

The cost of teacher turnover in Alaska

**A study by the Center for Alaska Education Policy Research
at the Institute of Social and Economic Research**

Dayna Jean DeFeo, PhD

Trang Tran, MPP

Diane Hirshberg, PhD

Dale Cope, PhD

Pam Cravez, JD

March 31, 2017



**UAA Center for Alaska
Education Policy Research**
UNIVERSITY of ALASKA ANCHORAGE

1901 Bragaw Street, BOC3 301
Anchorage, Alaska 99508-4614
T 907.786.5413 • F 907.786.7739
CAEPR@uaa.alaska.edu • www.iser.uaa.alaska.edu/CAEPR

Executive summary

Low teacher retention - high turnover - affects student learning. Teacher recruitment and retention are challenging issues in Alaska. Rates vary considerably from district to district and year to year, but between 2004 and 2014, district-level teacher turnover in rural Alaska averaged 20%, and about a dozen districts experienced annual turnover rates higher than 30%. High turnover rates in rural Alaska are often attributed to remoteness and a lack of amenities (including healthcare and transportation); teachers who move to these communities face additional challenges including finding adequate housing and adjusting to a new and unfamiliar culture and environment.

Though urban districts have lower teacher turnover rates, they also have challenges with teacher recruitment and retention, particularly in hard-to-fill positions (such as special education and secondary mathematics) and in difficult-to-staff schools. Annually, Alaskan school districts hire about 1,000 teachers (500-600 are hired by its five largest districts), while Alaska's teacher preparation programs graduate only around 200.

The costs associated with teacher turnover in Alaska are considerable, but have never been systematically calculated,¹ and this study emerged from interests among Alaska education researchers, policymakers, and stakeholders to better understand these costs. Using data collected from administrators in 37 of Alaska's 54 districts, we describe teacher turnover and the costs associated with it in four key categories: separation, recruitment, hiring, and induction and training. Our calculations find that the total average cost of teacher turnover is \$20,431.08 per teacher. Extrapolating this to Alaska's 2008-2012 turnover data, this constitutes a cost to school districts of approximately \$20 million per year.

We focused on costs to Alaskan school districts, rather than costs to individual communities, schools, or the state. Our calculation is a conservative estimate, and reflects typical teacher turnover circumstances - retirement, leaving the profession, or moving to a new school district. We did not include unusual circumstances, such as mid-year departures or terminations. Our cost estimate includes costs of separation, recruitment, hiring, and orientation and training, and excludes the significant costs of teacher productivity and teacher preparation. We suggest that not all turnover is bad, nor are all turnover costs; and emphasize the need to focus on teacher retention as a goal, rather than reducing turnover costs.

Even with conservative estimates, teacher turnover is a significant strain on districts' personnel and resources, and in an era of shrinking budgets, teacher turnover diverts resources from teaching and learning to administrative processes of filling teacher vacancies. Our recommendations include:

- Better track teacher turnover costs
- Explore how to reduce teacher turnover costs
- Support ongoing research around teacher turnover and its associated costs
- Explore conditions driving high teacher turnover, and how to address them

¹For a notable exception, a Dr. Roy Roehl the University of Alaska Fairbanks conducted preliminary calculations in the spring of 2016.

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 school district personnel who participated in our interviews. Your time and thoughtful responses helped us to not just calculate costs, but understand district processes associated with them. We know that your schedules are very busy, and we are grateful that you took the time to speak with us.

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. Your time and energies are most appreciated.

Thanks to the individuals who helped us to conceptualize the project, especially Steve Atwater, Robb Donohue Boyer, Les Morse, and Lisa Parady. Your experience and insight helped us to be more thoughtful and inclusive in our analyses.

We are grateful to the Texas Association of School Boards for giving us permission to adapt the instrument developed by Texas Center for Education Research.

Finally, we extend our most sincere appreciation to the teachers, administrators, and staff who work every day to educate Alaska's children. Your work impresses and inspires us to conduct research that will be used to support the profession.

Funding

Funding for this project was provided by the University of Alaska Foundation.

Contact

Questions or comments about this report can be directed to the lead author:

Dayna Jean DeFeo
djdefeo@alaska.edu
907.786.5494

Contents

Executive summary	2
Acknowledgements.....	3
Funding	3
Contact.....	3
What is teacher turnover?	7
What are the impacts of teacher turnover?	8
Teacher turnover erodes school climate	9
Teacher turnover impacts teacher professional development	10
Teacher turnover affects instructional quality and student achievement	10
What factors are associated with teacher turnover?	10
Working conditions.....	11
Physical environment.....	11
School leadership.....	11
Workload.....	11
Compensation	11
School characteristics	11
Teacher characteristics	12
Additional Alaska considerations.....	12
Poor community connections.....	12
Environmental factors.....	12
Place of preparation.....	13
Cultural differences.....	13
What are the costs associated with teacher turnover?.....	13
1. Separation.....	13
2. Recruitment	13
3. Hiring.....	14
4. Orientation and training	14
5. Performance productivity	15
6. Preparation	15
Other indirect (and difficult to measure) costs	16
Challenges in calculating teacher turnover costs	16

Method	18
Literature review.....	18
Describing teacher turnover in the Alaska context	18
Adapting and piloting the instrument	19
Data collection from districts.....	19
Delimitations.....	19
District as unit of analysis	19
Estimate turnover costs for all districts instead of a few case study schools.....	20
Exclude lost productivity costs.....	20
Exclude extreme and infrequent costs	20
Exclude preparation costs.....	20
Exclude community costs.....	20
Exclude contracted services.....	21
Other excluded costs	21
Analysis	21
Coding process	21
Estimating time	21
Coding staff	22
Estimating wage.....	22
Estimating fixed costs	23
Calculating total cost.....	23
Considerations for interpreting data	23
Findings	24
Separation.....	24
Recruitment	25
Hiring.....	26
Orientation and training	26
Implications.....	27
The cost of teacher turnover is considerable.	28
Not all turnover is bad, nor are all turnover costs.....	28
Retention pays off.....	28
Reducing costs in one area may create additional costs elsewhere.	28
Recommendations	28

Better track teacher turnover costs at multiple levels.	28
Explore how to reduce costs.....	29
Support ongoing research around teacher turnover and its associated costs.....	29
Explore conditions driving high teacher turnover, and how to address them.....	29
Increase Alaska-prepared teacher supply.....	30
Improve teacher supports.....	30
Recruit on community strengths.	30
Limitations	30
Conclusions	31
References	33
Appendix A: Detail costs of teacher turnover.....	37
Appendix B: Occupation codes & wages used for cost calculations.....	38

[A district] spends time and money trying to hire the person who best fits each available job and who enjoys putting in the effort required to accomplish the [school's] mission and goals. Further time and effort is spent on training every new hire. However, what happens when someone leaves, whether voluntarily or involuntarily? The [district] must spend time and resources looking for a replacement, training the replacement, and so on – a very expensive process. The cost to the [district and the school] is made up of both direct costs that are easily measurable and indirect costs that may not be as easy to gauge precisely. All told, the total cost of turnover can take a heavy toll on a [district's] finances.

- Karsan, 2007, p. 33

Even though districts typically allocate 80% of their operating budget to personnel (Thompson, Crampton, & Wood, 2012),

[s]urprisingly little work has been done to develop methodologies and standards that districts and schools can use to make reliable estimates of turnover costs. Even less is known about how to account for the costs of turnover at the school level, which encompasses a different set of costs than those expended at the district level and for which different methodologies are required. Finally, we know little about how the cost of teacher turnover varies at both the district and school levels, and for teachers of different grades and disciplines. In the absence of standardized models and methods, turnover costs remain buried in discreet line items of budgets and are practically invisible at the school level. As a result, decisions regarding resource allocation, teacher recruitment, professional development (PD), teacher retention efforts, and workforce restructuring – all factors that contribute to turnover costs – are made without accounting for the true costs that teacher turnover imposes on districts and schools. (Levy, Joy, Ellis, Jablonski, & Karelitz, 2012, p. 104)

The objective of the project was not to explore the fiscal impacts teacher turnover in Alaska, but rather to quantify the cost of teacher turnover itself.

What is teacher turnover?

Teacher turnover happens when educators leave their classroom positions and are replaced by different ones. We draw from the current literature to define teacher turnover in four broad categories:²

- **Retirement** happens when a teacher ends his or her teaching professional career, usually when he or she has reached a certain age or years of service. With this type of turnover, there are usually some salary savings to the district because typically districts will replace the veteran teacher with one who is less experienced and therefore less costly than the one who left (Milanowski & Odden, 2007).
- **Attrition** happens when a teacher leaves the profession entirely, premature to his or her retirement. Boe, Cook, and Sunderland (2008) estimate this type of leaving accounts for about 24-37% of teacher turnover; about a third of these teachers takes non-teaching positions in education.

² Though other researchers have made some different classifications for these categories (see Barnes, Crowe, & Schaefer, 2007) the four categories defined here are used in many analyses, and account for all types of turnover.

- **Migration** happens when a teacher leaves his or her current job for a teaching position in a new district.³
- **Transfer** happens when a practicing teacher moves to a new subject area. This is most commonly seen in teachers moving from General Education (GENED) to Special Education (SPED) and vice versa. While nationally the rate of these transfers is almost even (Boe et al., 2008), SPED teachers are more likely to transfer to GENED than leave teaching entirely. Transfer is characteristic of the teaching profession, but the reasons for it are not always clear.

Though teacher retirement is generally indicative of teacher stability, too much of any of the other three types – even if they are good moves for individual teachers – causes significant administrative and financial challenges for districts. These different types of teacher turnover incur different costs, and at different levels. For example, transfers are relatively inexpensive at the district level, but have significant impacts on costs at the individual schools affected.

In the national context, turnover rates for teachers are not higher than other professions (Boe et al., 2008), though patterns vary considerably. Teacher turnover is highest in first few years of teaching (Barnes, Crowe, & Schaefer, 2007). Nationwide, 66% of teachers leave their schools in their first five years, and any time a teacher starts in a new school, their expected longevity is between 5.8 and 6.5 years (Cannon & Becker, 2015).

In Alaska, teacher turnover is consistently higher in rural schools and districts. At the district level, between 1999 and 2012, it averaged 20% in rural districts, and 10% in Alaska's five largest districts which are mostly (though not entirely), urban or suburban (Hill & Hirshberg, 2013). At the school level, between 2015-2016 and 2016-2017, rural-remote schools had over 30% teacher turnover; schools in rural hubs had 22%, and in more populated areas the school turnover rate was 14-16% (Stevens & Pierson, 2017). Figure 1 illustrates turnover rates for teachers in Alaska's rural districts.

