Teacher Absences in the Commonwealth of Virginia:
An Analysis of Patterns and Predictors and Implications for Policy

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ABSTRACT

The research regarding the effect of policy on teacher absenteeism is scarce and research examining teacher absenteeism from a state perspective is very limited. This mixed methods study analyzed selected school variables for public schools and districts in Virginia contained in the 2011-2012 and 2013-2014 Civil Rights Data Collection (CRDC) and in the National Center for Educational Statistics. In addition, a content analysis was performed on leave policies for all 132 school districts in Virginia yielding policy variables for the study. The purpose of the study was to determine the relationship of school and policy characteristics to teacher absences.

The analysis for this study involved computing descriptive statistics, correlating continuous variables, and running multiple regressions for each dataset (school and district for each year) to determine the predictors of the dependent variable, chronically absent teachers, defined as the percentage of teachers absent for more than 10 days. Although the school models were significant, neither was a particularly strong predictor of chronically absent teachers, only accounting for 15.2 percent variation (2011-2012 model with $R^2=.152$) and 9.6 percent variation (2013-2014 model with $R^2=.096$) that is predicted by the independent variables. Nevertheless, there were independent policy and school variables that were significant predictors in both school years. The most prominent variables included: total leave, personal leave maximums, income protection provisions (sick leave banks, short-term disability), free and reduced lunch population percentage of a school, pupil/teacher ratio of the school, and the grade level of the school (elementary, middle, and high).

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GENERAL AUDIENCE ABSTRACT

Teacher absences have an educational impact on student achievement. Research specific to teacher absences is very limited. Using data for public school districts in Virginia, this study aimed to determine the relationship of school and policy characteristics to teacher absences. The study found that increasing the amount of total leave (sick and personal) granted annually and increasing the number of personal leave days a teacher is allowed to take annually, is likely to lead to higher number of teachers absent more than 10 days annually. The study also found schools with higher free and reduced lunch student population and higher pupil/teacher ratios are more likely to have a higher number of teachers absent more than 10 days. Finally the study found that there is a relationship of the grade level of the schools with middle schools having a higher percentage of teachers absent more than 10 days.

Dedication

      I dedicate this study to my mother who has served as a never-ending source of inspiration throughout my life. You taught me the value of education and hard work. By your model and deeds, I learned to always remain positive despite the circumstance. In times of despair, the first words I think of are those words you've said to me countless times, "It could always be worse." You have given me tremendous support and encouragement throughout my life and I count my richest blessing in having you as my mother and friend.

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Chapter 1: Background

During the 2009-2010 school year, over one third of public school teachers nationally were absent from the classroom more than 10 days. Across the country, the percentage of teachers missing more than 10 days varied significantly from state to state. Utah reported the lowest absence rate at 20.9% and the highest was Rhode Island at 50.2% of teachers absent more than 10 days (Civil Rights Data, 2009-2010). On any given day, 5.3% of teachers are absent from their jobs (United States Department of Education, 2012). This absence rate wouldn't be considered high in parts of the developing world, but compared to other industrialized nations, it is much higher (Clotfelter, Ladd & Vigdor, 2007). In addition the teacher absence rate of 5.3% exceeds the 2.9% national rate of absence for full time wage and salaried American workers (Bureau of Labor Statistics, 2013).

A teacher's absence from the classroom can be an intermittent day here and there or can be for months at a time. In 2001, Elizabeth stated:

Each day, about 5 million children walk into 274,000 classrooms nationwide and find a substitute. Students today will spend at least one full year with a substitute by the time they graduate from high school—a figure that's higher in poor schools and destined to increase. (p.1)

Recently, teacher absenteeism has once again gained policymakers' attention due to the publication of several reports casting light on this contentious issue. In addition, the Office for Civil Rights in 2009 began including teacher attendance data in the Civil Rights Data Collection.

The issue of teacher absence should be examined for several key reasons. First, the financial impact of teacher absence is significant. Research indicates that teacher absence is very

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expensive. With 5.3% of teachers absent on any given day in the United States, it has been

estimated that the payroll for substitutes totals over $4 billion annually, which equates to

approximately 1% of federal, state, and local spending on K-12 public education (Miller, 2008;

United States Department of Education, 2007). In a study of 40 large urban school districts, the

districts spent a combined $424 million employing substitutes which equated to $1,800 per full-

time teacher (National Council on Teacher Quality [NCTQ], 2014).

Aside from the direct payroll and fringe benefit expense, districts incur expenses

associated with the recruiting, selecting, vetting, and training of substitute teachers. In Virginia,

the onboarding of a substitute teacher is very similar to that of a full-time teacher, in that

substitute teachers must undergo the same background screening as a full time teacher in order to

comply with the Code of Virginia (Va. Code § 22.1-296.2; Va. Code § 22.1-296.4). Finally, the

'cost' of absenteeism is not always measured monetarily in payroll or benefit expense.

Sometimes teacher absences go unfilled and sometimes they are filled. Either way, the absent

teacher's colleagues and administrators often pay the price of the teacher not being present with

increased workload or stress (Bowers, 2001).

Another reason teacher absence should be explored is the implication of teacher absence

on student achievement. Evidence of the impact of teacher absences on student achievement can

be found in two recent correlational studies. Clotfelter et al. (2007), whose study involved all

school districts in the state of North Carolina, found that for every 10 days a teacher was absent,

the resulting student achievement in math decreased by 2.3% of a standard deviation, which is

equivalent to having a brand new teacher instead of teacher with two to three years of

experience. In another study involving a metropolitan school district in the United States,

researchers found that "10 additional days of teacher absence reduced student achievement in

fourth grade mathematics by 3.3% of a standard deviation" (Miller, Murnane, & Willett, 2007, p.23).

Yet another reason that the issue of teacher absence should be examined is one of equity. A well-documented achievement gap exists between minority and low income students as compared to their more affluent white peers. Pitkoff (1993) found that the most prominent predictor of teacher absences was the percentage of students reading below grade level, followed by the percentage of students eligible to receive free lunch. Clotfelter et al. (2007) examined the teacher absence data from all public schools in North Carolina spanning school years 1994-95 through 2003-2004. They found that most schools in the study that served predominately low income students fell in the highest quartile for teacher absences in at least five of the ten school years studied. They also found that a 10 percentage point increase in a school's low income population was associated with an additional $1/10^{th}$ of a day of absence by its teachers (Clotfelter et al., 2007). Likewise, Miller (2012) noted that, in analyzing the 2009-2010 CRDC Data Set, a school comprised of 90 % African American students has a 3.5% higher teacher absence rate on average than a school with only 10 % African American students. Similarly, if the school has 90 % Hispanic students, then the teacher absence rate is 3.25 % higher on average than a school with only 10 % Hispanic students. Considering that poverty is the common thread in minority groups, combined with the fact that student achievement is impacted by teacher absence, one could conclude as Miller (2012) did, "It's plausible that achievement gaps can be attributed, in part, to a teacher attendance gap" (p. 5).

In our high stakes accountability climate where school accreditation is dependent on demonstrated student achievement, we cannot afford to ignore this issue. The costs are too high and impact far reaching. Clearly, the financial impacts of teacher absence, the educational

impacts of teacher absence on student achievement, and the inequity created by higher absenteeism in schools serving low income and minority students lends credence to the importance of this topic.

Statement of the Problem

Research specific to teacher absenteeism is limited due to the fact that teacher absenteeism data is not reported to state education departments (Ehrenberg, Ehrenberg, Rees, & Ehrenberg, 1991). The purpose of this mixed methods study was to examine selected variables contained in the Office for Civil Rights 2011-2012 and 2013-2014 CRDC, in the National Center for Educational Statistics, and in district policies to determine if patterns exists among teacher absences in public school districts in the Commonwealth of Virginia and determine the relationship between teacher absences and organizational and policy characteristics.

Significance of the Research

Scholarly significance. Teacher absenteeism has been a dilemma for decades. Thirty-five years ago, Hill (1982) reported that 200,000 teachers nationally were absent every day. As recent as 2013, the Bureau of Labor Statistics reported that the 5.3 % of teachers absent daily exceeds the 2.9 % national rate of absence for full time wage and salaried American workers. Considering that the majority of full time teachers are contracted for fewer days than full time workers in private industry, studying absenteeism within the educational setting is needed to gain insight into the possible causes of this workforce dynamic.

As noted previously, student achievement is impacted negatively by teacher absenteeism (Clotfelter et al., 2007; Miller et al., 2007). It is imperative that we find ways to reduce the number of absences to mitigate the effects of absences on our students. Policy does affect absences (Clotfelter et al., 2007; Jacob, 2013), albeit research has been scarce and mixed

(Clotfelter et al., 2007; Ehrenberg et al., 1991; Miller et al., 2007, Rosenblatt & Shirom, 2005, 2006; Van Dick & Wagner, 2001).

Scholarly study of teacher absenteeism has extended to foreign schools (Rosenblatt & Shirom, 2005, 2006). However, foreign schools have different accountability measures than those in the United States, and leave policies and international laws also vary. Further domestic research is necessary within the context and culture of our American schools and our federal and state laws. Since the stakes are so high, more needs to be known regarding the relationship between teacher absences and organizational and policy characteristics.

Practical significance. Although there is limited scholarly research specific to teacher absenteeism, one would presume teacher absences negatively impacts student achievement. Ehrenberg et al. (1991) purport that it is reasonable that student motivation and learning decreases when the regular classroom teacher is absent. Miller (2008) states, "It follows that if what teachers do when they are present matters a great deal, the teacher's absence must also affect student learning" (p. 3).

I've experienced this substitute shortage first hand. Through personal experience as the human resource director of a small city school district, there are peak days (Mondays and Fridays) when teacher absences go unfilled as substitutes are not available. Teachers will cover for each other when subs cannot be found, sacrificing valuable planning time to cover a colleague's class or splitting up the absent teacher's students amongst the remaining teachers. Teacher absence definitely has an important effect on productivity.

Research Questions

1. What is the relationship between certain school district policy provisions (personal leave amount granted annually, personal leave maximum accumulation amount, personal leave expiration, maximum accumulation of sick leave, total days of leave granted annually, smallest increment for use of sick leave, income protection plan exists, monetary value of sick leave day) and teacher absenteeism?

2. What is the relationship between certain school characteristics (Title 1 School, grade level of school, percentage of teachers with less than two years' experience, size of teaching workforce, free and reduced lunch percentage, size of student enrollment, student absenteeism, and pupil/teacher ratio) and teacher absenteeism?

Definitions

For further clarity in reviewing the research, commonly used terms are defined.

Absence and Absenteeism: used synonymously to indicate a teacher is not present at work using some type of leave as defined in the "Types of Absence" definition.

Civil Rights Data Collection: The Civil Rights Data Collection (CRDC) is a biennial (every other school year) survey required by the U.S. Department of Education's Office for Civil Rights (OCR). According to the overview on the website, CRDC includes data from every public school in the nation (approximately 16,500 school districts, 97,000 schools, and 49 million students) and includes traditional public schools (preschool through 12th grade), alternative schools, career and technical education schools, and charter schools.

Family and Medical Leave Act (FMLA): The FMLA is a federal law that allows eligible employees to take up to 12 workweeks of unpaid job protected leave within a 12 month period for the birth of a child, for the placement of a son or a daughter for adoption or foster care, for

the care of an immediate family member who has a serious health condition, for an employee's

own serious health condition, for any qualifying exigency arising out of the fact that the

employee's spouse, son, daughter, or parent is a military member on covered active duty.

Further, eligible employees can take up to 26 workweeks of unpaid, job-protected leave in a 12-

month period to care for a covered service member with a serious injury or illness if the

employee is the spouse, son, daughter, parent, or next of kin of the service member (United

States Department of Labor).

Organizational/school characteristics: variables such as student enrollment, size of staff,

student attendance rates, socioeconomic level of the students, grade level of the school, student

ethnicity , overall experience level of teaching workforce, and principal support (Miller et al.,

2007; Rosenblatt & Shirom, 2006; Van Dick & Wagner 2001).

