., Hamilton, L. S. & Stecher, B. M.(2012b). Team pay for performance: Experimental evidence from the Round Rock Pilot Project on Team Incentives. *Educational Evaluation and Policy Analysis, 34*(4), 367-3690.

State of Alaska Department of Education & Early Development (EED) (2014). *Alaska's Public Schools: 2013-2014 Report Card to the Public.* Juneau.

Steinberg, M.P & Sartain, L. (2015). Does better observation make better teachers? New evidence from a teacher evaluation pilot in Chicago. *Education Next, 15*(1), 71-76.

Subedi, B. R., Swan, B., & Hynes, M. C. (2011). Are school factors important for measuring teacher effectiveness? A multilevel technique to predict student gains through a value-added approach. *Education Research International*, *2011*. doi: 10.1155/2011/532737

Tirivayi, N., Maasen van den Brink, H., & Groot, W. (2014). Group incentives for teachers and their effects on student learning: A systematic review of theory and evidence. *School Effectiveness and School Improvement, 25*(4), 570-601.

US Department of Education. (2015). *Highly qualified teacher data: Summary of school year 2013-14 data.* Retrieved from http://www2.ed.gov/programs/teacherqual/resources.html

Vandevoot, L.G., Amrein-Beardsley, A., & Berliner, D.C. (2004). National Board Certified teachers and their students' achievement. *Education Policy Analysis Archives, 12*(46)

Wang, R. & Weiss, A. (1988). Probation, layoffs, and wage-tenure policies: A sorting explanation. *Labour Economics 5*(3), 359-383.

Yuan, K., Le, V., McCaffrey, D. F., Marsh, J. A., Hamilton, L. S., Stecher, B. M., & Springer, M. G. (2013). Incentive pay programs do not affect teacher motivation or reported practices: Results from three randomized studies. *Educational Evaluation And Policy Analysis*, *35*(1), 3-22.