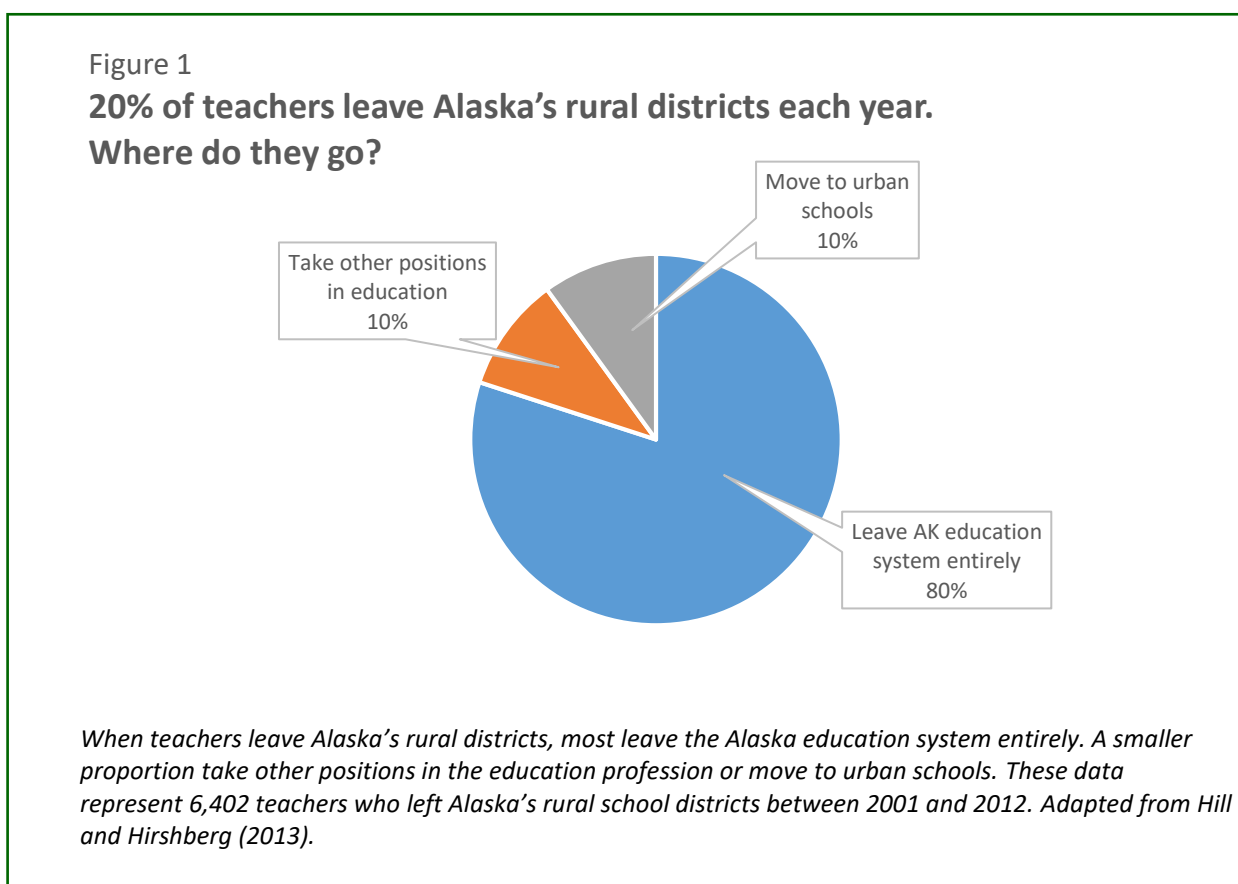
What are the impacts of teacher turnover?

Some teacher turnover is beneficial. Some teachers leave because they are not good fits, and though a stable school climate is desirable, it is also important to have new ideas and diversity (Barnes et al., 2007). Boe et al. (2008) noted that many leaving teachers are replaced by returning or more experienced ones, and when teachers take non-teaching positions in education, this also serves the profession in positive ways. Also, retirement is not generally a concern in conversations about reducing teacher turnover; there is a cost, but teacher retirements are indicative of stability, rather than a problem (Barnes et al., 2007; Levy et al., 2012).

Whereas a small amount of turnover may be positive, high turnover affects the continuity in instruction, leads to a lack of teaching expertise to make curriculum decisions, necessitates ongoing support and mentoring for new teachers, and requires time and resources to be reallocated for finding and training replacements (Carroll & Thomas, 2007; Loeb, Darling-Hammond, & Luczak, 2005). Thus the burden and

³ In-district migration (moving from one school to another in the same district) is a significant cost, but is beyond scope of our study; Boe et al. (2008) noted that much in-district migration is related to administrative staffing decisions, rather than teacher choice though there are preferred schools that teachers voluntarily move to in this type of turnover.

cost affect not just a single classroom, but permeate the entire school and ultimately encourage more teachers to leave, creating a cycle of turnover.⁴



Teacher turnover erodes school climate

When schools or districts have to dedicate ongoing resources to hiring and they have continuous instability, the cycle erodes school climate (Shields et al., 2001) and makes it difficult to build a stable community within schools (Carroll & Thomas, 2007; Hakanen, Bakker, & Schaufeli, 2006; Milanowski & Odden, 2007). Because new teachers are more likely to leave their positions (Allensworth, Ponisciak & Mazzeo, 2009; Grissmer & Kirby, 1997), seasoned teachers have to constantly mentor new ones, which is taxing and time consuming. The situation frustrates mentor teachers who take time away from their own classrooms to perform these duties, and ultimately this leads to burnout (Arens & Morin, 2016; Guin, 2004). Additionally, the increase in teacher turnover results in the decrease in trust and collaboration, as teachers need time to develop new collegial relationships (Allensworth et al., 2009; Guin, 2004). Guin (2004) documented that teacher turnover is higher in schools where teachers perceive

⁴ Though our work focuses specifically on teachers, it is important to note that administrator turnover also has a significant impact on schools and students. Superintendent stability is critical to school quality (Collier, 2016), and in the past five years 72% of Alaska school districts have experienced Superintendent turnover (Stevens & Pierson, 2017). Principal attrition also has a significant impact on school climate (Guin, 2004), and principal turnover in Alaska has been between 16% and 12% in the last five years, with higher rates in rural schools (Stevens & Pierson, 2017).

poor school climate,⁵ and Boe et al. (2008) estimated that about a quarter of teachers who leave do so for job-related reasons.

Teacher turnover impacts teacher professional development

Districts and schools who experience high teacher turnover have to offer the same onboarding and professional development (PD) programs each year, which results in limited PD opportunities for continuing teachers (Guin, 2004). By contrast, low turnover schools with continuing staff can do more extensive and comprehensive PD that can help to unify staff. These opportunities are never actualized if districts and schools continually spend dollars for onboarding new teachers (Shields et al., 2001).

Mentoring new teachers is often a responsibility of the veteran teaching staff, and high turnover typically means that there is an inadequate number of experienced teachers to do this work (Shields et al., 2001). This both impacts the mentoring of new teachers, and taxes the time and energies of the mentor teachers (Guin, 2004). Guin (2004) documented that in the case of large urban school districts, “[t]he continual loss of teachers had a negative impact on the momentum of instruction at the school” (p. 11), as the same veteran teachers are always mentoring their new colleagues.

Teacher turnover affects instructional quality and student achievement

Teacher turnover impairs instructional quality in two ways: by challenging the curricular planning and implementation process at the school level (Guin, 2004) and impacting individual teacher quality (Milanowski & Odden, 2007). For teachers new to the profession, gains in their effectiveness are most pronounced in the first and second years of teaching, and most reach their peak effectiveness between five (Rosenholtz, 1985) and ten years (Pennucci, 2012), though some research documents significant teacher improvement into their twentieth year (Huang & Moon, 2009). After that, gains are still made, but they are more modest (Clotfelter, Ladd, & Vigdor, 2006; Ladd, 2008; Rivkin, Hanushek, & Kain, 2005). Unfortunately, high turnover is synonymous with inexperienced teachers, and ultimately results in decreased student achievement (Barnes et al., 2007; Levy, Fields, & Jablonski, 2006; Rivkin et al., 2005). Even for teachers with classroom experience, transitioning to a new environment requires additional time and support, especially if they are moving to a school that is culturally distinct from their previous experience (Guin, 2004). This is especially pronounced for those moving to rural Alaska. The correlation between high turnover and low student achievement has been demonstrated in Alaska. In 2013 the number of students proficient in reading was 46.9% in Alaska’s five highest-turnover districts, compared with 85.8% in its five lowest turnover districts (Hill & Hirshberg, 2013). Though these data cannot demonstrate a causal link, the correlations are compelling.

What factors are associated with teacher turnover?

Knowing the challenges associated with teacher turnover, we turn to the factors that correlate with and contribute to it. We focus on three key considerations from the empirical literature: working conditions, workload, and teacher characteristics. Additionally, we note considerations unique to the Alaska teaching and hiring context.

⁵ The importance of school climate cannot be overstated, but is also difficult to measure. Efforts are underway in California to better quantify this concept (see the California State Board of School Conditions and Climate Group website, <https://lcff.wested.org/school-conditions-and-climate-group-scope-of-work/>.)

Working conditions

When controlling for student characteristics, Loeb et al. (2005) noted that working conditions are best predictors of teacher turnover. Working conditions include the physical work environment, school leadership, workload, and compensation.

Physical environment

The physical environment includes having enough textbooks for students to take them home, access to computers, reasonable class size, having enough space in the class to accommodate students, and clean/functioning school bathrooms. Poor perceptions of the physical environment including using space that is not a classroom for instruction (e.g., teaching in the gym or cafeteria); uncomfortable temperatures; excess noise that makes it difficult for students to concentrate; and evidence of roaches, rats, or mice, are correlated with increased turnover (Loeb et al., 2005).

School leadership

Poor or unstable leadership contributes to higher teacher turnover (Allensworth et al., 2009; Ingersoll, 1999); improvement in this realm can lead to increases in instructional quality, student performance in assessments, and teacher development (Guin, 2004). Hirshberg, Hill, and Kasemodel (2014) found that 45% of teachers in rural Alaska expressed dissatisfaction with district leadership, and 33% with school leadership.

Workload

High or unmanageable workloads lead to teacher burnout and ultimately to teacher turnover (Arnes & Morin, 2016; Hakanen et al., 2006; Lee & Asforth, 1990). Hirshberg, Kasemodel, Cope, and DeFeo (2016) noted that teachers who left rural Alaska were more likely to report that they were “overwhelmed by job demands” (Hirshberg et al., 2014).

Compensation

Low salaries also predict higher turnover (Loeb et al., 2005), and in Alaska, though they are higher than the national average, salaries are generally – and in some districts significantly – lower than needed to attract and retain qualified teachers (Hirshberg, DeFeo, Berman, & Hill, 2015), but only 14% of teachers in rural Alaska reported that they were dissatisfied or very dissatisfied with their compensation.

Analysis of working conditions in Alaska suggests that a combination of improvements – rather than attention to just one area – will be required to improve teacher turnover patterns in the state (DeFeo, Hirshberg, & Hill, in review).