Policy characteristics: variables such as the amount of leave granted, leave maximums,

buyback provisions of unused leave, income protection plans (i.e.sick leave banks, and short

term disability), reporting requirements, financial incentives and penalties (Ehrenberg et al.,

1991; Jacobsen, 1989; Kronholz, 2013; Pitkoff, 1993; Winkler, 1980).

Student achievement: generally, this term is defined as demonstrated student outcomes showing

progress towards learning goals. Since the No Child Left Behind Act of 2001, the focus has been

to measure student achievement by the outcome of a student taking a standardized test. As

related to the literature reviewed in this study of the relationship of teacher absence and student

achievement, data from state standardized tests are commonly used.

Substitute teacher: an employee that assumes the responsibilities of the regular teacher when

the regular teacher is absent. Since qualifications for substitutes vary widely between states and

districts, there is no assurance that a substitute teacher is qualified to provide quality instruction in the absence of the regular teacher.

Teacher: an employee of the school district providing direct services to students on a 10 or 11 month contract and would require a substitute when absent.

Teacher characteristics: Teacher characteristics are factors that may affect teacher absenteeism (Rosenblatt & Shirom, 2005). Examples include gender, education level, experience level, job satisfaction, motivation, distance commuted, level of education, tenure, whether the teacher has children or not, and workload (Miller et al., 2007; Rosenblatt & Shirom, 2005, 2006; Steers & Rhodes, 1978).

Types of Absence: Absence generally can be defined as time away from the job. School districts in Virginia generally allow similar leave types for teachers and policy typically dictates how many and parameters on use. Examples of common leave types include: sick leave, personal leave, professional leave, or leave without pay.

This dissertation is divided into five chapters. Chapter 1 provides an overview of the problem of teacher absenteeism, the significance of the research, research questions, and definitions; Chapter 2 provides a review of the scholarly researcher and the theoretical framework providing the rationale for conducting this research on the problem of teacher absenteeism; and Chapter 3 provides an overview of the research design, population, and procedures. Chapter 4 provides the data analysis and results of the research and Chapter 5 provides conclusions and recommendations.

Chapter 2: Literature Review

Search Process

An article written by Miller (2012) read for a class prompted interest in the topic of teacher absenteeism, the impacts of teacher absence, and how absenteeism might be improved and served as the initial resource used in this study. In order to find additional studies, a search of several educational databases was conducted, including Academic Search Complete from EBSCOhost, Education Research Complete from EBSCOhost, ERIC from ProQuest, and ERIC from U.S. Department of Education, ERIC from Worldcat. In beginning the search, terms used included teacher absenteeism, teacher absence and student achievement, teacher attendance, with no time frame indicated. Two recent studies were found regarding the relationship between teacher absenteeism and student achievement: one from Duke University (Clotfelter et al., 2007) involving all school districts in the state of North Carolina and another from Harvard University (Miller et al., 2007) involving one urban school district in the United States. The reference list from both studies was explored for relevant research.

Although these two aforementioned studies explored the impact of teacher absence on student achievement, both studies yielded questions for further research about the causes and predictors of teacher absences. Therefore, the search process was expanded and encompassed literature related to the causes and predictors of teacher and employee absences. Some studies focused specifically on teacher characteristics while others focused on organizational characteristics that contributed to teacher absences. Finally, the search process led to articles related to teacher absenteeism and policy. A wider body of research exists devoted to absenteeism in organizations, but there is limited research related specifically to teacher

absenteeism. While research related to the larger workforce is referenced as relevant, emphasis for the literature review is research specific to teacher absenteeism.

Review of Literature

In synthesizing the literature, the findings were organized into conceptual themes: relationship of teacher absenteeism and student outcomes; causes and predictors of absenteeism, and a theoretical framework that provide the reasons for conducting research on teacher absenteeism. Empirical research on the determinants and effects of teacher absenteeism is fairly limited; largely because data on teacher absenteeism and provisions governing school district leave policies have historically not been systematically collected and reported (Ehrenberg et al., 1991).

Teacher absenteeism and student outcomes. Research exploring the relationship between teacher absences and student achievement is two-fold. Some studies examined the aggregate impact of an entire teaching workforce, either by school or district, on the aggregate performance of a group or groups of students. Other studies examined the relationship between individual teacher absences and individual student achievement.

Ehrenberg et al. (1991) conducted a research study involving aggregate data from 419 New York school districts representing nearly 60 % of all New York public school districts. The researchers investigated how leave provisions in teacher contracts affected teacher absences from the classroom, how teacher absences impacted student absences, and how teacher and student absences influenced student test score performance for the 1986-87 academic year. The findings regarding how leave provisions in teacher contracts affected teacher absences are discussed in the relevant section of this literature review.

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As related to teacher absenteeism impacts on student outcomes, Ehrenberg et al. (1991) found that while higher student absenteeism was related with poorer performance on standardized tests, teacher absenteeism did not appear to be related with students' pass rates on standardized tests. The researchers cautioned that their findings are only relevant to students' pass rates on the standardized exams and that the findings do not determine how teacher absenteeism affects students whose academic performance exceeds the "minimum pass" level on the exams nor how teacher absenteeism affects knowledge and learning not measured by the exams. Furthermore, the study revealed that lower teacher absenteeism led to lower student absenteeism. Therefore, while teacher absenteeism did not have a relationship with students' pass rates in this study, researchers cautioned it is not logical to presume that teacher absenteeism has no relationship to student achievement (Ehrenberg et al., 1991).

Miller et al. (2007) stated "Many studies have found a negative relationship between teacher absences and student achievement (Bayard, 2003; Beavers, 1981; Boswell, 1993; Cantrell, 2003; Lewis, 1981, 1991; Manatt, 1987; Pitkoff, 1989; Smith, 1984; Summers & Raivetz, 1982; Womble, 2001; Woods, 1990)" (p.7). However, as noted by Miller et al. (2007), caution must be exercised in examining these studies because teacher absences may have been correlated with unmeasured levels of teacher skill and effort that could have introduced bias for omitted variables in the coefficient of absences. This premise is supported by a Pitkoff (1993) in which his study revealed that teachers who received low performance ratings missed a larger number of days than those who did not.

Miller et al. (2007) explain:

A high rate of absence may signal a teacher's lack of skill or effort when she is in school. If this were the dominant pattern, then the observed negative relationship between teacher

absence and student achievement would be an upwardly biased estimate of the causal

impact of teacher absence on student achievement. Thus, the research challenge is to

develop a strategy that permits unbiased estimation of the causal impact of teacher

absence on student achievement. (p. 7)

Therefore, considering this dilemma, it is not surprising that a review of literature for empirical

research revealed only a few domestic studies regarding the relationship between individual

teacher absences and individual student outcomes that accounted for the possibility of bias due to

omitted variables correlated with absences.

Woods and Montagno (1997) conducted a study to determine the impact of individual

teacher absences on individual student achievement. Specifically, the researchers examined if

there was a relationship between changes in reading scores for students moving from third to

fourth grade on the Iowa Test of Basic Skills and teacher absence behavior. The study involved a

total sample of 817 third grade students and 45 teachers from two school districts. Students and

teachers from Elkhart Community Schools in Elkhart, Indiana, numbered 685 with 34 teachers,

representative of nearly every third grade student and teacher. The second school district

included was the Campbell School District in Gillette, Wyoming, with 132 students and 11

teachers, representative of about 25 % of the third grade students and teachers from the school

district. The researchers also included the principal's rating of the teacher's performance as a

variable in order to account for the relationship between absences and performance and thereby

provide an unbiased estimation of the causal impact of a teacher's absence on student

achievement. The results showed that students' performance increased significantly from the fall

of their third grade year to the second administration of the test in the fall of their fourth grade

year ($p < 0.01$). The results revealed that that students whose teachers were absent four or less

days had a grade equivalency change of 1.0, students whose teachers were absent between 5 and

11 days had a grade equivalency change of 0.69, and students whose teachers were absent

between 11.5 and 29 days had a grade equivalency change of 0.79. As with the grade

equivalency scores, the teacher groups with four or fewer days absent had positive gains in

percentile ranking, while students of high absence teachers had negative changes in percentile

rankings. The study completed by Woods and Montagno (1997) supports the position that

teacher absenteeism had a negative effect on student achievement.

Two more recent studies regarding the relationship between teacher absenteeism and

student achievement with research designs that accounted for the possibility of bias due to

omitted variables correlated with absences were reviewed. Miller et al. (2007) studied the effects

of teacher absenteeism on the performance of fourth grade students on the Stanford Achievement

Tests (Series-9) of mathematics in a large metropolitan school district in the northern part of the

United States. It was a fairly large study, involving 80 elementary schools and 2,594 teachers

employed in at least one of the school years between 2002-2003 and 2004-2005.

A subset of this data from the fourth grade was used to study the impact of teacher

absences on student achievement. The sample included 8,631 students who were in the fourth

grade in the years studied. The dependent variable, student achievement in mathematics, was

based on scores from state sponsored end of course mathematics examinations. In their work,

Miller et al. (2007) recognized the potential bias in that rates of teacher absence may be

correlated with levels of teacher skill and effort. Therefore, their strategy for dealing with the

bias was to replace the time-invariant teacher skill and effort level with a teacher fixed effects

variable representing the year-to-year variation in absences for the same teacher. Their fixed

effects model found that 10 additional days of teacher absence reduced student achievement by

3.3% of a standard deviation in fourth grade mathematics. Moreover, the researchers contend, that when the 10 additional days of teachers absence is unplanned, student mathematics achievement is reduced by 10% of a standard deviation (Miller et al., 2007). In the context of heightened accountability due to the No Child Left Behind Act (NCLB), the researchers contend their findings are significant enough to deserve further policy investigation.

Clotfelter et al. (2007) made similar findings. The researchers studied the impact of teacher absenteeism on student achievement across the state of North Carolina for school years 1994-95 through 2003-04. Students in Grades 4 and 5 were matched with the classroom teachers who had taught them math and English. The researchers found that for every 10 absences, a student's score on the state math test decreased by 2.3 % of a standard deviation and decreased about 1% of a standard deviation for reading scores. Clotfelter et al. (2007) made the comparison that the 2.3% reduction in a standard deviation in a student's score on the state math test is akin to the reduction in achievement expected when a student has a brand new teacher instead of a teacher with two or three years of experience. In the model with the teacher fixed affect factor to account for the possibility of bias due to omitted variables correlated with absences, the results yielded a smaller, though statistically significant coefficient. The fixed effects models imply that for every 10 absences, a student's score on the state math test would reduce by 1.7% of a standard deviation in math achievement and 0.9% of a standard deviation for reading scores. Clotfelter et al. (2007) also found that schools in the poorest quartile had on average, almost one extra sick day per teacher than schools in the highest income quartile, further heightening of the inequity of these schools.

Predictors and causes of teacher absenteeism. Early on, research on the causes of employee absenteeism centered primarily on studying individual characteristics, such as gender,

age, or years of experience (Muchinsky, 1977; Steers & Rhodes, 1978). Since that time,

however, researchers have argued that employee absenteeism is not merely an individual, private

behavior. Researchers purport that group and organizational-level factors, such as organizational

culture, may have an impact on absence rates (Fitzgibbons, 1992; Nicholson & Johns, 1985;

Rentsch & Steel, 2003; Rhodes & Steers, 1990). Research reviewed on the factors causing

absenteeism is varied but can be categorized into four conceptual themes: organizational

characteristics, teacher characteristics, organizational policies, and culture.

   Organizational characteristics. Organizational characteristics of schools include the

conditions and structures under which the school operates, such as student enrollment numbers,

level of education (elementary, middle, or high school), socioeconomic status of students

enrolled, experience level of teaching workforce, student attendance rates, size of staff, and staff

leadership. As the literature reveals, these characteristics can impact the amount of leave that

teachers use each year.