School characteristics

As with many social issues, the problem of teacher turnover is intensified in the communities and schools serving the most marginalized populations. Poor working conditions described above are more likely to occur in low-income schools (Darling-Hammond, 1997; Olsen & Anderson, 2007; Tissington & Grow, 2007). Consistently across the literature, researchers document that higher-poverty, higher-minority, and lower-performing schools have higher teacher turnover rates (Barnes et al., 2007; Clotfelter et al., 2004; Guin, 2004; Levy et al., 2006), and this is problematic for both student achievement and filling vacancies. When high-performing schools experience turnover, they tend to have a high number of qualified applicants for open positions, and the hiring process can help schools to reinforce their values. By contrast, low-income schools have vacancies more frequently and have fewer qualified applicants, thus they must spend disproportionately more time and dollars on recruitment. Per

teacher costs are higher, and thus a higher proportion of scarcer resources – both manpower and dollars – needs to be diverted from teaching and learning (Milanowski & Odden, 2007; Texas Center for Education Research, 2000; Watlington, Shockley, Guglielmino, & Felsher, 2010), and the proportional impacts are magnified (Barnes et al., 2007).

Teacher characteristics

Teacher quality also predicts retention or turnover; interestingly, the highest- and lowest-performing teachers are retained at about the same rates (Chingos, 2014). New teachers have higher turnover rates than those who are mid-career (Education Week, 2000). Early-career teachers who themselves have higher IQs, GPAs, and standardized test scores (Darling-Hammond & Sclan, 1996; Murnane, 1996) or whose students make the greatest gains in standardized test performance (Chingos, 2014) are among ones most likely to leave (Quartz, 2003). Math, science and SPED teachers leave at higher rates than their colleagues who teach in other fields (Boe, Bobbit, & Cook, 1997; Grissmer & Kirby, 1992). Male teachers are more likely than females to leave the profession permanently to look for opportunities in other fields (Murnane, 1996).

Additional Alaska considerations

In addition to the conditions noted in the national literature, Alaskan districts – particularly rural communities – have additional characteristics associated with high turnover including poor community connections, environmental factors, place of preparation, and cultural differences.

Poor community connections

A 2013 survey of almost 300 rural Alaska teachers found strong correlations between teacher retention and their feelings of connectedness to their communities; teachers who left were far less likely to find living in their community rewarding, and more likely to feel they were not supported by families or community members (Hill et al., 2014). Additionally, teachers who left rural Alaska noted feeling of isolation/loneliness and a desire for a relationship or missing extended family. Hirshberg, et.al. (2016) noted that teacher turnover affects communities as well; residents are unwilling to invest in creating relationships with educators who they believe will be gone in a year or two. This leads to a cycle of teachers feeling unsupported and not integrated in to the community, while concomitantly community members perceive schools as distant and disconnected. In a survey of teachers who left their positions in rural Alaska, 49% said they were dissatisfied or very dissatisfied with parent or community support (Hirshberg et al., 2014).

Environmental factors

Teachers also cite environmental conditions – both weather and living quarters – as causes for turnover in rural areas. Cope and Germuth's (2012) study of 120 teacher stayers from Lower Kuskokwim School District and Northwest Arctic Borough School District found that the cold and dark of winter, distance from family and/or urban centers, and high expenses are reasons teachers leave Alaska. Hirshberg et al. (2016) noted poor living conditions as a factor influencing turnover in rural Alaska; many teachers also expressed they were misinformed or misunderstood the living conditions there prior to their appointments. Hirshberg et al. (2016) also noted the high cost of village living has a negative impact on teacher retention.

Place of preparation

In Alaska, the clearest distinction in teacher turnover is place of preparation. Between 2007 and 2012, turnover rates for early-career teachers was 11.6% for those prepared in-state, and 22.5% for those prepared outside (Hill & Hirshberg, 2013). Thus, while in any given year the proportion of Alaska-prepared teachers hired is only about 15%, Alaska-prepared teachers generally comprise about 30% of the Alaska teaching workforce. This may reflect a more effective preparation for the Alaska context, but likely also reflects these teachers' existing connections to Alaska and desire to remain in state.

Cultural differences

Adjusting to a new set of community and cultural expectations and learning to teach an unfamiliar but culturally relevant curriculum also impacts teacher turnover. Teachers both find it challenging and need additional support and time to develop the skills to effectively teach student populations that are high minority, culturally distinct, or English language learners⁶ (Guin, 2004). Meyers et al. (2008) concluded that training for workers entering a different cultural environment must address emotional and social factors, not just a cognitive understanding of cultural differences. In Alaska, Hirshberg et al. (2016) noted inability to adapt to cultural differences contributed to teacher turnover.

What are the costs associated with teacher turnover?

Though we have good data about the patterns of turnover and the importance of retaining good and experienced teachers both nationally and in Alaska, there are not good data about the costs associated with teacher turnover. The issue draws attention of researchers, policymakers, and administrators who call for mechanisms to measure the cost of teacher turnover reliably (Watlington et al., 2010). The literature breaks teacher turnover costs into distinct categories: separation, recruitment, hiring, orientation and training, performance productivity, and preparation, which are represented in figure 2.

1. Separation

Separation activities are the administrative processes that take place when teachers leave. These include exit interviews; closing out payroll and benefits; and updating databases, websites, technology, or security. In Alaska, they may also include housing maintenance costs. Though the list of activities is extensive, these account for the smallest proportion of the total teacher turnover cost. Synar and Maiden (2012) estimated costs in categories 1, 3, 4, and 5, and calculated that separation accounts for 2.29% of the cost of teacher turnover in urban school districts. Similarly, Levy et al. (2012) estimated costs for categories 1-4, and calculated separation costs to be 3.6% of teacher turnover costs for regular (non-specialty) teaching positions in California.

2. Recruitment

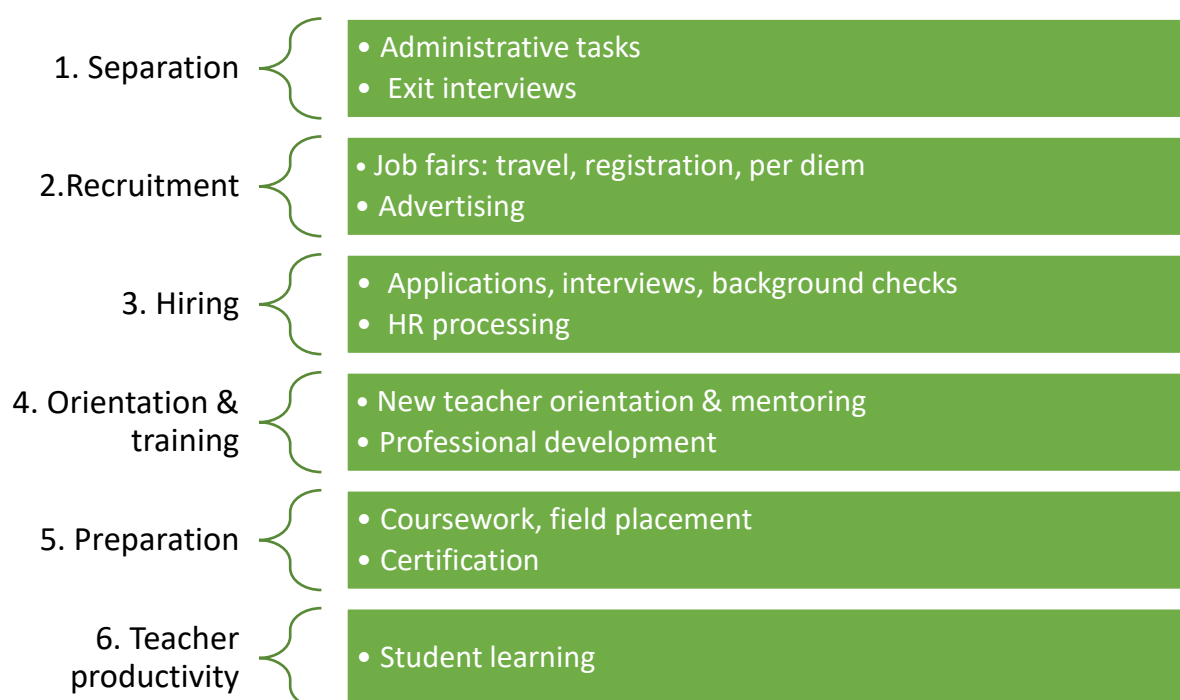
Recruitment includes the activities necessary to find suitable applicants to fill an open teaching position. These costs are primarily advertising and job fair participation, but recruitment costs vary considerably between districts and amongst different positions. Loeb et al. (2005) noted that when schools report that they have difficulties filling vacancies, this may be more indicative of selectivity than the number of applicants, and schools that "insist on filling positions with highly skilled teachers may have more difficulty filling vacancies than schools with high turnover that hire whomever they can find" (p. 58). Additionally, a district's attractiveness to teachers will affect their applicant pool. High turnover schools

⁶ Paraprofessional turnover also has a negative impact on schools and student achievement, especially when they are the ones who are linguistically and culturally like the student body (Guin, 2004).

in low-income, high-minority areas tend to have fewer applicants in general, as well as fewer qualified applicants, meaning that these districts spend a disproportionate number of dollars on recruitment. Furthermore, some positions are more difficult to fill and, even within the same district or school, will incur higher costs than others. For example, Loeb et al. (2005) estimated that recruiting a secondary science teacher costs 2.5 times as much as recruiting an elementary teacher.

Figure 2

Cost categories for teacher turnover



The literature typically describes the costs of teacher turnover in 6 broad categories: separation, recruitment, hiring, orientation and training, preparation, and teacher productivity. These costs in these categories include time and wages dedicated to performing the activities, as well as material costs (such as software, supplies, travel, or fees) associated with them. This figure gives an example of costs in each category; a more comprehensive list is included in Appendix A.

3. Hiring

Hiring includes such costs and time commitments as screening, interviewing, and selecting applicants; background checks; contract preparation and school board approval; setting up payroll and benefits; creating accounts and webs updates; housing searches; and facilitating the certification process. Depending on the size of the applicant pool and the individuals involved in the hiring and interview process, the amount of time spent on these tasks is highly variable. Synar and Maiden (2012) estimated that these activities constitute 8.64% of the cost of teacher turnover in categories 1, 3, 4, and 5.

4. Orientation and training

Orientation and training costs are extremely difficult to estimate because they are not a line item, and are dispersed across different categories in the budget (Levy et al., 2012). Some PD is offered routinely to all teachers, while other PD is specific to only new teachers. Some PD is offered by the district staff,

some is contracted out, some is done within individual schools, and some requires districts to send teachers to external providers, such as professional conferences or training. These activities vary by position, the incoming teacher's experience level and needs, and funding availability within districts. Many districts fund these activities by applying for external and fixed-term grants, with PD opportunities often dissipating when funding wanes (Barnes, Crowe, & Schaefer, 2007). Calculating these highly variable costs is a challenge, but they constitute a high proportion of teacher turnover costs. Synar and Maiden (2012) estimated that training is 48.15% of the costs in categories 1, 3, 4, and 5. Levy et al. (2012) estimated that it is 67.0% of costs in categories 1-4 for regular teaching positions. Levy et al. (2012) further noted that when teachers leave, they take this PD and this investment the district made in them. Additionally, when teachers change jobs within the system, the district may lose PD investments that are not transferrable. Levy et al. (2012) noted that since training and development is a school and a district cost, hiring experienced teachers could reduce costs in this category.