   School's student enrollment. The size of a school's student enrollment appears to effect

teacher absence rates. Miller et al. (2007) found that a discretionary absence, defined as an

absence that teachers take in order to extend leisure time, increases as student enrollment

increases. Ehrenberg et al. (1991) similarly found that the average number of leave days taken

per year increases with school district size. Rosenblatt and Shirom (2006) found the same when

examining absence frequency (spells or incidents) rather than absence duration (days/time lost)

The researchers reasoned that absence frequency, rather than absence duration was a more valid

measure voluntary absenteeism, in that absence frequency generally indicates missing work for

reasons other than illness, and excludes duration measures which would be affected by chronic

or extended illness. Robenblatt and Shirom (2006) found that in comparing two teachers with the

same characteristics except for their school size, for every 100 students larger the school, the teacher will average 1.039 more absences.

Grade level of the school. Research has revealed that grade level of the school can have an effect on teacher absenteeism. High school teachers are absent less often than elementary or middle school teachers (Clotfelter et al., 2007; Speas, 2010, Tingle, Schoeneberger, Wang, & Algozzine, 2012; USDOE 2009). The evidence is mixed regarding teacher absences at elementary and middle schools. Some research shows that elementary teachers have more absences (Clotfelter et al., 2007; Miller et al., 2007; Speas, 2010; Scott & McClellan,1990; Rosenblatt & Shirom, 2006) and other studies showing the opposite (Tingle et al., 2012; USDOE, 2009). Clotfelter et al. (2007) suggest that research showing that elementary teachers have a higher amount of absences could be more of a reflection of the smaller size of elementary schools, in that, due to the smaller size, there are larger variances in average absence percentages from year to year. In synthesizing the literature reviewed, clearly grade level does affect teacher absenteeism and consistently, high school teachers have lower average absenteeism than middle or elementary teachers.

Socioeconomic status of students. The socio-economic status of students enrolled in a school is an additional factor that may impact teacher absenteeism (Pitkoff, 1993). According to the National Center for Education Statistics, Schools and Staffing 2003-04 Survey, teachers at schools with less than 24% of students eligible for free and reduced lunch were absent at an average rate of 5% or less, while teachers at schools serving higher percentages of free and reduced lunch students were absent 5.5% of the time. Similarly, Clotfelter et al. (2007) found that teachers employed in the schools in the quartile with poorest students used on average, almost one extra sick day per teacher than teachers employed in schools in the quartile with the

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highest income students. In addition schools with consistently high rates of teacher absence were much more likely to have a student population with high rates of free and reduced lunch (Clotfelter et al, 2007). Clotfelter et al. (2007) concluded that each 10 percentage point increase in a school's free and reduced lunch population was associated with an additional tenth of a day of absence by its teachers. In analyzing the 2009-2010 CRDC data set, Miller (2012), surmised that a school comprised of 90 % African American students has a 3.5 % higher teacher absence rate on average than a school with only 10 % African American students and a school with 90 % Hispanic students will have a teacher absence rate 3.25 % higher on average than a school with only 10 % Hispanic students. The National Council on Teacher Quality (2014) conducted a study of 40 urban school districts representing many of the largest metropolitan areas in the United States. The study examined teacher absenteeism as reported for the 2012-2013 school year. Seventy-five % of teachers in the study taught in high poverty schools (at least 60 % of the students qualified for free or reduced price lunch). In their study, the researchers categorized the schools in quintiles based on poverty rates in order to analyze how school poverty levels affected teacher attendance. Although the rates of absenteeism were the highest for teachers in the highest poverty quintile, it was not statistically significant. The difference in teacher attendance was less than one day between teachers in the highest and lowest poverty schools (NCTQ, 2014).

Size of the school staff. The size of the school staff has also been shown to have an effect on teacher absenteeism (Winkler, 1980). In a study of 57 elementary schools in California and Wisconsin, Winkler (1980) hypothesized that the larger the staff, the higher the rates of teacher absenteeism due to decreased efficiency in communications and group cohesiveness. The research revealed that a staff of twenty teachers would have .92 more short-term absences than a staff of ten, and a staff of twenty would have .34 more Monday-Friday absences on average than

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a staff of ten. Winkler (1980) cautioned that the impact of staff size on absenteeism is not linear for short term absences. According to the regression, an increase of one in staff size in small schools (20 or less staff members) would increase average short-term absences by .092, while an increase of one in staff size in large schools (more than 20 staff members) would increase average short-term absences by only .049. In this study, there exists a threshold effect with respect to staff size (Winkler, 1980). Similarly, Bridges & Hallinon (1978) found in their correlational study that absenteeism was positively correlated with staff size.

Student attendance rates. Student attendance rates appear to be related to teacher attendance rates. Miller (2008) found that discretionary teacher absences were higher in schools with higher rates of student absences. Similarly, Ehrenberg et al. (1991) and Pitkoff (1993) found that higher student absenteeism is associated with higher teacher absenteeism. Pitkoff (1993) also found that higher teacher absence is associated with higher student dropout rates.

Teacher characteristics. Teacher characteristics that may have an impact on absence rates include external factors independent of the school or district such as teacher educational background, years of teaching experience, gender, commuting distance for the teacher, and whether or not the teacher has children. As the literature reveals, these characteristics may impact the amount of leave that teachers use each year.

Educational background. Cloterfelter et al. (2007) found that teachers that had master's degrees, held National Board certification, had higher state examination scores, or had graduated from a very competitive college had fewer absences. Garcia (1987) found in studying public city employees that employees with only a high school diploma tended to use considerably more sick-time, especially for long term illnesses. Rogers and Herting (1993) had similar findings with federal public employees in that the less educated employees used more sick leave.

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Years of experience. Research supports a pattern of teacher absences linked with years of teaching experience (Clotfelter et al., 2007; Miller et al., 2007; Speas, 2010). Sick and annual/vacation leave often are earned at higher rates as teacher experience increases and accumulate with years of experience. Therefore, it expected that more experienced teachers will have more absences due to having more leave (Clotfelter et al., 2007). Patterns found in research indicate that probationary teachers, those with the least amount of teaching experience and potentially earning less leave time than others, average the fewest amount of absences (Clotfelter et al., 2007; Miller et al., 2007; Speas, 2010). Teachers who successfully attain tenure/continuing contract status have higher absences until they reach mid-career, followed by incremental decreases over time (Clotfelter et al., 2007; Ehrenberg et al. 1991; Miller et al., 2007; Speas, 2010). Speas (2010) noted that perhaps one cause of the reduced use of leave as a teacher approaches retirement, is that many districts allow accumulated leave to convert to a pension credit, and/or allow unused leave to be paid in cash to the retiring employee. Therefore the teachers don't use at much time to accumulate as much benefit as possible upon retirement.

Garcia (1987) found in studying public city employees that employees with 21 or more years of service not only recorded significantly higher zero absences (meaning they had no absences) but also generally used less sick-time than employees with less tenure. The data further indicate that employees who had been employed by the city from 1 to 15 years were responsible for the highest usage of sick time benefits. Conversely, Rogers and Herting (1993) studying public federal employees on a Navy Ship Weapon Systems Engineering Station in California, found that as age and years of experience increased, sick leave usage also increased.

Gender. In most studies reviewed in the literature, females missed more time than males, both in terms of absence frequency and duration or number of days. (Clotfelter et al., 2007;

Garcia, 1987; Jacobson, 1989; Kroesser, Meckley, & Ranson, 1991; Miller, 2008; Miller, 2012; NCTQ, 2014; Rogers & Herting,1993; Scott & McClellan, 1990; Scott & Wimbush, 1990; Tingle et al., 2012). However two international studies offered conflicting evidence. One study found that male teachers in India were absent more often than women (Chaudhury, Hammer, Kremer, Muralidharan, & Rogers, 2006) and another found no association between absenteeism and gender (Rosenblatt & Shirom, 2006). Scott & McClellan (1990) found that while the difference in absence incidence rates amongst male and female teachers was not statistically significant, there was a significant difference in the duration, or total number of days missed, between men and women. The mean difference in the number of days taken by women was 6.92 while men took an average of 4.83 days.

There is research to suggest that the differences in absence rates between males and females could be related to biological differences and family role expectations between males and females. Scott & McClellan (1990) found that the most significant difference in occurrence of teacher absence based on gender occurred between the ages of 21 and 39, the childbearing years for women. Similarly, Garcia (1987) found that the greatest use of sick time for all public employees in his study was between the ages of 31-40. Klein's (1986) research showed that past age 55, absence rates for men and women were not significantly different. *Children.* Klein's (1986) study revealed that women who had children under six and women who maintained families alone had the highest absence rates. Scott & McClellan (1990) found a positive correlation of the number of dependents and absenteeism (both number of occurrences and duration) amongst male and female teachers. Moreover, they also stated that 87% of the female teachers in the study reported that when children or elderly people in the home were sick and

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other care could not be found, they stayed home to care for them whereas 85% of the male

teachers in the study reported their spouse stayed home.

Conversely, Garcia (1987) in his study of public city employees found that although there

was no distinct relationship between sick-time usage and whether or not employees had children,

employees with no children recorded fewer zero absences than employees with children, as well

as slightly higher usage overall.

Distance to work. Research findings support the logical premise that the further a teacher

lives from their school, the more they are absent (Scott & McClellan, 1990; Scott & Wimbush,

1991; Winkler, 1980). Furthermore, in studying public city employees, Garcia (1987) found that

although not statistically significant, employees who traveled over 20 miles one way to work,

tended to use more sick-time than individuals who traveled shorter distances.

Job satisfaction and related variables. Steers and Rhodes (1978) originally developed a

model on absenteeism that is frequently cited in literature about absenteeism. The model states

that the capability of employees or workers to report to work is largely influenced by their

motivation and their ability to attend (Steers and Rhodes, 1978). Originally, Steers and Rhodes

(1978) found that job satisfaction was the single most important factor affecting attendance

motivation. Rhodes and Steer (1990) have since modified the model and grouped job satisfaction

with other "employee attitudes, values, and goals." These combined with organizational

practices and absence culture, influence the "attendance motivation" (Rhodes and Steer, 1990).

Three studies reviewed used the Cornell Job Description Index (JDI) to measure job

satisfaction. (Garcia, 1987; Scott & McClellan, 1990; Scott & Wimbush, 1991). The JDI has six

separate scales and measures job satisfaction in the areas of pay, promotion, supervision, type of

work and the people on the job and satisfaction toward the job in general (Scott & Wimbush, 1991).

Garcia (1987), in their study of absenteeism amongst public employees in a large western city, found that city employees that scored above the 50th percentile for job satisfaction on the JDI did have a statistically significant correlation (although weak) with lower absenteeism. In addition, Garcia (1987) cautioned that the sample was from employees that agreed to participate, and those not participating used an average of 48 hours more sick time than those participating.

Similarly in their study of gender differences in the absence behaviors of teachers, Scott and McClellan (1990) also used the JDI and also included measures of job involvement, role conflict (between work, spouse, children, and/or community), and centrality of life (to determine the principal motivation for life, work or nonwork) in their study. For both genders, they found that the more positive an employee was in regards to work attitude, relationships with co-workers and supervisors, attitudes about promotions and overall general attitude, the fewer absence occurrences the employee had. In addition, they found the more involved a male teacher was in his job, the less absences he would have. For females, the less a woman was involved with her job and the fewer hours she wanted to work, the higher the number of occurrences of absences (Scott & McClellan, 1990).

Scott and Wimbush (1990) also included measures of job involvement, role conflict and centrality of life in their study coupled with the JDI. They had similar findings in that teachers who were generally more satisfied with their jobs had fewer absences and the higher degree of job involvement, the fewer the absences.

Kroesser, Meckley, and Ranson (1991) found in their study of public employees in the West Virginia Department of Education that employees with more job autonomy used less sick

leave and that as the number of supervisors an employee had increased, so did the use of sick leave. An employee's perceived stress levels had no relationship with the use of sick leave.

Organizational Policies. Organizational policies outline the rules and procedures which govern teacher contracts. The relationship of existing personnel policies, such as sick leave use, sick leave banks and other income protection plans, absence reporting procedures, and incentive programs for use of sick leave, and buyback programs of unused sick leave, has been the focus of research related to teacher absenteeism.

Number of leave days. Ehrenberg et al. (1991) considered how leave provisions in teacher contracts affected teacher absences. A total of 419 school districts-nearly 60 % of the school districts in New York State-participated in the study. Results revealed that the larger the number of leave days permitted by the school district, the higher the number of leave days that were taken. Moreover Ehrenberg et al. (1991) also found that in districts with unlimited accumulation of sick leave experience a lower usage of leave. Those school districts that provided for an explicit number of days for professional leave, conferences, and annual visitation days had a lower usage of the actual leave days provided. (Ehrenberg et al., 1991). Pitkoff (1993) noted that when teachers with historically low absence rates approached the maximum accumulation of leave, absence rates increased which could be reflective of a "use it or lose it" mentality.

Buyback of leave days. Ehrenberg et al. (1991) showed that the existence of buyback provisions of unused sick leave days was shown to lower the annual usage of leave days taken by staff personnel. In addition Ehrenberg et al. (1991) found that the greater proportion of teachers older than 55, the lower the usage of sick leave. The researchers suggested this finding could be attributed to the fact that older teachers would be receiving a payoff for unused sick leave in the

near future and concluded that school districts that allow for unlimited accumulation of leave had

lower usage of sick leave.

Attainment of tenure. Both Ehrenburg et al. (1991) and Clotfelter et al. (2007) found that

tenured teachers had higher usage of sick leave than non-tenured or novice teachers. Miller et al.

(2007) had parallel findings in that tenure, or continuing contract status, was a significant

predictor of teacher absences. Teachers that had obtained continuing contract or tenure took 3.7

more days of discretionary absence than teachers without such status.

Income protection plans. Winkler (1980) examined the effect of sick leave policies on

short-term absenteeism for public school teachers in California and Wisconsin. Controlling for

personal and job characteristics, the researcher found that the existence of income protection

plans, which provide insurance against the loss of pay once accumulated leave is exhausted,

resulted in higher short-term absenteeism. A district having an average of 2.80 absences per

teacher could expect to see an average of 2.87 per teacher if the percentage of teachers covered

by the income protection plan increased by 10 % (Winkler, 1980). Similarly, Ehrenberg et al.

(1991) also found that in their study of over 700 school districts in New York, teachers in

districts with income protection plans used on average 1 day more of sick leave each year.

Reporting requirements. Two reporting requirements could lead to lower absenteeism,

having to provide proof of illness and the teacher having to report the absence directly to the

school principal. A district that averages 1.22 days of teacher absence associated with a weekend

(Monday or Friday absences) may reduce that number to 20 % by requiring proof of illness

whom the absence is reported (Farrell & Stamm, 1988; Hubbell, 2008; Winkler, 1980). A district

with an average of 2.8 days of absence per teacher could reduce absenteeism by nearly 25% by

requiring the teacher to report the absenteeism directly to the principal (Winkler, 1980). In

districts with automated absence reporting and substitute procurement systems, research shows that teacher absences increase (Kronholz, 2013).

Financial incentives and penalties. Some districts have experimented with providing financial incentives to teachers for excellent attendance. Banerjee and Duflo (2006) and Jacobson (1989) found that incentive pay for teacher attendance resulted in fewer absences. In a small-scale research investigation (318 teachers) Jacobsen (1989) documented a significant decrease in average number of days absent, from 7.21 to 5.34 days, after the district implemented a monetary incentive plan to reduce the rate of teacher absence. Similar results were achieved by Freeman and Brant (1987) through the implementation of an incentive plan. In one year, the average staff absence dropped from 7.6 days per employee to 6.4 days per employee and $156,000 was saved by reducing the number of substitutes needed.

While not in an educational setting, Conley and Baggett (1990) reported on the impacts of a sick leave incentive program adopted in November 1982 for county government employees in DeKalb County, Georgia. This program provided an annual monetary award, paid near December 25 each year, equal to 25 % of an employee's unused sick leave over the past 12 months for those employees with a minimum accrued sick leave balance of at least 30 days. Over the five year period studied, from 1983 to 1987, employees used an average of 5.48 hours less sick leave per year. In addition, employees with three years of service or less used significantly less sick leave than employees with more than 3 years of service which, as Conley and Baggett (1990) state, could be due to new employees' efforts to accrue the minimum 30 day sick leave balance required for consideration of the annual monetary award.

Similarly, Rickert, Duncan, and Ginter (1995) found in their research that employees of the Jefferson County Health Department in Alabama used less sick leave as a result of the

implementation of an incentive plan that compensated employees annually for a portion of their

unused sick leave.

State and federal compliance. District policies provide the parameters for all schools in a

district outlining the sick and personal leave allocation. Therefore it is not surprising that the

largest amount of variation in teacher absence rates is between districts but within states (Miller,

2012). In crafting policies, it is important to consider compliance with the Family and Medical

Leave Act and with the regulations governing leave plans for teachers, if any, defined in the laws

of the state.

Contradictory evidence: As noted earlier, there is evidence that teacher absence behavior

can be influenced through policy, both positively and negatively. Aforementioned examples

include: short duration of absences suggesting the teacher was not ill and therefore avoids the

required medical certification for longer absences as outlined in policy; evidence that the amount

of leave taken is positively associated with the allocation of leave from the district; decreasing

rates of absence when an incentive plan for improved attendance is implemented; and decreasing

rates of absence when teachers are required to report absences by phone to their principal, rather

than by reporting to a centralized online system or school based messaging system.

One study in the literature reveals contradictory evidence as to the effectiveness of policy

in reducing teacher absences. The National Council on Teacher Quality (2014) reviewed 40 large

urban school districts policies to determine the impact on reducing teacher absence, and

researchers concluded, "Districts with formal policies in place to discourage teacher absenteeism

did not appear to have better attendance rates than those without such policies, suggesting the

most common policies are not particularly effective" (p.1). These districts had a variety of

policies in place including: allowance for carry-over of personal leave from year to year versus a "use it or lose it" benefit; restricting leave on particular days and times of the year (before and after holidays, during state testing or professional development days, during first and last week of school year, etc); requiring medical certification after absence depending on the length of absence; including teacher attendance as a factor in the district's evaluation framework; and rewarding teachers with additional personal days for good attendance (NCTQ, 2014). However, a preponderance of the research does support that teacher absence behavior appears to be related to policies and responds to incentives. Intentional and careful crafting of these polices may be an effective way to reduce teacher absences

   Culture. Culture –the norms, traditions, beliefs, protocols, mindsets, attitudes, formal and informal that guide behavior in on organization is sometimes difficult to pin down. Miller (2008) notes, "A school's absence culture comprises the norms dealing specifically with absence. It is difficult to study its effects since absence culture is largely an informal, undocumented phenomenon" (p.6).

   The National Council on Teacher Quality (2014) noted:

   Investing in a system that keeps effective teachers in the classroom should be a priority for school leaders and policymakers. A key part of that effort is creating a school climate in which consistent teacher attendance is the norm. That said, teachers have demanding, stressful jobs that often include long hours outside the normal school day. Their job requires that they always be 'on' regardless of how well they feel. For attendance policies to be effective, they must be flexible for a job that is unique in many ways. (p. 2)

These findings are supported by the study of the CRDC. As Miller (2012) notes, a third of the variation in teacher absence data happens within districts, between schools, suggesting that school culture may play a significant part in reducing teacher absences.

Farrell and Stamm (1988) examined absence culture through a meta-analysis study involving a quantitative review of employee absence correlates. Correlates were categorized as psychological, demographic, work environment, or organizational wide factors. They found that work environment and organizational wide factors were better predictors of employee absences than demographics or psychological factors. They found that control policies, both positive (commendations or bonus pay) and negative (verbal warnings, written notices, and dismissals), are strong absence correlates (Farrell & Stamm, 1988).

Rhodes and Steers (1990) diagnostic model for employee attendance includes absence culture as one of three primary influences on attendance motivation. The model also illustrates that organizational practices, and employees' attitudes, goals and values do influence the absence culture, which in turn impacts the attendance motivation and actual attendance. Rhodes and Steers (1990), stated that "absenteeism can be symbolic of deeper feelings of hostility or perceptions of inequitable treatment in the job situation."

Imants and Van Zoelen (1995) studied the relationship of school climate, teacher efficacy, and teacher attendance in primary schools in the Netherlands. They found that collegial relations and leadership were positively related to high absenteeism and the directive leadership is positive related to low absenteeism. They surmised that more directive type of leadership actually reduces teacher stress resulting in lower absenteeism (Imants and Van Zoelen, 1995). Another study, Dworkin, Haney, Dworkin, and Telschow (1990), of urban school teachers examined the influence supportive coworkers and supportive principals had on mitigating

teachers reporting stress related illnesses. Dworkin et al. (1990) found that the supportive coworkers had no influence, however, teachers with supportive principals were less likely to report stress related illnesses.

One study (Martocchio, 1994) of clerical employees from five locations of a Fortune 500 company examined the impact of absence culture on individual absence. Martocchio (1994) found that group level beliefs regarding absenteeism were predictive of individual employee absenteeism, measured by paid absences. However, individual employee beliefs regarding absenteeism were only predictive of the number of unpaid absences.

Theoretical Framework. As noted by Miller et al., 2007, three premises explain why school districts might be able to make inroads into reducing teacher absences: (1) that a substantial amount of teachers' absences are discretionary, (2) that teachers' absences have a significant impact on productivity, and (3) that policy changes could reduce teacher absences. Scholarly research on this topic leads to conclusions based on the research that inform policy and thereby may influence teacher absenteeism. In examining each of these issues, empirical data was reviewed from various studies and points of contention were explored.

A substantial amount of teachers' absences is discretionary. The majority of short-term leave taken is sick leave. In looking at the patterns of teacher absence, there is evidence that some teacher absences are discretionary. First, teachers are most frequently absent on Fridays, followed closely by Mondays (Miller, 2008; Miller et al., 2007). Researchers found that teachers were absent more frequently on days before and after non-instructional days (Miller, 2008; Miller et al., 2007; Winkler, 1980). The timing of these absences could suggest that employees are taking a long weekend rather than suffering from illnesses. Additonally, teacher absences tend to be of a duration just shy of a requiring medical certification (Clotfelter et al., 2007).

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Medical care is not necessary in the absence of illness. Scott and Wimbush (1991) collected data for both short term and long term absences in studying how job satisfaction impacted attendance. They stated, "It is believed that most single-day or short-term absences are voluntary, or related to discretionary reasons for absence" (Scott & Wimbush, 1991, p. 512). Imants and Van Zoelan (1995) in studying teacher absenteeism in the Netherlands, suggest that under 20% of all sickness absence was attributable to "strictly medical grounds" (p. 78), while more than 50% is attributable to psychological factors and job related conditions.

Further evidence supports the claim that teacher absences are discretionary and can be influenced by school and district policies. In a study of 40 of the largest school districts in the nation, researchers found that the amount of leave taken is positively associated with the allocation of leave from the district (NCTQ, 2014). In addition, Jacobson (1989) noted that perfect attendance rose from 8 % to 34 % and the average number of days a teacher missed dropped from 7.21 days to 5.34 days during the first year of an attendance incentive plan. Clotfelter et al. (2007) found that teachers with more experience were absent more than those with less experience and theorized that was due to unlimited, accumulated sick leave and vacation leave that had been accrued from years of experience. Another finding that supports the premise that absences are discretionary is lower absence rates that result when districts implement absence control measures requiring teachers to report absences by phone to their principal, rather than to a centralized reporting center or school based messaging system (Farrell & Stamm, 1988; Hubbell, 2008;Winkler, 1980).