5. Performance productivity

Performance productivity is the trickiest category to estimate, and losses in teacher quality are an indirect but significant cost of teacher turnover (Karsan, 2007). The effectiveness of the leaving and incoming teachers is highly variable; it is possible that an incoming teacher would be more productive (Barnes et al., 2007), and there are also salary cost savings when a district replaces a teacher with one who has less experience, which may offset some performance productivity losses. Attempts to calculate these costs involve complex modeling. Synar and Maiden (2012) calculated that 40.92% of the cost of teacher turnover in categories 1, 3, 4, and 5 is in the area of performance productivity. However, they used 20% monthly increase in performance productivity to calculate productivity costs, suggesting that in 5 months, new teachers are fully up to speed, which underestimates productivity losses in education, where the literature consistently documents that teachers make substantial gains during at least their first 5 years (Pennucci, 2012; Rosenholtz, 1985) or need additional time to be fully effective in a new cultural setting (Guin, 2004). Because our work focused on direct costs, the calculation for teachers' performance productivity is beyond the scope of the data presented in our analysis. However, costs in this category are usually overlooked because they are soft, highly variable, and difficult to calculate (Synar & Maiden, 2012) even though Milanowski and Odden (2007) noted that lost productivity is one of the most important and highest costs of teacher turnover.

6. Preparation

The costs of teacher preparation (educating teachers so they are qualified to serve in classrooms) varies considerably, even in Alaska. For example, a four-year Bachelor of Arts in Elementary Education includes several short field placements plus an extended student teaching opportunity. A University of Alaska student who wants to teach secondary science, math, or other content at the middle or high school level generally must earn a bachelor's degree in his or her content area and take at least an additional full year of coursework to earn a Master of Arts in Teaching degree. All teacher candidates require field supervision; they are placed with master teachers and are also visited and observed by university faculty; depending on their field placement, time and travel costs for supervising faculty may vary considerably.

All degrees incur costs borne by the student, such as tuition, books, and fees; estimated student cost for a four-year degree at the University of Alaska Anchorage is \$25,822 for an in-state student (National Center for Education Statistics Multiyear Tuition Calculator, 2017). Some of this cost may be supported

or subsidized by state scholarship programs. Additionally, the state of Alaska spends on average \$13,978 in public funding per year for each full-time undergraduate student (State Higher Education Executive Officers, 2015).

Other indirect (and difficult to measure) costs

As Synar and Maiden (2012) noted, direct costs are the same for all teachers, and these are relatively easier to quantify,⁷ but they do not account for all considerations. Though these indirect costs are beyond the scope of our study, there are examples and discussion in the literature, both from scholars who study teacher turnover, as well as other industries. Karsan (2007) notes,

indirect costs include such factors as ... loss of morale when a senior person leaves, loss of knowledge and experience, and lost opportunities that a seasoned employee would have followed up on but that a new one might not spot. (p. 34)

In addition to the direct and indirect costs and impacts on districts, schools, and students, TCER notes that there is also a human cost to teachers themselves. Teachers invest time and money in their education, and if they leave the profession, they lose both in direct financial and indirect personal ways.

Challenges in calculating teacher turnover costs

Though the costs of teacher turnover are substantial, a validated formula for standardizing these measures is yet to be developed, in part because of the challenges of doing so. Barnes et al. (2007) provided the most comprehensive overview of these challenges, many of which we experienced, noting that:

- Many small districts collect data by hand, whereas districts with databases do not document costs in a systematic way.
- In large districts, turnover costs are spread across many departments, which creates data silos as departments collect data in different formats and for different purposes, thus many systems are not compatible.
- Grant funding changes the types of activities which are performed (particularly related to PD) and can span categories of costs and departments.
- Districts manage their human resources processes and functions in different ways, so how they experience these costs varies tremendously; Milanowski and Odden (2007) echoed this challenge, saying, “it is likely that every district has idiosyncrasies in its teacher replacement processes that make administrative costs vary” (p. 19).
- Fixed costs are distributed across widely varying numbers of teacher separations and replacements (even in the same district from one year to the next) thus making it difficult to calculate a consistent per-teacher cost.
- Retirement complicates calculations – many teachers who retire could stay longer; though researchers generally do not look at retirement as a teacher turnover concern, it is not independent of the turnover considerations typically associated with the other types or categories.

⁷ As we will demonstrate, none of the costs are simple to quantify. As the literature documents time and again, the costs are highly variable, even amongst schools in the same district (Barnes et al., 2007; Levy et al., 2012).

- No matter the district size, the costs are borne at different levels – most notably by the district and school. Barnes et al. (2007) noted, “[t]o determine the cost of teacher turnover, a school district needs to be able to collect and *connect* teacher, school, and cost information” (p. 72).

Levy et al.(2012) noted two additional challenges: first, administrator turnover makes it especially difficult to calculate costs, as new administrators are unfamiliar with district processes and have difficulty reporting these costs for research purposes.⁸ Additionally, they noted that records are frequently unavailable or incomplete, requiring researchers to make many assumptions.

- We learned that many of these tasks described in the cost categories are done piecemeal, and people do not know precisely how much time they spend doing them, as they happen between and concurrent with other tasks. People are not often aware of their own behaviors in tasks they do routinely (Spradley, 1980); even individuals who are confident about their time management skills are quite poor at estimating how long it takes to perform a range of activities (Burt & Kemp, 1994).

These challenges are reflected in widely differing estimates for the cost of teacher turnover. For example, even using the same calculator and method, in a 10-year period in the same district, Synar and Maiden (2012) estimated that costs ranged from 3.2 million to 5.7 million (inflation adjusted), and their findings illustrate the year-to-year variability of costs, even in a single district.

The variability underscores that districts cannot fully rely on national trends or calculations derived from other research. Barnes et al. (2007) explained that districts need

to track and analyze teacher turnover and important teacher and school variables [because] [b]asing interventions on national data may lead a district to attach a problem it does not have or to ignore a local factor that is key to retaining teachers. (p. 69)

Though the need to better understand the costs associated with teacher turnover is well established, there are few available cost calculation instruments. Notable examples include:

- Model to measure cost of teacher turnover (Milanowski & Odden, 2007) as a subsection of the School Finance Redesign Project (SFRP)
- School Turnover Analysis (STA) – Shockley, Guglielmino, & Watlington (2006)
- Teacher Turnover Cost Calculator (TTCC) – Barnes, Crowe, & Schaefer (2007)
- Teacher Turnover Cost Model (TTCM) - Synar & Maiden (2012)
- Texas Center for Educational Research method (TCER), 2000

Approaches vary; some researchers have used industry models to estimate costs (see Synar & Maiden, 2012), whereas others have done it with district administrative data (see TCER, 2000). Regardless of method, a common theme in the literature is the challenge with doing this work reliably, due to missing data, a lack of standardization for managing costs, costs spanning different budgets, and costs borne by different entities at different levels. For example, in Barnes et al. (2007) study of teacher turnover in five distinct sites, efforts were challenged by a lack of information at the district and/or school level, with

⁸ This was our experience as well, and the challenge seems to be exacerbated in Alaska where administrator turnover is notably high (Stevens & Pierson, 2017).

only two of the five districts able to give data for school level costs, and only one able to account for all costs borne at the district level.

These inconsistencies, missing data, and a lack of standardization make cross-district comparisons extremely difficult. Levy et al. (2012) summarized the cost of teacher turnover literature:

These studies all found that differences in data systems and/or availability of data by districts and even schools within the same district influenced the kind of information that researchers were able to collect. Districts had varying abilities to extract cost data, which resulted in authors having to estimate certain costs. Variations in accounting systems, publicly available budget data, and access to administrators made comparisons across districts particularly difficult. Further, school-level turnover costs remained hidden in the unrecorded time principals and teachers spent managing teacher separations and additions within their schools. (p. 106)

This was our experience as well.

Method

The methods included a review of literature, exploration of teacher turnover and its associated costs in the Alaska context, adapting and piloting an instrument for data collection, and conducting interviews with representatives from Alaskan school districts.

Literature review

We drew from the extant literature, knowledge of school finance and administration, and teacher turnover patterns in Alaska to develop a responsive and executable method. The available instruments describe teacher turnover in three major cost categories described by Milanowski and Odden (2007): separation, replacement, and training. We broke “replacement” into two distinct categories because the activities align with different departmental and district functions: recruitment and hiring. We used Levin and McEwan’s “ingredients method” (2001) approach: first accounting for all of the “ingredients” that have value, then calculating the costs associated with them. This has been applied to cost of teacher turnover by Milanowski and Odden (2007), who looked at tasks, determined hourly breakdown of time devoted to them, and noted direct costs of those activities.

Describing teacher turnover in the Alaska context

For construct validity, around teacher turnover and its associated costs, we reached out to key stakeholders, such as the Alaska Superintendents Association and school district human resource professionals for feedback on our study design. In this process we realized that we had to do two tasks: descriptive interviews, followed by quantitative cost calculations. First, we needed to describe the workload and how districts operationalize these processes, because activities are so highly variable. The use of qualitative interview data as a mechanism for enumerating costs and activities for later quantitative analysis was employed by Levy et. al (2012) to capture the costs of turnover at the district and school levels that do not show up in budget sheets or timesheets. Though our decision to apply this process added significantly to the time and effort required to collect data, given the variability within Alaska’s 54 districts, doing the easy calculations of line item budget items would not have been a valid representation of their true activities, and would left off a lot of additional or site-specific costs.

Adapting and piloting the instrument

For data collection, we adapted the instrument developed by the Texas Center for Education Research (2000)⁹ to accommodate the unique Alaskan context that includes costs that are not relevant in many other states, such as housing or travel to communities not on a road system. We then piloted the instrument with superintendents from a few key districts to ascertain how well it worked to solicit processes and information from large/small and urban/rural districts that have different organizational structures and ways of splitting costs between school and district offices. With their inputs, the instrument was adapted accordingly for content and construct validity.

Data collection from districts

We subsequently sought to contact (by phone and email) superintendents in each of Alaska's 54 school districts, and to do this we received support from the Alaska Council of School Administrators in promoting the study and encouraging participation. We ultimately spoke to 41 superintendents and/or other district administrators (Interim Superintendents, Human Resources Directors, Assistant Superintendents, Business Managers, and Administrative Assistants) representing 37 districts.

After the interviewer documented the processes in a descriptive fashion, she used in-depth follow-up questions to break the processes into discrete tasks, and then to determine who (or who plural) was responsible, and how long each took. When possible and/or when the participant was unable to provide the detailed information, the interviewer followed up with the appropriate district staff member. Data collected during interviews provided valuable background and context for the quantitative numbers we ultimately derived, which in turn, facilitated analysis and interpretation.

Delimitations

Researcher decisions – or delimitations – are ubiquitous in research, and particularly in a project of this magnitude. The following decisions were made at the outset of this study.

District as unit of analysis

Clear distinction between district- and school-level costs has been claimed in the literature; Levy et al. (2012) note that the task distribution is variable. For example, in big districts, hiring is done at school level, and recruiting is done at district level. Meanwhile, smaller districts may do all of this at the district level, but involve school administrator. We learned these processes are highly variable in Alaska as well. We used the district as the unit of analysis, because teacher hiring and related processes (from recruitment to negotiating union contracts) most typically occur at this level.

Because our charge included estimating costs for all districts in the state, this determination was a methodological necessity; however it does exclude school-level costs, which are substantial and extremely difficult to quantify because they happen informally or with other activities. Additionally, Levy et al. (2012) note that school practices may differ significantly from one year to the next:

School-level costs are distinct from district-level costs, and vary in important ways from year to year in response to a range of contextual factors that are often unpredictable. Therefore, given the relative inaccessibility of cost data ... at the school and district levels, not only would a full accounting of its [cost of teacher turnover] require considerable time and legwork in any given

⁹ Adapted with permission from and gratitude to Texas Association of School Boards.

year, but it would also require repeating the work over several years in order to capture the variation that is known to occur. (p. 126)

Estimate turnover costs for all districts instead of a few case study schools

At the study's onset, stakeholders expressed interest in understanding the cost of teacher turnover to the state as a whole. Moreover, because districts in Alaska vary so enormously in size, structure, and business costs, as well as in the degree of teacher turnover, some stakeholders felt looking at a few districts or schools alone would not adequately reflect the costs of teacher turnover in Alaska. This decision makes our study unique; in the literature teacher turnover is typically calculated via case studies of individual districts (see Barnes et al., 2007; Texas Center for Educational Research, 2000) where researchers spend a significant amount of time observing processes, reviewing records, and interviewing personnel at different levels. Though our method accommodates the state more broadly, it is also meant limiting the breadth and precision of analysis for each district.

Exclude lost productivity costs

Though Milanowski and Odden (2007) note that while “the costs of administering the separation and hiring systems are not negligible, it is the lost human capital and the related productivity loss that should be of most concern to policy makers” (p. 18), this important cost was not a part of our charge. Doing this cost calculation would require a separate but complementary study that would employ different methods, data, and modeling. This cost could not be ascertained with our “ingredients” method.

Exclude extreme and infrequent costs

Our task was to calculate the average per-teacher turnover cost, so we limited our analysis to typical teacher turnover circumstances. However, it is important to note that infrequent turnover costs – like terminations and litigation that accompanies them – are not inconsequential. These were left out of our analysis intentionally, and primarily for validity purposes. Levy et al. (2012) note that “[t]hese costs – associated with the time needed to manage the process – are dispersed, highly variable, and very difficult to quantify” (p. 108). We found this to be true. In our early interviews, we did ask about these costs, and found that many administrators had difficulty recalling time spent on termination, mostly because these circumstances had happened several years ago and were managed by employees or administrators who had since left the district and/or were not available for interviews.

Exclude preparation costs

With the district as the unit of analysis, we also excluded the costs of teacher preparation. It is important to note that Alaska spends public funds training teachers in our university systems. Though Alaska imports nearly 64% of its new teacher hires from the lower 48 (Hill & Hirshberg, 2013), the in-state preparation costs are significant, and including these costs would be a valuable complement to the analysis we present.

Exclude community costs

Community costs were excluded from the analysis because our charge was to identify district-level costs. Additionally, superintendents were often not able to speak to these costs, which include things like having parents, elders, school board members, or community members on interview committees or in onboarding activities, particularly “culture camps.” Some of this time is volunteered; sometimes it is compensated. Because we were unable to collect these costs reliably (and they are often not district costs), they are excluded from the analysis.

Exclude contracted services

When districts contract their administrative processes (most commonly separation's administrative tasks such as final payroll, COBRA notification, or technology updates in smaller districts), we noted these as contracted expenses, but were not able to separate turnover costs from the broader agreements. For these tasks, we note that districts do the processes administratively, but did not estimate costs for these activities; thus the costs of these activities may differ significantly in districts where these tasks are contracted.

Other excluded costs

We also identified some tasks that we did not include, either because they came up during the ongoing literature review or in the qualitative data collection after the instrument was piloted. These include the cost of reworking schedules (see Levy et al., 2012), which would be an administrative cost in the separation process, and compliance with EEO systems and HR policies (see Levy et al., 2012), which would be costs to both separation and hiring.

Analysis

In our data collection and analysis, we experienced many of the same challenges that other researchers have described. For some of the more standard and uniform tasks, such as reference checks in the hiring process which are done in all districts and have a clear protocol, our averages included data from all participating districts. For other tasks, such as job fair participation, which varies considerably even within individual districts, spotty data rendered us unable to calculate a reliable average cost. Though there are limits in the dataset, the calculations are comprised with input from 69% of Alaska's districts, and provides a valuable starting point for analysis.

Coding process

Using an axial coding process (Saldaña, 2015), two researchers coded a set of the interviews together, breaking each of the four major cost categories into individual tasks and noting the personnel costs (time and wage) as well as material costs associated with each category. Working together, they talked through the tasks and activities, establishing inter-rater reliability and consistently developing a codebook and set of definitions for the tasks. Then the codebook and definitions were used so that the two researchers could code the remainder of the interviews independently.

Estimating time

Far more districts were able to reliably describe their process than indicate the amount of time spent on it, and cost calculations required some estimation:

- When a time range was given (e.g., 2-3 hours), we took the middle (2.5 hours) for calculations.
- When the range provided was too broad (e.g., "less than a day" or "a couple hours") we coded these responses as missing data.
- If a respondent told us that a task takes a certain amount of time per applicant, we multiplied that by the average number of applicants per position in the district, using data provided by interviewees, to calculate the per-position cost.
- If a respondent told us how much time the district spends on the whole process (for all positions), we divided that by the number of teachers who left (created vacancies) to calculate the per-position costs.

- If a respondent bundled processes (e.g., applications screening and interviews combined take 10 hours per position), we divided the total time by the number of tasks and distributed it evenly (in this case, 5 hours in each task).

Coding staff

The interviews also solicited the person responsible for performing each task:

- If the respondent told us an employee *sometimes* participated in the process, we coded that as 0.5 of the employee, suggesting that this happens half of the time.
- When a respondent told us that a particular employee *usually* does something (but it *sometimes* was done by another employee or position) we coded the usual employee.
- When a task was done by one position *or* another (either/or), we named both and later averaged the hourly wages of the two positions and used that as the multiplier when calculating wage.
- Because the positions were later used to calculate wages, we developed uniform codes (position names) for common positions. These were checked for accuracy by a third party at the Institute of Social and Economic Research who has familiarity in state and school district data systems. The codes are presented in Appendix B.

Estimating wage

Our original intent was to calculate costs using actual wages as reported by the district, however we were unable to consistently get enough data to calculate averages, and we were sometimes unclear whether reported wages also included benefits. Thus we estimated an average wage for every coded position.¹⁰ To do this:

- We used actual reported wages from the Association of Alaska School Boards (AASB) *Alaska Public School Classified Employee 2014-2015 Salary & Benefits Report* where possible.
- When it was not possible to use AASB data, we estimated wages using the Alaska Department of Labor and Workforce Development's Alaska Local and Regional Information (ALARI) data, which is supplied publicly by the Research and Analysis Division.
- For teacher wages, we used data supplied by the National Education Association-Alaska (NEA Alaska). These data were robust enough to provide contract days, thus we were able to calculate hourly wages for salaried teacher positions using an 8 hour/day estimate.

From each of these datasets and for each position, we calculated mean hourly wage, which does not include benefits. For consistency, we deferred to calculated wages even when districts reported actual wages. However, when we compared reported wages with our estimates, our estimates were fairly on par (if not a slight underestimate) with the actuals reported.

When respondents stated that school personnel who participated in the hiring processes were volunteers (most typically this was other teachers), we followed Milanowski and Odden's (2007) method

¹⁰ Districts were extremely helpful in providing these data and the lack of wage data does not reflect a lack of participation or cooperation. Average wages were used in all cost calculations because we were able to access high-quality salary data from a variety of sources for which averages could be reliably calculated. This allowed us to expand the number of districts in the dataset to those for which we had time and position data, which was more complete than wage data in the district interviews.

and recommendation to calculate this cost as teacher wages. There are two reasons for this. First, if teachers volunteer their time as part of any of these activities, they cannot be considered costless, because the teachers would otherwise be using that time to make other meaningful contributions at their schools. Additionally, we note that significant teacher workloads (exacerbated by volunteer activities in the school) contributes to teacher burnout (Arens & Morin, 2016). Thus, we calculated time and wage, but the costs are probably not monetary alone.

Estimating fixed costs

When the district had a fixed cost for something exclusive to teacher turnover (like software), we divided the annual material cost by the number of vacancies to get the per-position cost. If there was no turnover in the district that year but the district nonetheless had to maintain the system, the denominator was 1. If the unit was not provided for a per-person cost, we defaulted to one per teaching position. For example, formal background checks are charged per inquiry per person. We assumed that the district would want to minimize costs and perform these only on the finalist.

Calculating total cost

Our original intent was to get complete data so we could crosstab or further drill down turnover costs by turnover rate or other district characteristics. Unfortunately, we were unable to do this because we had too small a number to do quartiles, data were too incomplete to get the actual complete cost for any single district, there were no natural breaks in the turnover rates to make these distinctions, and there are not optimal turnover levels established in the literature. Also, turnover rates can vary significantly year-to-year, particularly in small districts. On the positive side, the data were complete enough to identify common tasks, note the number of districts performing the task as part of the teacher turnover process, and calculate the average time, wage cost, and fixed cost per teaching position. Using the number of districts that do the task divided by the number of districts that we had data for which the task applies,¹¹ we were able to weight the activities and use that as a multiplier to create a statewide average. The statewide per-task was calculated by the following formula:

$$CTT = \frac{\text{No. of districts performing the task}}{\text{No. of districts not doing task at all or as part of teacher turnover} + \text{No. of districts performing the task}} \times \text{Average wage cost of task}$$

These calculations are presented in table 1 and further detailed in Appendix A.

Considerations for interpreting data

Given our experience in the process and how our work aligns with the literature, we offer the following considerations for readers:

- Because of the intricacies and until some process of accounting for teacher turnover is standardized, costs cannot be compared across districts or states, except in general and broad terms (Levy et al., 2012).
- The tasks and personnel performing them are highly variable even at the individual district, school, or worker level (Levy et al., 2012), thus our calculation should be only considered as representing “the typical case.”

¹¹ These are not weighted by the number of teaching positions available in the district (meaning the proportional number of *teachers* to which these costs apply), but instead to the number of *districts*.

- Some things presented as costs (e.g., training new hires) may help reduce turnover in long run. As Barnes et al. (2007) noted,

A high cost per turnover is not necessarily bad, and a low cost per turnover is not necessarily good. A district that invests heavily in teacher training and support will probably have a high cost per turnover – even when the investment lowers its overall turnover rate and, we hope, turnover costs. This is due to the fact that the investments in teaching quality add to the total costs of turnover while also reducing the number of turnovers. (p. 82)

Findings

Our analysis allowed us to make a conservative estimate of turnover costs. Levy et al. (2012) summarized our experience:

Consistent with prior research, the [cost of teacher turnover] model could not be easily or fully applied at the district level, where the component costs of teacher turnover were scattered between different departmental budgets and typically not identified by task. Nor could it be fully applied at the school level, where teacher replacement and PD costs were undocumented. As a result of these challenges, we have most likely presented underestimates of the real cost of teacher turnover. Nevertheless, applying the methodology...specified the explicit and some of the hidden costs of teacher turnover at both the district and school levels based on data about staff responsibilities, and the time, materials, and resources spent on turnover activities. (p. 125)

Our calculations find that the total weighted average cost of teacher turnover is \$20,431.08 per teacher for the costs we calculated. Again, these numbers reflect typical circumstances. Average costs by category are detailed in table 1.