Teachers' absences have a significant impact on productivity. There is much research concluding that the educational impacts of teacher absence on student achievement is significant (Clotfelter et al., 2007; Ehrenberg et al., 1991; Miller et al., 2007; Woods & Montagno, 1997). In

this high stakes accountability era, the cumulative effects of teacher absence presents additional challenges that must be overcome. Schools that are not meeting state and federal targets risk losing accreditation. More importantly, the students are short changed when the teacher is not present. The quality of instruction provided by substitute teachers is typically poor. Classes often just review material or worse yet, engage in busy work weakly related to the content. Many teachers have "emergency plans" that are left for subs to follow on days of unanticipated absence. Substitute teachers are often unfamiliar with classroom and school routines and the absence of the teacher disrupts relationships that support learning (Kronholz, 2013).

Substitute teachers are often less qualified that certified teachers and therefore lack the training and knowledge to provide adequate instruction (Kronholz, 2013; Miller, 2008). Requirements for substitute teaching vary by state. Over half the states in the country either have no regulations for substitute teachers or require only a high school diploma (National Education Association [NEA], n.d.). Thirty-seven states do not require a bachelor's degree and only one state, North Dakota, requires the same credentials for substitutes as for regular teachers (Miller, 2008). Even the No Child Left Behind Act of 2001 specifically exempts substitutes not serving in a long term capacity (more than 20 days) from licensure requirements. Despite such minimal requirements for applicants many districts still report a critical shortage of qualified substitute teacher applicants which could result in dispersing students in the absent teacher's classroom to other classrooms further disrupting instruction (NEA, n.d).

Policy changes could reduce rates of absence among teachers. The research findings support the notion that organizational policies, such as parameters on sick leave use and accruals, buyback options, financial incentives and penalties, sick leave banks and other income protection plans, absence reporting procedures, incentive programs for use of sick leave, and buyback

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programs of unused sick leave, have a relationship to teacher absenteeism (Banerjee & Duflo, 2006; Clotfelter et al., 2007; Ehrenberg et al.,1991; Jacobson, 1989; Pitkoff, 1993, Winkler, 1980). Further research could be used to inform policy.

     Points of contention. Upon closer examination of the data, Miller (2008) noted that the large urban school district data studied included days missed due to "professional leave" rather than pure absences. The same is true of the data set including 40 of the country's largest urban school districts (NCTQ, 2014). Including these data injects "noise" in the findings, especially when doing comparisons to other absentee datasets where only sick leave and personal leave are included. For these two datasets, the teacher absence rate on any given day was lower than purported. For professional leave, while a teacher may be absent from the classroom, she is not absent from work just because she attended a conference or workshop. These data issues make it difficult to compare the national teacher absence rate of 5.3 % to national rate of absence for full time wage and salaried American workers of 2.9 % (Bureau of Labor Statistics, 2013). This makes the comparison less valid, yet it is made throughout the literature and in newspapers and magazines widely read by the general public.

     The studies reviewed emphasized the high average rates of teacher absence. Upon closer look, the evidence shows a wide variance in usage of sick leave time, with a core group of teachers with extremely high rates of absence that affects the overall average. In North Carolina, the 10 % of teachers that missed the most time accounted for one third of all absences (Clotfelter et al., 2007). In the study of the 40 largest city school districts, sixteen % of all the teachers were "chronically absent," having 18 days or more in the school year, which equates to missing one day every two weeks (NCTQ, 2014). The total time missed by these "chronically absent" teachers accounted for more than a third of all time missed. In that study, 40% of the teachers

missed between 4 and 10 days (NCTQ, 2014). Rogers and Herting (1993) found in their study of public federal employees that there was a significant correlation between individual absence data in the sample years and those employees' usage over their civil service career. Those employees with high usage of sick leave had always been high users of sick leave and vice versa. (Rogers & Herting, 1993) These data may support the notion that the vast majority of teachers are not absent excessively.

Certain traits of the teachers absent most often may support the legitimacy and non-discretionary use of leave. The teaching profession employs a disproportionate percentage of females. In many studies reviewed in the literature, females missed more time (Clotfelter, et al. 2007; Jacobson, 1989; Miller, 2008; Miller, 2012; NCTQ, 2014; Tingle, et al., 2012). These findings may be the result of lingering effects of historical gender roles in the United States which still expect women to serve as the primary caretakers and take off more time than men for the birth of a child or care of children. If so, then the pattern of females missing more time than males could be evidence that their absences are likely to be legitimate and non-discretionary as they take off time to care for dependent children and for the birth of a child. Additionally, the average female teacher has 2.1 children, whereas women in other occupations have 1.7 children (Podursky, 2003). Furthermore, since a lower percentage of females are employed as teachers in high schools, the fact that high schools have the lowest teacher absenteeism may have little to do with the specifics of being a high school teacher and simply may be because a lower percentage of females are employed as teachers.

Teachers with the most or least experience tend to be absent less than other teachers. It could be that those teachers in the middle experience range have young families and miss more time to care for them. Clotfelter, et al. (2007) found that over the 10 years of absence data

studied in North Carolina, teachers with four to five years of experience used 29 % more sick

and personal days than teachers with two to three years of experience.

   Interest in this Policy Issue from many Perspectives. Chronically absent teachers are a

big problem for all levels. Using the CRDC data on teacher absences, this study examinded data

for the Commonwealth of Virginia and district policies governing teachers' leave privileges to

determine if there are valid predictors of teacher absences. Based on the findings, local policy

makers may want to consider various policy changes to shape teacher behavior. However, this

type of policy intervention is not without risk. A school district's desire to reduce teacher

absence can lead to policy changes that may disrupt a healthy "absence culture" at a particular

school in the district with already low teacher absence rates. A school district desires to have

consistent quality instruction and reduced substitute teacher costs. Building administrators desire

a culture of trust and respect, which are just as important to efficient operations as low teacher

absence. If a school district changes a policy, for instance requiring medical certification for an

absence beyond two days, this policy action might make teachers feel disrespected and not

trusted and act out in ways that could lead to increased absenteeism.

   In examining the reasons that individuals choose teaching as a career, studies reveal that

factors such as having time with family and job stability are very important to the choice of a

teaching career (Farkas, Johnson, & Foleno, 2000; Milanowski, 2003; Reif & Warring, 2002).

Generous leave policies, shorter days, and a schedule that matches the children's school schedule

yield working conditions that allow for more time to be spent with family. If the number of leave

days is reduced or accountability becomes burdensome, teaching may become a less desirable

career. Teachers have seen their benefits erode over time, through pension reform, soaring

healthcare costs, all the while with increased stress and accountability for student performance.

That said, we owe it to our students to make sure teachers consistently show up to teach. School administrators, parents, district administrators, and even students all are keenly interested in doing whatever it takes for students to have the best chance of succeeding. Though research, study, and dialogue with the district, ideas for action emerge.

It is the hope that the findings will inform policy related to the predictors of teacher absence prompting local policy makers to consider various policy changes to shape teacher behavior. Teacher absence is an issue clearly worth our time and study. As stated in the National Council on Teacher Quality Study (2014), "We may be overlooking one of the most basic, solvable and cost effective reasons why schools may fail to make educational progress" (p.14).

Chapter 3: Research Methods

Prior research regarding teacher absenteeism yielded various conclusions. Some researchers have focused on the effects on student achievement; some have focused on the monetary costs of teacher absenteeism and the effects of incentive programs; while others have examined the relationship of teacher characteristics to teacher absenteeism. The research regarding the effect of policy on teacher absenteeism is fairly scarce and research examining teacher absenteeism from a whole state perspective is extremely limited.

Purpose and Research Questions

The purpose of this mixed methods study was to examine selected school and policy data to determine if patterns exist among teacher absences in public school districts in the Commonwealth of Virginia and the relationship between teacher absences and school and policy characteristics. The data for school variables were extracted from the Office for Civil Rights 2011-2012 and 2013-2014 CRDC and National Center for Educational Statistics for the respective school years. The policy variables were gleaned from Virginia district leave policies. Specifically, this study aimed to answer the following research questions:

1. What is the relationship between certain school district policy provisions (personal leave amount granted annually, personal leave maximum accumulation amount, personal leave expiration, maximum accumulation of sick leave, total days of leave granted annually, smallest increment for use of sick leave, income protection plan exists, monetary value of sick leave day) and teacher absenteeism?

2. What is the relationship between certain school characteristics (Title 1 School, grade level of school, percentage of teachers with less than two years' experience, size of

teaching workforce, free and reduced lunch percentage, size of student enrollment,

student absenteeism, and pupil/teacher ratio) and teacher absenteeism?

Research Design

This mixed method study involved both secondary and primary data analysis. Barrett

(2006) differentiates secondary data from primary data in that secondary data does not involve

the user in the data collection effort. The use of secondary data analysis typically is more

efficient and cost effective and allows for a larger sample size. Moreover, secondary data sets are

often coded so that that the identification of any single individual is not possible, thereby

exempting the researcher from obtaining the subject's informed consent. However, the

researcher is still required to submit study protocols to the Institutional Review Board in order to

guarantee the protection of human subjects (Barrett, 2006).

According to Barrett (2006), there are important considerations for the use of secondary

data. For example, the researcher must establish that the data set contains the variables that are

necessary to answer the research questions. Further considerations should include the

populations from which the data was collected, the manner of collection, the accessibility of the

data, the necessary documentation of the authenticity of the data, the structure of the data file,

and the computing capacity to work with the data set (Barrett, 2006).

For this study, the secondary data analysis involved teacher and school and district data

for public school districts in the Commonwealth of Virginia included in United States

Department of Education Office for Civil Rights 2011-2012 and 2013-2014 CRDC. The data set

contained the majority of the information (Title 1 School, grade level of school, percentage of

teachers with less than two years' experience, size of student enrollment, student absenteeism,

size of teaching workforce) to answer the second research question: What is the relationship

between certain school characteristics and teacher absenteeism? The remaining two school characteristics being studied (percentage of students receiving free or reduced lunch, and pupil/teacher ratio) were downloaded for the respective years from the National Center for Educational Statistics. In addition to the aforementioned school characteristic data, the CRDC dataset also contained the number of full-time-equivalent (FTE) teachers that were absent greater than 10 days in a school year. The CRDC provides the following data definition for "absent":

> A teacher is absent if he or she is not in attendance on a day in the regular school year when the teacher would otherwise be expected to be teaching students in an assigned class. This includes both days taken for sick leave and days taken for personal leave. Personal leave includes voluntary absences for reasons other than sick leave.   Do not include administratively approved leave for professional development, field trips or other off-campus activities with students. (p.1)

The number of teachers absent more than 10 days in a school year was used to calculate the dependent variable, chronically absent teachers, which was the percentage of teachers that missed more than 10 days in a school year. This study used multiple regression analysis to measure the relationships of the school predictive variables to the dependent variable of chronically absent teachers.

In order to determine the policy variables for this study, a content analysis, yielding primary data, of the leave policies of the 132 school districts in Virginia was conducted. Content analysis is a systematic, replicable technique for making valid inferences and condensing many words of text into content categories based on a set of procedures (Weber, 1990). Content analysis is a powerful data reduction technique when used correctly. One major advantage is that it is very unobtrusive. Therefore, in this case, the authors of the various polices had no awareness

of the policies being analyzed, yielding minimal chance that the act of measuring will impact the data (Weber, 1990).

This content analysis generated categorical and continuous data for the policy variables, to which the power of statistical analysis was applied. This study used multiple regression analysis to measure the relationships of the policy predictive variables and the dependent variable of chronically absent teachers.