Separation

We estimate the cost of separation, excluding housing, is \$194, and accounts for less than 1% of the total per teacher turnover cost, mirroring what other researchers have found (see Levy et al., 2012; Synar & Maiden, 2012). This is probably the most aligned set of processes across districts, and the category for which we had the most complete data. The processes are also the same for all teacher types – SPED, secondary, or elementary educators all generally have the same separation processes and costs, though some tasks in this category are contracted out by some districts. Variation in this category includes whether or not districts conduct interviews or provide teacher housing. Housing accounts for 11% of the average cost of teacher turnover; averaged across the state, this is \$2,254. Looking only at districts that provide it, we estimate that housing maintenance when a teacher separates averages \$4,035, which includes both wages for maintenance personnel and material costs (e.g., paint, carpeting, locks).¹²

¹² The manner in which teachers leave also may affect this category. Though we calculated costs for typical circumstances of teachers leaving at the end of their contract year, teachers who leave in middle of year may do so for differing reasons – personal (by choice, or for involuntarily reasons like health), transfers of military spouse, or removal. These circumstances are infrequent, but the costs are often substantial. However, programs designed to reduce teacher turnover rates generally cannot account for these circumstances. Additionally, cases of involuntary

Table 1
District-level teacher turnover expenditures by cost category

	Separation	Recruitment	Hiring	Orientation & training	Performance productivity	Preparation
Our per-teacher cost calculation	\$2,448.95	\$1,910.35*	\$4,901.91	\$11,169.86	(not calculated)	(not calculated)
Percent of our total cost calculation	11.99%	9.35%	23.99%	54.67%	.	.
Estimate includes	Administrative, maintenance, and security tasks	Job fairs, advertising	Screening applicants, interviews, and administrative processes	Professional development, onboarding, and new teacher support	.	.
Our total calculated cost: \$20,431.08						
<p><i>Our analysis calculated the district-level cost of teacher turnover in four categories. A full listing of all activities and costs in each category is detailed in Appendix A.</i></p> <p><i>*We gathered insufficient data to calculate wages for recruitment, but accommodated all wage and material costs in the separation, hiring, and orientation & training categories. All cost calculations exclude benefits, which vary considerably between districts; author analysis of AASB data noted that these typically add 40-50% to wage costs.</i></p>						

Recruitment

Our calculations in this category include only the fixed costs of job fair travel and registration expenses, but do not include wages associated with tending to these activities.¹³ Fixed costs are not inconsequential, averaging \$1,910 per teacher or 9.35% of the costs we were able to account for. Fifty-six percent of districts participating in our study reported going to at least one job fair; the Alaska Teacher Placement (ATP) website reports that over 40 districts regularly participate in the Anchorage job fair.

Though we were unable to calculate wage costs due to insufficient data, our data allow us to provide some descriptive information. Districts send an average of 2.96 representatives to the Anchorage job fair, and 3.13 people to out-of-state fairs; each fair consumes several days' time. Attendees are most commonly the superintendent and principal(s); other personnel may include recruitment specialists, human resources directors, teachers, school board members, parents or community members or elders.

In spite of this significant cost and that some hires are made there, a consistent theme among the superintendents was that job fairs are declining in usefulness – especially in Anchorage – because of low

removal tend to be private, and information about the circumstances or frequency is difficult to obtain. We acknowledge these circumstances even though we are unable to incorporate them in the analysis.

¹³ Recruitment was the only cost category we intended to calculate yet are unable to fully report with the data we collected.

participation from teacher candidates. In addition to job fairs, the interview data reveal that districts are recruiting on relationships, drawing on both in-state and out-of-state networks.

Beyond individual district efforts, additional recruiting is provided through ATP, which sends representation to Montana, Oklahoma, Pennsylvania, Kansas, and several national conferences to recruit on behalf of Alaska Districts. Though these costs are beyond the scope of our study, and district participation in the ATP network is calculated at a per-teacher cost (see Appendix A), the state makes additional expenditures beyond district investment to support this teacher turnover activity.

Hiring

We estimate that hiring costs are about one fourth of the cost of teacher turnover. Many activities in the hiring process are consistent across districts. They all screen applications, conduct interviews, and engage in various administrative processes around selecting teacher candidates. All districts use the Alaska Teacher Placement (ATP) system and program to screen applicants, and most use committees to select suitable candidates, though in some districts this is done by principals and superintendents independently, or at job fairs. Superintendents in rural districts noted the importance of verifying candidates' interest; they spend a lot of time talking to applicants to help them understand the district and community to which they have applied, and to ascertain "fit." No districts provide travel to interviews as a routine cost, which means many teachers accept jobs having never visited the community (or even the state).

Housing also is an important and sometimes considerable cost in the hiring process, because many districts – even though they do not provide housing – have to assist teachers in finding it. Housing searches take districts an average of 4.14 hours, or \$178 per position – in most cases involving superintendents or principals, and some superintendents described significant time investments in this process.

Another significant cost in the hiring process was helping teachers to navigate the Alaska teacher certification process. Most districts do this; 21 out of 25 that provided data on this task noted it as a cost of teacher turnover, with an average time of 4.56 hours and cost of \$201 per teacher.

Orientation and training

This was the most difficult set of costs for us to calculate as well as the most variable between districts. Overall, it accounts for more than half of the costs we calculated. Orientation activities differ significantly in scope, as well as in what individual districts provide. They range from procedural training like using district software or curriculum, to more intensive PD around pedagogy and cultural orientations. The amount of volunteers who participate in this process again means a significant underestimate of the total cost – and is a hidden cost on communities.

We were conservative in our estimates, calculating only orientation and training that is specific to new teachers and excluding PD that is routinely provided to all teaching staff. We also limited our calculations to only the teachers' first year of service, though many districts provide ongoing support to new teachers for several years.

Orientation and training costs also extend well beyond our unit of analysis (the school district) and are borne at different levels of the system. First, much of ongoing orientation and mentoring happens at school level, which is a cost both in actual dollars as well as the tax on senior teachers' time and

energies. Additionally, the Alaska Statewide Mentor Project (ASMP) which has operated since 2004, provides induction and mentoring for first- and second-year teachers across Alaska (Alaska Statewide Mentor Project, 2017). Though the funding source for the program has changed since its inception and has included federal grants and state legislative appropriations, it is currently supported by University of Alaska general funds, at amounts ranging from 1.5 million to \$750,000 year (Steve Atwater and Glenda Findlay, personal conversation, Feb 28, 2017). Also, and as noted in the literature, many of the districts rely on external grant funding for their orientation and training activities, which may reduce direct district costs, but often do not provide for sustainable programs. Additionally, table 2 summarizes additional costs excluded from our calculations and, where data are available, some values from additional data sources or the literature.

Table 2**Additional costs of teacher turnover not represented in our analysis**

	School-level costs	District-level costs	State costs	Teacher costs	Community costs
Separation	Impact on schedules and school climate	Terminations, teachers leaving mid-year, contracted services			
Recruitment			\$110,000/year ^a (as per Alaska Teacher Placement)		
Hiring	Teachers and principals serve in hiring process				Elders and parents serve on hiring committees
Orientation & training	Senior teachers and principals mentor new hires		\$750,000/year ^a (as per Alaska Statewide Mentoring Program)		Community contribution to help teachers settle in.
Performance productivity	40.92% of turnover costs ^b				
Preparation			\$55,912 ^d /4-year degree	\$25,822 ^c /4-year degree	
<p><i>This table notes additional costs of teacher turnover not included in our analysis, and how other researchers or sources have estimated some of these expenditures.</i></p> <p>^aUniversity of Alaska FY17 budget</p> <p>^bSynar & Maiden, 2012</p> <p>^cNational Center for Education Statistics Multiyear Tuition Calculator, 2017</p> <p>^dState Higher Education Executive Officers, 2015</p>					

Implications

The study findings have implications for how we conceptualize teacher turnover, how we calculate it, and how we seek to address it.

The cost of teacher turnover is considerable.

Our analysis provides a conservative estimate for the average cost of teacher turnover in four cost categories. We calculated costs using the district as the unit of analysis, but direct costs are also borne by schools, communities, and the state. There are additional costs to Alaska from impacts on teacher preparation and student achievement. Even with conservative estimates (excluding, for example additional costs associated with teachers leaving mid-year), the direct expenditures and impacts on students and communities are significant, and divert dollars that could otherwise be invested in teaching and learning.

Not all turnover is bad, nor are all turnover costs.

Some teacher turnover is beneficial – teachers leave the profession if it is not a good “fit,” some take other positions in education, and retirement is indicative of stability. Mentoring and induction activities that are resource-intensive up front promote teaching effectiveness and long-term retention, which ultimately save costs.

Retention pays off.

Retaining teachers over time not only promotes instructional quality, but saves direct turnover costs, allowing districts to reallocate funds to teaching and learning.

Reducing costs in one area may create additional costs elsewhere.

As districts seek to manage costs of turnover through budget revisions, they should be mindful that reducing expenditures in one area may incur costs at other levels of the education system. As Levy et al. (2012) note,

School-level COT is a particularly relevant issue given the layoffs and staffing adjustments that many districts are making in response to dwindling resources. If districts account for only the savings they realize when reducing their workforce, they miss the very real costs to schools[.] ... This is especially pertinent as districts seek to reduce their teacher workforce through lay-offs, managing attrition, and re-assignments. (p. 126)

Thus efforts and activities aimed at saving should consider costs at other levels of the education system that may be unintentionally impacted.

Recommendations

Our recommendations focus on policies, practice, and research that can reduce teacher turnover, reduce turnover costs, and help us to better understand the phenomenon. Ultimately, the goal of these recommendations is to retain high-quality teachers, thus serving Alaskan students and communities.

Better track teacher turnover costs at multiple levels.

Our research revealed significant opportunities to better describe and track the costs of teacher turnover broadly, both for future research and for policy and practice applications. Levy et al. (2012) implored, “if districts are to understand and control the costs associated with teacher turnover, tracking these costs must become a systematic and transparent process. Moreover, tracking costs at the district level along will undermine the total [turnover costs]” (p. 126). Researchers recommend this be done annually, and data systems need updating so key data can collect and systematized to make these

processes more accurate (Barnes et al., 2007; Watlington et al., 2010), for both districts and schools (Guin, 2004).

Explore how to reduce costs.

Reducing the direct costs of teacher turnover is an opportunity for the state and for districts (Boe et al., 2008), though many costs of turnover can be regarded as investments in long-term retention. Our analysis suggests the state may have an opportunity to be more efficient in some district-level administrative processes, but these are typically tailored to district needs, and are not high costs relative to others identified in our analysis. At the community level, improvements in housing could save significant time; at the state level, efficiencies in the teacher licensure process may save costs for districts that support teachers in navigating them. At the district level, we recommend that superintendents maintain autonomy to structure systems and process that best suit their needs.