Population

The population for this study included all public schools in the state of Virginia that reported in the 2011-2012 and 2013-2014 Civil Rights Data Collection (CRDC) respectively, and were coded to one of the 132 public school districts in Virginia. The types of schools included traditional public schools (preschool through 12th grade), alternative schools, career and technical education schools, and charter schools. There were 1,931 schools and 132 public school districts included in the study in the 2011-2012 dataset and 1,912 schools and 132 public school district included in the study in the 2013-2014 dataset.

Procedures

This section covers the procedures that were employed in this study. The section discusses the procedures that were used for data collection and data analysis. Approval to conduct the study was sought from the Virginia Tech Institutional Review Board prior to conducting the study. The Institutional Review Board concluded that, "The data collected is about the school's attendance policy, only, which is not about individual humans. Therefore, this does not fall under the purview of the IRB and the IRB does not need to review or approve this application."

Data Collection Procedures. The 2011-2012 and 2013-2014 CRDC datasets for the state of Virginia were extracted from a DVD provided upon request from the U.S. Department of Education's Office for Civil Rights (OCR). The datasets did not contain individual teacher data. The datasets contained the following variables: Title 1 school, grades included in the school, type of school, number of teachers in their first year of teaching, number of teachers in their second year of teaching, size of student enrollment, and size of teaching workforce. Only the dataset for 2013-2014 contained data on students that were chronically absent. For the dependent variable, the percentage of full time teachers that have missed more than 10 days was computed for each school for each academic year by dividing the number of teachers that missed more than 10 days in a school year by the total number of teachers for each school. In addition, the percentage of teachers with less than two years' experience was computed for each academic year at each school. The percentage of students that were chronically absent (in the 2013-2014 dataset only) was computed for each school by dividing the number of students that have missed more than 15 days in a school year by student enrollment for each school. Based on the grades in each school each school was categorized as follows: Alternative, Combined (contained grades K-12), Elementary (contained grades PreK through 6), Elementary/Middle (contained grades PreK-8), Middle (contained grades 6-9), Middle/High (contained grades 7-12), High (contained grades 8-12), Preschool, and Special Education Centers. The remaining two school characteristics being studied (percentage of students receiving free or reduced lunch, and pupil/teacher ratio) were downloaded for the respective years from the National Center for Educational Statistics. Based on the common school number field, the data was joined into one Excel spreadsheet for each school year.

Leave policies for the 132 public school districts in Virginia were compiled. District leave policies are available on the Internet for most school districts for public viewing. District leave policies also are subject to the Virginia Freedom of Information Act (FOIA). For those districts whose policies were not readily available, an email request for the relevant policies was made. For any policy variables not specified clearly in policy language, a clarifying standardized email (Appendix A) was sent to the human resource contact listed in the Virginia Public School Division Staff directory maintained online by the Virginia Department of Education.

A content analysis examining each district's leave policies was conducted. Data was categorized and recorded as shown in Table 1.

Table 1: Content Analysis Categories, Definitions, and Coding Rules

Category	Definition	Coding Rules
Personal leave amount granted annually	The total number of personal leave days granted annually to full time teachers (200 day contract) to be taken without any penalty.	Record the number of personal leave days granted annually to full time teachers.
Personal leave maximum accumulation amount	The maximum accumulation for personal leave that can be used in one school year.	Record the personal leave accumulation maximum amount.
Personal leave expiration	When the maximum accumulation for personal leave is reached, the excess leave expires.	1 if personal leave will expire. 0 if personal leave will roll to sick leave or be paid.
Maximum accumulation amount of sick leave	Policy provision limiting the amount of sick leave that can be accumulated.	1 if there is a maximum on the amount of leave that can be accumulated. 0 if there is no maximum on the amount of leave that can be accumulated.
Maximum sick leave accumulation amount	The maximum number of sick leave days that can be accumulated.	Record the maximum number of sick leave days that can be accumulated.

Category	Definition	Coding Rules
Total days of sick leave granted annually	The total number of sick leave days granted annually to full time teachers (200 day contract).	Record the number of sick leave days granted annually to full time teachers
Total days of leave granted annually	Sum of personal and sick leave granted annually to full time teachers (200 day contract).	Record the sum of the personal and sick leave days granted annually to full time teachers
Smallest increment for use of sick leave	Smallest increment for use of sick leave for teachers is whole or half days.	1 if sick leave must be used in whole or half day increments only. 0 if sick leave can be used in less than half day increments.
Income protection plans	Short term disability benefits such as separate STD policy or sick leave bank are provided to full time teachers at no cost.	1 if income protection plans exist. 0 if income protection plans do not exist.
Monetary value of sick leave day upon retirement.	Monetary value of a sick day that is paid upon retirement for accumulated sick leave.	Record the value of each day of accumulated sick leave.
Maximum amount of sick leave payout	Maximum monetary payout of accumulated sick leave.	Record the maximum amount of sick leave payout (if any)

Policy variables were recorded for each district on a data collection sheet (Appendix B) and then the data from each sheet were transferred to an Excel spreadsheet. After examining the data in aggregate, some of the data were not considered for inclusion in the regression studies. The maximum sick leave accumulation amount was not included because it was completely missing from a large number of districts that lacked that particular policy provision. Total days of sick leave granted annually was not included as some districts combine personal leave into the sick leave granted annually. Instead, a field with the sum of the personal and sick leave granted annually was used. Finally, the maximum amount of sick leave payout was dependent, for many districts without a cap on the maximum amount or days to be paid, on the number of days a

particular teacher has accumulated. Therefore, these data were not included in the regression studies.

In regards to the monetary value of a sick leave day that is paid to a teacher upon retirement, it was found that districts calculated this amount different ways. Some districts use the substitute teacher rate per day, some use a flat rate, and some use the teacher's per diem rate. For the teacher per diem rate, a calculated daily rate was used. This calculation was based on the average pay for a teacher with 30 years of experience as reported in the Miller & Kozlowski (2016) report on Virginia's teacher pay. The amount was then adjusted for each year based on the Virginia Department of Education Teacher Salary Survey annual report in which the average percentage change in teacher pay from one fiscal year to the next was reported. The adjusted amount, $57,000, is an average of the salary a 30 year teacher in Virginia would have received between school years 2011-2012 and 2013-2014. The daily rate used, based on a 200 day contract was $285.00.

The Excel spreadsheet with the data from the leave policy content analysis contained a row for each school district with the school district name and the "LEAID" field extracted from the CRDC dataset. Using the "LEAID" as the common index field, the policy content analysis data was merged with the school data for each of the school years, resulting in the policy variables being joined on each row for every school in the datasets.

A copy of the Excel sheet for each of the school years was made. The columns for Total FTE, School Level, Title 1, and Pupil/Teacher Ratio were deleted. Data were totaled for each district, creating a district Excel Spreadsheet for each school year. The Excel spreadsheets were imported into JMP Pro 12.0.1 Statistical software in order to perform statistical analyses.

Data Analysis Procedures. The analysis for this study involved computing descriptive statistics, correlating the continuous variables, and running multiple regressions for each dataset. The level of significance was set at $p < .05$, as that is the customary level used when working on significance (Glenn, October 14, 2013). The dependent variable studied was the percentage of teachers absent for more than 10 days at each school or district. The independent variables were comprised of school variables and policy variables and are described in Table 2.

Table 2: Description of Independent Variables

Independent Variable	**Description**
Number of teachers	Total number of full time equivalent (FTE) teachers in the school
Inexperienced teachers	Percentage of teachers in school with less than two years' experience
School level	Alternative, Combined, Elementary Elementary/Middle, Middle, Middle/High, High, Preschool Center, Special Education Center
Title I	School is designated as a Title I school
Student enrollment	Total students enrolled in the school
Free or reduced lunch	Percentage of students receiving free or reduced price lunch
Student absence	Percentage of students that miss 15 or more days of school per year
Pupil/Teacher ratio	The number of students for every full time equivalent teacher
Personal leave amount	Total number of personal days granted annually to full time teachers
Personal leave maximum	Maximum accumulation amount for personal leave
Personal leave expires	Personal leave beyond the maximum amount expires and does not roll to sick leave
Leave amount per year	Combined total of personal leave and sick leave granted annually
Smallest increment for use of sick leave	The minimum increment for using sick leave is half day or whole day
Sick leave maximum	Maximum accumulation for sick leave exists

Independent Variable	Description
Monetary value of a sick leave day	Monetary value of each day of accrued sick leave that is paid to a teacher upon retirement for accumulated leave
Income protection	Employer provided income protection plan (sick leave bank/short term disability) exists

The categorical policy variables (smallest increment for use of sick leave, income protection plan, personal leave expires, and sick leave maximum) and school variable (Title 1) were coded "1" for yes and "0" for no. The school level data was dummy coded omitting the elementary level. The data was imported into JMP Pro 12.0.1 Statistical software.

Descriptive statistics were run in order to properly analyze the data, determine outliers, and identify any issues with the data. Histogram and plot and whisker diagrams were reviewed along with the skewness for each distribution. Some data were excluded based on this analysis.

Correlation was used with variables to determine relationships. The Pearson correlation coefficient (r) was computed to describe the linear dependence between two variables. The continuous variables that were studied in the correlation include: chronically absent teachers, inexperienced teachers, student enrollment, free or reduced lunch, number of teachers, pupil/teacher ratio, personal leave amount, personal leave maximum, leave amount per year, and monetary value of sick leave day.

There are many situations in education where making predictions is necessary, consequently conducting regression studies provides a more accurate prediction. Multiple regression measures the predictive power of several independent variables on a dependent variable. Using multiple regression, I examined the relationship of the dependent variable, chronically absent teachers (the percentage of teachers absent for more than 10 days at each school), with independent variables to find significant effects. Variables that were found to have

interactive effects, student enrollment and number of teachers, were explored by running the regressions with and without both variables and checking the variance inflation factor (VIF). Ultimately student enrollment was omitted from the regressions.

An alpha level of .05 was used to interpret statistical significance. Further descriptive statistics were generated to identify issues with the data, patterns of absence or to support the size of the effect.

Data from the school level for each year were analyzed first. Once completed, the analysis was repeated for district data. The district data did not include several school level variables: school level, Title 1 status, student enrollment, and pupil/teacher ratio. All multiple regressions were repeated for the dataset including the outliers.

Validity

It is critical that validity is established in research. For this study, the secondary data analysis involved the teacher and school/district data for school districts in the Commonwealth of Virginia included in United States Department of Education Office for Civil Rights 2011-2012 and 2013-2014 CRDC and data from the National Center for Educational Statistics. In addition, this study examined primary data derived from a content analysis of the leave policies of the school districts in Virginia. Validity and confidence of both the secondary and primary data were increased through implementation of research protocol and strategies.

The Civil Rights Data Collection (CRDC) was completed by each school district through a digital survey or file upload directly to the Office for Civil Rights. The process included embedded data checks to ensure data errors were corrected before final submission from each district. In addition, district superintendents or the superintendents' designees certified the submissions. Districts were also provided training materials and guidance documents in reporting

the data. Nevertheless, the quality of the OCR dataset is as only as accurate as the districts'

collection and reporting procedures. (Civil Rights Data Collection: Data Notes). A small

sampling of four school districts were surveyed and confirmed the data reported in the CRDC

was representative of what the district reported for the respective years of data collection.

Data extracted from the National Center for Educational Statistics included the

percentage of students receiving free or reduced lunch and the pupil/teacher ratio. The National

Center for Educational Statistics serves as a data warehouse for many databases of educational

research. These two variables (percentage of students receiving free or reduced lunch and the

pupil/teacher ratio) are housed in the Common Core of Data (CCD), which is the Department of

Education's main database on public elementary and secondary education in the United States.

Most of the data are obtained from administrative records maintained by the state education

agencies.

After completing the content analysis of leave policies, a sampling of 20 school districts

was peer reviewed for accuracy. In addition, data compiled in the Excel spreadsheet was peer

reviewed for the same 20 school districts. Finally, data collected for the personal leave amount

and leave amounts was checked against the 2015-2016 Virginia Education Association's Leave

Policies Survey. When discrepancies were noted in the comparison, the original policy was

reviewed again to ensure accuracy.

In examining the validity of this study, internal validity, external validity, and construct

validity were explored. Internal validity describes the confidence level of the cause and effect

relationship (Glenn, September 30, 2013). Could there be another cause that might explain the

observations? As noted in the literature review, some studies included a fixed effects variable to

account for unmeasured levels of teacher skill and effort that could have introduced bias. The

design of this study was based on the research, yielding the best model possible, though a missing variable remains a potential problem.

External validity is the extent to which the findings in the study can be can be generalized to other people and situations (Glenn, September 30, 2013). Virginia is a diverse state, comprised of inner cities, suburbs, towns, and rural areas with a wide variety of different demographics. Therefore, what was gleaned from this study about teacher absences in Virginia has reasonable applicability across the nation. However, Virginia is a right to work state and public employees cannot collectively bargain. Teachers employed in union states typically are higher paid with better benefits. As leave time is an employee benefit, the findings of the study would be most relevant in a right work state.

Construct validity is the extent to which findings are congruent with what theory would expect to find (Glenn, September 30, 2013). In this case, based on the research, we would have expected to find that teacher absenteeism was positively correlated with many variables and that some of those variables would have been significant predictors of teacher absenteeism.

Reliability

As discussed earlier, the Office of Civil Rights has implemented various protocols (embedded data checks, digital surveys, certification of the data, training manuals and guidelines) designed to increase the reliability of the CRDC. With content analysis, reliability can also be of concern, and can best be addressed by only utilizing trained coders (Mayring, 2000). In this study, I developed an efficient data collection tool (Appendix B) that ensured systematic review of the policies for each district. In content analysis, there can also be an issue of consistency, as different words in the policy text could be used to describe the same variable. It is important that the text was coded the same way despite the differences in the words used if

they convey the same meaning. (Weber, 1990). I was the only researcher conducting the content analysis, thereby ensuring the consistency. I also checked the data collected for the personal leave amount and leave amounts against the 2015-2016 Virginia Education Association's Leave Policies Survey. When discrepancies were noted in the comparison, the original policy was reviewed again to ensure accuracy.

Researcher Background and Qualifications

It is important for me to recognize information which may have influenced my perspectives on the data I collected in the research. I have been a human resource professional for over 25 years and have worked in both private industry and public education. I have worked for the past six years for a small city school district serving as the Director of Human Resources. In this role, I've seen firsthand the effects of teacher absence. My career experiences working in both private industry and public education have given me a well-balanced perspective on leave provisions and absenteeism.

Summary

In order to learn what factors might impact teacher absenteeism; I conducted a mixed methods research study for my dissertation using both primary and secondary data. Primary data was collected by completing a content analysis on Virginia school district leave policies to determine policy variables for use in the study. I used secondary data by extracting school level variables from the Office for Civil Rights 2011-2012 and 2013-2014 Civil Rights Data Collection for all school districts in Virginia and the National Center for Educational Statistics. The research design and strategies used to conduct my research and make meaning from my data promoted validity, consistency, and reliability.

The purpose of my research was to determine the relationship between teacher absence and policy and school characteristics through completion of regression studies and examining patterns and predictors in relationship to my theoretical framework. I established clear procedures, limitations, and delimitations in my research design in order to present accurate findings and assertions based on the collected data. My background and experiences as a veteran human resource professional qualified me to conduct such research because I have written and implemented personnel policies including leave policies. My goal for this research was to inform policy in the Commonwealth of Virginia for K-12 public school districts and thereby reduce teacher absenteeism.

Chapter 4: Data Analysis and Results

The previous chapter outlined the research protocol and statistical methods employed to examine the relationship between teacher absenteeism and organizational and policy variables. Two specific research questions guided this study:

1. What is the relationship between certain school district policy provisions (personal leave amount granted annually, personal leave maximum accumulation amount, personal leave expiration, maximum accumulation of sick leave, total days of leave granted annually, smallest increment for use of sick leave, income protection plan exists, monetary value of sick leave day) and teacher absenteeism?

2. What is the relationship between certain school characteristics (Title 1 School, grade level of school, percentage of teachers with less than two years' experience, size of teaching workforce, free and reduced lunch percentage, size of student enrollment, student absenteeism, and pupil/teacher ratio) and teacher absenteeism?

Using an alpha level of .05 for all statistical tests, findings from each of the research questions are reviewed in this chapter.

Population

The population for this study consisted of all public school schools and districts in the state of Virginia that reported in the 2011-2012 and 2013-2014 Civil Rights Data Collection (CRDC) respectively. There were 1,931 schools (727 were designated as Title I schools) and 132 public school districts included in the study in the 2011-2012 dataset and 1,912 schools (725 were designated as Title I schools) and 132 public school district included in the study in the 2013-2014 dataset. Schools levels are presented in Table 3. Also presented in Table 3 are the

data excluding outliers and schools with suspect teacher absence data as presented in the section

on outliers.

Table 3: Schools Counts by Level for 2011-2012 and 2013-2014

School Level	2011-2012 Total dataset	2011-2012 Excluding Outliers	2013-2014 Total Dataset	2013-14 Excluding Outliers
Alternative	48	43	40	37
Combined (PreK-12)	1	1	1	1
Elementary (PreK-6)	1118	1031	1107	1059
Elementary/Middle (PreK-8)	50	46	47	45
Middle (5-9)	339	310	340	326
Middle/High (6-12)	12	11	13	13
High (7-12)	322	304	320	309
PreK Center	24	18	27	27
Special Education Center	17	16	17	17
Total	1931	1780	1912	1834
Title I School	727		725	

Excluded Data. Descriptive statistics were run for each dataset including histograms,

box and whisker plots, and skewness. Adjustments were made to every data set based on an

analysis of the data.

In the 2011-2012 district level dataset, 5 of the 6 continuous independent variables and

the dependent variable contained outliers. Several adjustments were made to eliminate the most

extreme outliers. For inexperienced teachers, one school district was excluded (inexperienced

teachers was 81.33%). Two districts with a $285 value per sick leave day were also excluded.

Three districts reported chronically absent teachers of 0%. These three districts, Albermarle, Alexandria, and Newport News, had 845.29, 1204.4, and 1946.4 full time equivalent teachers respectively. Reporting that not one teacher missed more than 10 days in 2011-2012 was highly suspect. Therefore the data for these districts were excluded.

In the 2011-2012 school level dataset, 8 of the 9 continuous independent variables and the dependent variable contained outliers. Several adjustments were made to eliminate the most extreme outliers. For chronically absent teachers, 5 schools that reported chronically absent teachers at 93.75% or higher were excluded As noted earlier in the district level data, three districts reported absenteeism at 0%, which was highly suspect considering the size of these districts that not one teacher in the entire district missed more than 10 days. The reporting of data for the CRDC is centralized. Therefore, in the school level data, the 89 schools in these three districts were also excluded. For inexperienced teachers, the most extreme outliers were excluded, 7 schools that reported inexperienced teachers at 57% or higher. As noted in the district level discussion, the 50 schools in the two districts with $285 value a sick leave day were excluded.

In the 2013-2014 district level dataset, 5 of the 6 continuous independent contained outliers. Several adjustments were made to eliminate the most extreme outliers. Two districts reported chronically absent teachers of 0%.These two districts, Grayson County and Franklin County, each reported high absence percentages in the 2011-2012 district dataset, 53.91% and 37.16 % respectively. Reporting that not one teacher missed more than 10 days in 2013-2014 was highly suspect. Therefore, data for these districts were excluded. The two districts with $285 value a sick leave day were also excluded. Based on the mean, a value of $40 per day would be expected.

In the 2013-2014 school level dataset, 8 of the 9 continuous independent variables and the dependent variable contained outliers. Several adjustments were made to eliminate the most extreme outliers. For chronically absent teachers, 3 schools that reported chronically absent teachers at 100% were excluded. As noted earlier in the district level data, two districts reported absenteeism at 0%, which was highly suspect considering the data reported in the CRDC the year prior. It is highly unlikely that not one teacher in the entire district missed more than 10 days. Therefore, in the school level data, the 23 schools in these two districts were excluded. For inexperienced teachers, 2 schools with 57% or higher were excluded. The 50 schools in the two districts with $285 value a sick leave day were also excluded.

Descriptive Statistics

After excluding the data, descriptive statistics were rerun for each dataset. A summary of the data for the continuous variables is presented in Tables 4 and 5.

Table 4: Schools Dataset Means, Standard Deviations, and Skewness for 2011-2012 and 2013-2014

School Continuous Variable	2011-12 *M*	2011-12 *SD*	Skewness	2013-14 *M*	2013-14 *SD*	Skewness
Chronically absent teachers	.352	.193	.216	.329	.186	.472
Number of Teachers	46.91	29.99	2.08	47.42	29.36	2.15
Inexperienced teachers	.093	.071	1.15	.104	.084	1.34
Student enrollment	675.39	441.88	2.24	668.12	442.37	2.11
Free or reduced lunch percentage	.434	.233	.077	.447	.235	.012
Pupil/Teacher ratio	15.63	2.74	.332	15.80	3.37	.830
Student Absence	-	-	-	.124	.108	3.10

Policy Continuous Variables	2011-12 M	2011-12 SD	Skewness	2013-14 M	2013-14 SD	Skewness
Personal leave amount	2.60	.637	.372	2.62	.645	.367
Personal leave maximum	4.09	1.88	1.57	4.12	1.88	1.50
Leave amount per year	12.57	.944	1.49	12.58	.968	1.48
Monetary value of a sick leave day	38.78	26.04	1.63	39.18	26.46	1.58

Table 5: District Dataset Means, Standard Deviations, and Skewness for 2011-2012 and 2013-2014

School Continuous Variables	2011-12 M	2011-12 SD	Skewness	2013-14 M	2013-14 SD	Skewness
Chronically absent teachers	.340	.146	.128	.288	.149	.382
Inexperienced teachers	.093	.043	.536	.100	.067	2.091
Free or reduced lunch percentage	.476	.166	-.147	.490	.167	-.228

Policy Continuous Variables	2011-12 M	2011-12 SD	Skewness	2013-14 M	2013-14 SD	Skewness
Personal leave amount	2.57	.720	.724	2.59	.727	.696
Personal leave maximum	3.92	1.74	1.19	3.95	1.76	1.17
Leave amount per year	12.56	.970	1.738	12.59	.987	1.69
Monetary value of a sick leave day	40	24.44	1.53	40.40	25.00	1.51

Means for the dependent variable, chronically absent teachers (the percentage of teachers absent more than 10 days per year), by school level and school year were calculated and are presented in Table 6.

Table 6: DV Means by School Level for the 2011-2012 and 2013-2014 Schools Dataset

School Level	2011-2012 Means	2013-2014 Means
Alternative	.188	.316
Combined (PreK-12)	.385	.231
Elementary (PreK-6)	.361	.332
Elementary/Middle (PreK-8)	.417	.298
Middle (5-9)	.366	.355
Middle/High (6-12)	.265	.252
High (7-12)	.331	.293
PreK Center	.350	.372
Special Education Center	.252	.350

For both years, there were 132 public school districts included in the study. Policy variables are consistent across all schools in a district. The variables studied were constant from one school year to the next and are summarized in Table 7.

Table 7: Summary of Policy Variable Counts for both 2011-2012 and 2013-2014 District Dataset

Policy Variable	Yes Count (1)	No Count (0)	Total Count
Smallest increment for use of sick leave is half day	98	34	132
Sick leave maximum exists	39	93	132
Income protection plan exists	106	25	131
Personal Leave Expires	7	125	132

Correlational Results and Analysis

The two research questions were first examined by conducting a correlational analysis to discover if the predictor variables contribute to the independent variable. In a multiple regression analysis it is important for the researcher to check and ensure that the assumption of no multi-

collinearity (heavily related variable) has not been violated by having any variables that were too

closely related to one another by checking the Pearson Correlation Coefficient, the tolerance

level and the variance inflation factor (VIF) values between the predictive variables (Howell,

2011).