Support ongoing research around teacher turnover and its associated costs.

Recommendations for research stemming from our work – and building on the recommendations of other scholars – include:

- **Better describing the patterns of teacher turnover**; for example, when we report turnover rates in Alaska, additional research should explore how those numbers differ across schools, communities, or positions (Guin, 2004).
- **Exploring the costs of teacher turnover that are non-monetary**, including the impacts on schools as organizations and how they function (Guin, 2004).
- **Measuring teacher productivity losses** and the costs of educational interventions or policy changes.
- **Exploring the impact of different district or school characteristics on turnover** “to see what effects district characteristics such as size, degree of decentralization, student achievement, wealth, and location have on turnover costs” (Milanowski & Odden, 2007, p. 19). This requires finding a way to standardize the data collection while maintaining robust recognition of difference.

Explore conditions driving high teacher turnover, and how to address them.

Given the magnitude of associated costs, understanding addressing the reasons for teacher turnover has the potential for significant savings. Fewer than half of the districts participating in our study conduct exit interviews with departing teachers. Our data do not suggest that doing interviews correlates with lower turnover (and administrators in smaller districts often know why their staff leave) but the data are not recorded systematically. To the extent that these data can illuminate reasons teachers are leaving, and potential ways to lesson turnover, we recommend that districts implement mechanisms to record and track turnover patterns over time. These mechanisms will need to consider the realities are harsh truths about teacher turnover patterns, particularly in low-income, rural, and difficult-to-staff districts. As Guin (2004) noted,

Broad policies aimed at improving teacher quality are not likely to be successful if they ignore the reality of teacher turnover. If teachers continue to use low-performing schools as a point of entry into a district, but leave them as soon as they gain even a little seniority, the schools and the students in them will continue to suffer. School districts that try to fix low performing

schools through professional development alone may be disappointed since teachers leave these schools after acquiring new skills. (p. 21)

Our literature review and interviews with districts identified areas of promise: increasing the Alaska-prepared teacher supply, improving teacher supports, and recruiting on community strengths.

Increase Alaska-prepared teacher supply.

Analysis of teacher turnover in Alaska notes that teachers who are prepared in Alaska are retained longer in their positions and in the state (Hill & Hirshberg, 2013), thus increasing this teacher supply would reduce turnover (and save turnover costs). There is an opportunity to increase supply by limiting barriers to teacher mobility that inhibit transfer between Alaska districts, as well an opportunity to increase enrollments incrementally in Alaska's teacher preparation programs, which emphasize cultural competency specific and appropriate to Alaska populations (Cope & Germuth, 2012).

Improve teacher supports.

The broader literature on teacher turnover, as well as studies conducted specifically in Alaska, underscore the value and importance of supporting new teachers. Levy et al. (2012) note that investing in teacher support is aligned with lower turnover rates, and in particular, school-level supports increase retention (Berry, Daughtrey, & Wieder, 2010). Smith and Ingersoll (2004) note that a good induction program can decrease teacher turnover by as much as 50%, and Barnes et al. (2007) recommend that comprehensive retention strategies should especially target at-risk schools.

In Alaska, Cope and Germuth (2012) documented that new teachers wished they had a local, community mentor for support, and Hirshberg et al. (2016) noted lack of professional support correlated with teachers' decision to leave rural districts. Cope and Germuth (2012) showed that following a carefully managed set of cultural experiences including a summer immersion, followed by ongoing local cultural mentorship and a university-level course taught by an Alaska Native instructor both improve teacher self-assessments and perseverance.

Supporting teachers also means supporting administrators (Barnes et al., 2007; Watlington et al., 2010). Given the correlation between teacher turnover and their perception of administrator support, administrators will also need resources, autonomy, skills, and community assistance to provide this support to teachers.

Recruit on community strengths.

Research in Alaska has also explored factors contributing to teacher retention – not just turnover. Cope and Germuth's (2012) research notes that teachers who choose to stay in rural Alaska like the opportunity to work with small classes, getting to know students and families more intimately in small communities, and feeling that they were making a difference in the lives of their students. Teachers also said they were drawn to Alaska for compensation, more opportunities, and adventure. Districts are recruiting by underscoring these characteristics and seeking these attributes, and our data suggest that these efforts are effective and valuable.

Limitations

The difficulty in calculating these costs cannot be overstated. Other researchers in the peer-reviewed literature note, "all of these methods are best guesses, and none make the effort to calculate actual costs of teacher turnover exclusively for school districts, especially since the costs of teacher turnover

can vary greatly from one district to another” (Watlington, 2010, p. 27). In consideration of these challenges, and though our data were collected with integrity and we are confident in our analysis, the study presents some significant limitations in addition to those noted in the method and delimitations.

First, though we weighted the cost of teacher turnover using average costs at the district level, the costs of turnover are highly variable (Milanowski & Odden, 2007). These variations include hiring in-state versus hiring from out of state; hiring new teachers versus returning teachers who bring skill and experience; hiring teachers from different content areas; and variable turnover rates for different schools, positions, or teacher characteristics – even within the same district. Our method was not precise enough to parse out these differences.

Additionally, using the district as our unit of analysis was both our charge and aligned our study methodologically with other research in this field. Though the line between school and district is clear in the literature, in many places in Alaska – particularly its rural school districts - the line between district and school is blurred.

Next, because we were conservative in our estimates, defaulting to the lower cost or assumption when presented with decisions, the numbers we present are low-end estimates of the total cost of teacher turnover. Particularly in the area of orientation and training, our calculations include only the cost of first-year induction, but Milanowski and Odden (2007) argue that, even when estimates do not count performance productivity losses to student learning, it is more appropriate to calculate training and mentoring for five-year post-hire, to bring new teachers up to a more experienced level.

Though we encountered challenges in data collection and analysis were, they were also revelatory. We echo Milanowski and Odden (2007), who said of their own work,

This study has also illuminated a number of interesting complexities in estimating the cost of teacher turnover. First, it is clear that estimating the costs of training and lost productivity are not as straightforward as estimating administrative costs and requires the use of assumptions that are arguable. (p. 18)

Because there is not a validated instrument for calculating teacher turnover, we cannot compare these costs to other states. The work of other researchers illuminates our understanding, but because other estimates for the cost of teacher turnover have been calculated using different instruments, even when numbers are available, comparisons can only be made in the most general sense. To that end, we also have to consider the shelf life of the data; already as we finalize the report, the data are nearly 18 months old, and this time lapse fails to account for inflation or changed circumstances or processes in the districts themselves.

Conclusions

The costs of teacher turnover considerable, and reducing teacher turnover – particularly for new teachers in their first five years who in their highest rate of productivity growth, earning relatively lower salaries, and at highest risk for turnover – is an opportunity for Alaska. Zero teacher turnover is neither practical nor desirable, from a cost or an educational perspective. However, we can do better, and this report identifies some opportunities.

This research also highlighted the multifaceted nature of teacher supply and demand. The reasons teachers stay – or go – are complex, and cannot be solved at one level or by one initiative. Rather, changing teacher turnover (and reducing the costs associated with it) will require enhanced cooperation and innovative policies. We look forward to supporting those efforts.

References

- Alaska Statewide Mentor Project. (2017). *Research summary 2004 - 2016*. Fairbanks, AK.
- Allensworth, E., Ponisciak, S., & Mazzeo, C. (2009). *The schools teachers leave: Teacher mobility in Chicago public schools*. Chicago IL: Consortium on Chicago School Research.
- Arens, A. K., & Morin, A. J. S. (2016). Relations between teachers' emotional exhaustion and students' educational outcomes. *Journal of Educational Psychology, 108*(6), 800-813.
- Association of Alaska School Boards. (2015). *Alaska public school classified employee 2014-2015 salary & benefits report*. Juneau, AK.
- Barnes, G., Crowe, E., & Schaefer, B. (2007). *The cost of teacher turnover in five school districts: A pilot study*. Arlington, VA: National Commission on Teaching and America's Future.
- Berry, B., Daughtrey, A., & Wieder, A. (2010). *Preparing to lead an effective classroom: The role of teacher training and professional development programs*. Carrboro, NC: Center for Teaching Quality.
- Boe, E. E., Bobbitt, S. A., Cook, L. H., Barkanic, G., & Maislin, G. (1998). *Teacher turnover in eight cognate areas: National trends and predictors*. Philadelphia, PA: Center for Research and Evaluation in Social Policy.
- Boe, E. E., Cook, L. H., & Sunderland, R. J. (2008). Teacher turnover: Examining exit attrition, teaching area transfer, and school migration. *Exceptional Children, 75*(1), 7-31.
- Burt, C. D., & Kemp, S. (1994). Construction of activity duration and time management potential. *Applied Cognitive Psychology, 8*(2), 155-168.
- Cannon, S. R., & Becker, K. I. (2015). *Life tables: A new perspective on teacher career patterns*. Retrieved from http://www.academia.edu/14112035/Life_Tables_A_New_Perspective_on_Teacher_Career_Patterns
- Carroll, T. G. (2007). *Policy brief: The high cost of teacher turnover*. Arlington, VA: National Commission on Teaching and America's Future.
- Chingos, M.M. (2014). *Ending teacher tenure would have little impact on its own*. Washington, DC: Brookings Institution Brown Center on Education Policy.
- Clotfelter, C. T., Ladd, H. F., Vigdor, J. L., & Diaz, R. A. (2004). Do school accountability systems make it more difficult for low-performing schools to attract and retain high-quality teachers? *Journal of Policy Analysis and Management, 23*(2), 251-271.
- 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.
- Collier, M., (2016). Home-grown school superintendents bring stability, deep knowledge to their districts. *EdSource*. Retrieved from <https://edsources.org/2016/home-grown-school-superintendents-bring-stability-deep-knowledge-to-their-districts/574127>
- Cope, D., & Germuth, A. (2012). *Survey of teacher stayers*. Anchorage, AK: Alaska Humanities Forum.
- Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching*. Kutztown, PA: National Commission on Teaching & America's Future.

- Darling-Hammond, L., & Sclan, E. M. (1996). Who teaches and why: Dilemmas of building a profession for twenty-first century schools. *Handbook of Research on Teacher Education*, 2, 67-101.
- DeFeo, D.J., Hirshberg, D., & Hill, L. *It's more than just dollars: Problematizing salary as the sole mechanism for recruiting and retaining teachers in rural Alaska*. Manuscript submitted for publication.
- Education Week. (2000). *Quality counts 2000: Who should teach?* Bethesda, MD, 16.
- Grissmer, D. W., & Kirby, S. N. (1992). *Patterns of attrition among Indiana teachers*. Santa Monica, CA: Rand Corporation.
- Grissmer, D., & Kirby, S. N. (1997). Teacher turnover and teacher quality. *Teachers College Record*, 99(1), 45-56.
- Guin, K. (2004). Chronic teacher turnover in urban elementary schools. *Educational Policy Analysis Archives*, 12(42), 1-30.
- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, 43(6), 495-513.
- Hill, A. and Hirshberg, D. (2013). *Alaska teacher turnover, supply, and demand: 2013 highlights*. Anchorage, AK: University of Alaska Anchorage Center for Alaska Education Policy Research.
- Hirshberg, D., DeFeo, D., Berman, M, and Hill, A. (2015). *Salary & benefits schedule and teacher tenure study final report*. Anchorage, AK: University of Alaska Anchorage Center for Alaska Education Policy Research.
- Hirshberg, D., Hill, L., & Kasemodel, C. (2014, April). *Will They Stay or Will They Go? Teacher Perceptions of Working Conditions in Rural Alaska*. Paper presented at American Educational Research Association annual meeting, Philadelphia, PA.
- Hirshberg, D., Kasemodel, C., Cope, D. & DeFeo, D. (2016, September). *Why they leave, why they stay, and what these choices cost: exploring decisions by teachers in rural Alaska*. Paper presented at the UArctic Congress, St. Petersburg, Russia.
- 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. M. (1999). The problem of underqualified teachers in American secondary schools. *Educational Researcher*, 28(2), 26-37.
- Karsan, R. (2007). Calculating the cost of turnover. *Employment Relations Today*, 34(1), 33-36.
- 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.
- Loeb, S., Darling-Hammond, L., & Luczak, J. (2005). How teaching conditions predict teacher turnover in California schools. *Peabody Journal of Education* 80(3), 44-70
- Lee, R. T., & Ashforth, B. E. (1990). On the meaning of Maslach's three dimensions of burnout. *Journal of Applied Psychology*, 75(6), 743-747.
- Levin, H. M., & McEwan, P. J. (2001). *Cost-effectiveness analysis: Methods and applications* (Vol. 4). Thousand Oaks, CA: Sage.

- Levy, A. J., Fields, E. T., & Jablonski, E. S. (2006). *What we know and don't know about the consequences of science and math teacher turnover*. Newton, MA: Center for Science Education at Education Development.
- Levy, A. J., Joy, L., Ellis, P., Jablonski, E., & Karelitz, T. M. (2012). Estimating teacher turnover costs: A case study. *Journal of Education Finance*, 38(2), 102-129.
- Lewak, R., Stolberg, R., & Savarese-Levine, J. (2008). *The relationship of cross cultural adaptability and emotional intelligence*. Retrieved from <http://www.drjudithmeyers.com/Relationship%20of%20Cross%20Cultural%20Adaptability%20and%20Emotional%20Intelligence.pdf>
- Milanowski, A., & Odden, A. (2007). *A new approach to the cost of teacher turnover*. Seattle, WA: School Finance Redesign Project, Center on Reinventing Public Education.
- Murnane, R. J. (1996). Staffing the nation's schools with skilled teachers. *Improving America's Schools: The Role of Incentives*, 241-258.
- National Center for Education Statistics. (2017). *Multiyear Tuition Calculator*.
- Olsen, B., & Anderson, L. (2007). Courses of action: A qualitative investigation into urban teacher retention and career development. *Urban Education*, 42(1), 5-29.
- 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.
- Quartz, K. H. (2003). "Too angry to leave": Supporting new teachers' commitment to transform urban schools. *Journal of Teacher Education*, 54(2), 99-111.
- Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (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.
- Saldaña, J. (2015). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.
- Salkind, N. J. (2010). *Encyclopedia of research design*. Thousand Oaks, CA: Sage.
- Shields, P. M., Humphrey, D. C., Wechsler, M. E., Riel, L. M., Tiffany-Morales, J., Woodworth, K., ... & Price, T. (2001). *The status of the teaching profession 2001*. Santa Cruz, CA: The Center for the Future of Teaching and Learning.
- Shockley, R., Guglielmino, P., & Watlington, E. (2006, January). The costs of teacher attrition. In *International Congress for School Effectiveness and Improvement*. Fort Lauderdale, FL.
- Smith, T. M., & Ingersoll, R. M. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal*, 41(3), 681-714.
- Spradley, J. (1980). *Participant observation*. New York: Holt, Rinehart and Winston.
- State Higher Education Executive Officers. (2015). *FY 2014, table 5: Educational Appropriations per FTE (Constant adjusted 2014 dollars)*. Retrieved from <http://www.sheeo.org/sites/default/files/project-files/SHEF%20FY%202014-20150410.pdf>
- Stevens, D. & Pierson, A. (2017, February). *Alaska State Policy Research Alliance: Informing issues with data and evidence*. Presentation to Alaska Legislature, Juneau, AK.

- Synar, E., & Maiden, J. (2012). A comprehensive model for estimating the financial impact of teacher turnover. *Journal of Education Finance, 38*(2), 130-144.
- Texas Center for Educational Research (2000). *The cost of teacher turnover*. Texas State Board for Educator Certification. Retrieved from <http://www.tcer.org/research/index.aspx>
- Thompson, D. C., Crampton, F. E., & Wood, R. C. (2012). *Money and schools*. Larchmont, NY: Eye on Education.
- Tissington, L. D., & Grow, A. (2007). Alternative certified teachers and children at risk. *Preventing School Failure: Alternative Education for Children and Youth, 51*(2), 23-27.
- Watlington, E., Shockley, R., Guglielmino, P., & Felsher, R. (2010). The high cost of leaving: An analysis of the cost of teacher turnover. *Journal of Education Finance, 36*(1), 22-37.

Appendix A: Detail costs of teacher turnover

Activity	% of Districts doing CTT tasks	Time average (hours)	Wage cost average (\$)	Material cost average (\$)	Weighted cost (\$)
SEPARATION					
COBRA notifications	95.83	0.76	30.84	.	29.56
Database updates	85.19	0.45	16.63	.	14.17
Exit interviews	47.22	1.57	88.56	.	41.82
Final benefits	96.77	0.48	17.98	.	17.4
Final payroll	93.75	0.51	18.84	.	17.66
Housing maintenance	55.88	22.4	1,088.00	2,947	2,254.85
Leave payout	82.61	0.33	14.47	.	11.95
Other administrative costs	29.17	0.54	8.64	.	2.52
Retirement processing	34.48	0.48	16.89	.	5.82
Security	82.14	0.35	15.93	.	13.09
Technology updates	88	0.69	31.22	.	27.47
Website updates	76.92	0.44	16.43	.	12.64
RECRUITMENT					
Advertising	82.76	.	0	242	200.28
Job fair registration & materials	47.06	.	0	1,254.00	590.12
Job fair travel	66.67	.	0	1,679.93	1,119.95
HIRING					
Alaska Teacher Placement (ATP) services	100	.	0	785.93	785.93
Applications pre-screening	92	9.11	395.82	.	364.15
Benefit processing	96.3	0.69	28.75	.	27.69
Bonus	15.63	.	0	2,000.00	312.5
Computer account setup	95.65	0.71	31.81	.	30.43
Contract preparation	100	1.41	67.12	.	67.12
Email setup	96	0.34	16.42	.	15.76
Establish payroll	92.31	0.75	28.57	.	26.37
Formal background check	54.55	.	209.94	373	317.97
“Highly Qualified Teacher” Status ¹³	70.83	0.68	26.05	.	18.45
Housing searches	62.96	4.14	178	.	112.07
Identify candidates for interviews	76.67	24.53	551.5	.	422.82
Informal background check	33.33	0.48	17.54	.	5.85
Interview preparation	92	4.2	200.42	.	184.39
Interviews	100	10.03	768.56	.	768.56
Moving	24.24	.	0	1,513.00	366.79
Navigate certification process	80.77	4.56	200.55	.	161.98
Other hiring costs	16.13	1	52.32	.	8.44
Other post-hire task	40	2.8	175.63	.	70.25
Other selection tasks	86.67	2.52	101.54	.	88
Phone book updates	54.55	0.22	6.22	.	3.39
Reference checks	100	6.7	368.67	.	368.67
School board approval	91.67	0.869	50.78	.	46.55
Security	84	0.49	21.51	.	18.07
Stipend	9.68	.	0	2,000.00	193.55
Transcript review	100	0.93	31.54	.	31.54
Travel	20	.	0	.	0
Verify interest	100	1.03	60.45	.	60.45
Website updates	79.17	0.9	30.54	.	24.18
ORIENTATION & TRAINING					
District-sponsored PD	46.43	.	1,845.00	7,213.00	4,205.50
Mentorship	74.07	120	2,800.00	.	2,074.07
Orientation activities	96.88	45.25	837.89	3,480.00	4,182.96
Praxis fees	60	.	0	870	522
Substitute for district-sponsored PD	40	.	0	448.63	179.45
Tuition benefits	11.76	.	0	50	5.88

¹³ Under new regulations in the 2015 rewrite of the federal Elementary and Secondary Education Act (formerly *No Child No Child Left Behind* now *Every Student Succeeds Act*) districts are no longer required to document highly qualified teacher (HQT) status for teachers hired for the 2016-2017 school year. <https://www2.ed.gov/policy/elsec/leg/essa/faq/essa-faqs.pdf>.

Appendix B: Occupation codes & wages used for cost calculations

Occupation	Alternate position names supplied by districts	Mean Wage	Wage Source
Accountant	Payroll Accountant, Payroll Manager, Bookkeeper	38.93	ALARI
Administrative Assistant	Secretary, Administrative Secretary, Point Person, Data Manager	17.93	ALARI
Assistant Principal	Academic Principal, Supervisor, Building Administrator	40.50	AASB
Assistant Superintendent	.	56.77	AASB
Board Secretary	Superintendent's Administrative Assistant, District Secretary	27.6	ALARI
Classified Staff	Staff Member	19.50	AASB
Curriculum Director	.	47.59	AASB
Director	Training Director, KID Coordinator	42.56	ALARI
Facility Coordinator	Special Manager for Leases & Operations, Facility Director	43.65	AASB
HR Manager	HR Supervisor, Executive Director of Staffing and Operations, HR Officer, Benefits Manager, Benefits Coordinator, HR Director, Personnel Director, Staffing and Operation Coordinator, EEO Director	53.86	ALARI
HR Specialist	HR staff, Personnel person, HR, Senior HR Technician, Leave Specialist, Benefits Specialist, Personnel Officer	22.25	ALARI
Information Technologist	Tech Coordinator, Tech Department, Technology Specialist, Computer Technician, Tech Guy, Tech Facilitator, Tech Engineer, IT	39.52	ALARI
Maintenance Director	Maintenance Manager	43.80	AASB
Payroll Clerk	Payroll Technician, Payroll Specialist, Payroll Person, Payroll	23.24	ALARI
Principal	Head Teacher, Building Principal, Site Administrator	51.25	AASB
Recruitment Specialist	Communication Coordinator	31.77	ALARI
School Business Officer	Business Manager, Business Officer, Comptroller, Business Office Manager	40.50	AASB
Site Maintenance Person	Custodian, Maintenance, Cleaning Crew	16.05	ALARI
Superintendent	.	58.97	AASB
Teacher	Mentor/Counselor, Tech Teacher	44.15	NEA Alaska
Tech Director	IT Manager	57.47	ALARI