Pearson Correlations were calculated among the continuous predictive variables. The

correlation values can describe the relationship between the variables as noted on Table 8.

Table 8: Measure of Association (Szafran, 2012, p. 199)

Correlation Coefficient	Association Description
.000	No relationship
.001 to .199	Weak
.200 to .399	Moderate
.400 to .599	Strong
.600 to .999	Very Strong
1.00	Perfect Relationship

As displayed in Tables 9, 10, 11, and 12 the data showed that number of teachers and

student enrollment were closely related, exceeding the .80 threshold in school datasets for 2011-

2012 and 2013-2014. During the regression analysis, the Variance Inflation Factor (VIF) score

was examined and ultimately, student enrollment was deleted from all regressions.

Personal leave amount and leave amount per year also had strong correlations in all four

datasets. During the regression analysis, the VIF score was examined in all four models and the

relationship was not a concern.

In both schools datasets, the free and reduced lunch had a negative moderate relationship

with number of teachers and a negative relationship with student enrollment. Value of a sick

leave day and personal leave maximum also had a moderate relationship in both school datasets, albeit a positive relationship.

Also, in the 2013-2014 schools dataset, free and reduced lunch had positive moderate relationships with both student absence and inexperienced teachers. Pupil/teacher ratio had a negative relationship with student absence. The only variable to have a moderate relationship with the dependent variable, chronically absent teachers, was leave amount per year.

In the 2011-2012 district dataset, free and reduced lunch had a positive moderate relationship with inexperienced teachers. Similarly personal leave maximum and personal leave amount had a moderate relationship. The only variable to have a moderate relationship with the dependent variable, chronically absent teachers, was personal leave amount.

In the 2013-2014 district dataset, free and reduced lunch had positive moderate relationships with both student absence and inexperienced teachers. Similarly personal leave maximum and personal leave amount had a moderate relationship. The only variable to have a moderate relationship with the dependent variable, chronically absent teachers, was inexperienced teachers.

Table 9: Pearson Correlations for 2011-2012 Schools Dataset

Variable	Chronically absent teachers	Number of Teachers	Inexperienced teachers	Student Enrollment	Free or Reduced Lunch	Pupil/ Teacher Ratio	Personal Leave Amount	Personal Leave Maximum	Leave Amount Per Year	Value of Sick Leave Day
Chronically absent teachers	1									
Number of Teachers	-0.043	1								
Inexperienced teachers	-0.133*	0.041	1							
Student Enrollment	-0.023	0.948*	0.013	1						
Free or Reduced Lunch	0.146*	-0.282*	0.128*	-0.346*	1					
Pupil/Teacher Ratio	0.151*	-0.035	-0.050*	0.122*	-0.182*	1				
Personal Leave Amount	-0.006	0.045	0.065*	0.010	-0.009	-0.079*	1			
Personal Leave Maximum	0.125*	-0.072*	-0.122*	-0.013	-0.028	0.042	-0.006	1		
Leave Amount Per Year	0.144*	-0.037	0.013	0.003	0.096*	0.124*	0.509*	-0.038	1	
Monetary Value of Sick Leave Day	-0.071*	-0.072*	-0.041	-0.061*	-0.054*	-0.004	-0.000	0.226*	0.057*	1

*Correlation is significant at the .05 level

Table 10: Pearson Correlations for 2013-2014 Schools Dataset

Variable	Chronically absent teachers	Number of Teachers	Inexperienced teachers	Student Enrollment	Free or Reduced Lunch	Pupil/ Teacher Ratio	Student Absence	Personal Leave Amount	Personal Leave Maximum	Leave Amount Per Year	Value of Sick Leave Day
Chronically absent teachers	1										
Number of Teachers	0.023	1									
Inexperienced teachers	0.023	0.049*	1								
Student Enrollment	0.058*	0.961*	0.030	1							
Free or Reduced Lunch	0.016	-0.251*	0.242*	-0.320*	1						
Pupil/ Teacher Ratio	0.115*	-0.052*	-0.007	0.098*	-0.148*	1					
Student absence	-0.045	0.135*	0.072*	0.093*	0.218*	-0.247*	1				
Personal Leave Amount	0.107*	0.043	0.135*	0.019	0.027	-0.123*	0.115*	1			
Personal Leave Maximum	0.025	-0.039	-0.092*	-0.013	0.006	0.039	-0.057*	0.050*	1		
Leave Amount Per Year	0.205*	0.003	0.115*	0.006	0.107*	-0.023	0.078*	0.522*	0.012	1	
Value of Sick Leave Day	-0.011	-0.034	-0.101*	-0.051*	-0.051*	-0.078*	-0.053*	0.064*	0.274*	0.131*	1

*Correlation is significant at the .05 level

Table 11: Pearson Correlations for the 2011-2012 District Dataset

Variable	Chronically absent teachers	Inexperienced teachers	Free or Reduced Lunch	Personal Leave Amount	Personal Leave Maximum	Leave Amount Per Year	Value of Sick Leave Day
Chronically absent teachers	1						
Inexperienced teachers	-0.022	1					
Free or Reduced Lunch	0.082	0.219*	1				
Personal Leave Amount	0.216*	-0.052	-0.018	1			
Personal Leave Maximum	0.189*	-0.199*	-0.129	0.260*	1		
Leave Amount Per Year	0.171	-0.023	0.067	0.583*	0.134	1	
Value of Sick Leave Day	0.007*	0.026*	-0.010*	-0.057*	0.083	-0.040*	1

*Correlation is significant at the .05 level

Table 12: Pearson Correlations for the 2013-2014 District Dataset

	Chronically absent teachers	Inexperienced teachers	Free or Reduced Lunch	Student Absence	Personal Leave Amount	Personal Leave Maximum	Leave Amount Per Year	Value of Sick Leave Day
Chronically absent teachers	1							
Inexperienced teachers	0.253*	1						
Free or Reduced Lunch	0.023	0.381*	1					
Student Absence	0.085	0.255*	0.335*	1				
Personal Leave Amount	0.158	0.062	-0.001	0.019	1			
Personal Leave Maximum	-0.012	-0.173	-0.120	-0.092	0.283*	1		
Leave Amount Per Year	0.180*	0.176*	0.082	0.072	0.594*	0.165	1	
Value of Sick Leave Day	0.044	0.036	-0.015	0.014	-0.012	0.134	0.018	1

*Correlation is significant at the .05 level

Multiple Linear Regression Results and Analysis

To examine the research questions and the notion that school and policy characteristics predict chronically absent teachers by determining which variables had a statistically significant relationship to chronically absent teachers, I used a simultaneous multiple regression model for my study. This strategy is used when the researcher has no logical or theoretical structure to the data. This method is typically used to explore and maximize prediction (Pedhazur, 1997). Multiple regression statistically controls for the effects of each of the independent variables on the dependent variable, chronically absent teachers.

To check the statistical significance and relative importance of each predictive variable, I created a model for each dataset (4 sets) and examined the unstandardized coefficient beta weights and the standardized beta weights of each predictive variable. In addition, R squared was used to examine the relationships between the various predictive variables and the dependent variable. I also ran regression models for each dataset including the outliers. A summary chart and analysis for each regression is presented below

2011-2012 Schools Dataset. Making the exclusions to the dataset as previously described, data were collected on 1,677 schools. Chronically absent teachers was regressed on number of teachers, inexperienced teachers, level of school, Title I school, free or reduced lunch, pupil/teacher ratio, personal leave amount, personal leave maximum, personal leave expires, leave amount per year, sick leave maximum, sick leave use in whole/half days, monetary value of sick leave, and income protection plan. The overall regression was significant $(F(22,1655)= 14.123)$ $p<.0001$ and $R^2 = .152$.

As presented in Table 13, inexperienced teachers, middle school, free or reduced lunch, pupil/teacher ratio, personal leave amount, personal leave maximum, leave amount per year, sick leave maximum, sick leave use in whole/half days, monetary value of sick leave, and income protection plan were significant predictors of chronically absent teachers.

A model including the outliers was also run. Data were collected on 1733 schools. The overall regression was significant $(F(21,1711)=13.999)$ $p<.0001$ and $R^2 = .147$. Significant predictors included the same ones in the model without the outliers except personal leave amount and personal leave maximum.

Table 13: Regression Results for 2011-2012 Schools Dataset

	Estimate	Std Error	t Ratio	P Value	Std Beta	VIF
Intercept	-0.185	0.069	-2.698	0.007	0.000	
Number of Teachers	-0.000	0.000	-0.953	0.341	-0.031	2.035
Inexperienced teachers	-0.370	0.067	-5.542	<0.0001	-0.129	1.062
Middle/High School	0.015	0.060	0.245	0.807	0.006	1.139
Alternative School	0.073	0.081	0.895	0.371	0.021	1.048
Elementary/Middle School	0.037	0.028	1.329	0.184	0.031	1.087
Combined School	0.181	0.179	1.012	0.312	0.023	1.022
High School	0.034	0.018	1.907	0.057	0.067	2.408
Special Education Center	-0.125	0.125	-0.993	0.321	-0.023	1.006
Preschool Center	-0.024	0.055	-0.437	0.662	-0.010	1.043
Middle School	0.051	0.015	3.409	0.001	0.103	1.772
Title I School	0.019	0.014	1.325	0.185	0.048	2.546
Free or Reduced Lunch	0.122	0.026	4.664	<0.0001	0.149	1.993
Pupil/Teacher Ratio	0.014	0.002	7.443	<0.0001	0.205	1.478
Personal Leave Amount	-0.017	0.009	-1.981	0.048	-0.057	1.604
Personal Leave Maximum	0.006	0.003	2.176	0.030	0.060	1.499
Personal Leave Expires	-0.003	0.025	-0.112	0.911	-0.003	1.143
Leave Amount Per Year	0.030	0.006	5.340	<0.0001	0.150	1.530
Sick Leave Maximum	-0.071	0.013	-5.460	<0.0001	-0.138	1.248
Sick Leave Used in Whole/Half Days	0.045	0.012	3.855	0.000	0.118	1.822
Monetary Value of Sick Leave Day	-0.001	0.000	-4.848	<0.0001	-0.116	1.126
Income Protection Plan	-0.053	0.015	-3.607	0.000	-0.088	1.152

2013-2014 Schools Dataset. Making the exclusions to the dataset as previously described, data was collected on 1,722 schools. Chronically absent teachers was regressed on number of teachers, inexperienced teachers, level of school, Title I school, free or reduced lunch, pupil/teacher ratio, student absence, personal leave amount, personal leave maximum, personal leave expires, leave amount per year, sick leave maximum, sick leave use in whole/half days, monetary value of sick leave, and income protection plan. The overall regression was significant $(F(22,1699)= 8.247)$ p<.0001 and $R^2 = .096$.

As presented in Table 14, number of teachers, high school, Title I, free or reduced lunch, pupil/teacher ratio, student absence, personal leave maximum, personal leave expire, leave amount per year, sick leave maximum, sick leave use in whole/half days, and income protection plan were significant predictors of chronically absent teachers.

A model including the outliers was also run. Data were collected on 1774 schools. The overall regression was significant $(F(22,1751)=8.53)$, p<.0001 and $R^2 = .097$. Significant predictors included all those on the model without the outliers and also included the monetary value of sick leave.

Table 14: Regression Results for 2013-2014 Schools Dataset

	Estimate	Std Error	t Ratio	P Value|	Std Beta	VIF
Intercept	-0.193	0.066	-2.911	0.004	0.000	
Number of Teachers	0.000	0.000	1.975	0.048	0.063	1.922
Inexperienced teachers	-0.040	0.054	-0.735	0.462	-0.018	1.143
Middle/High School	-0.073	0.053	-1.372	0.170	-0.033	1.104
Alternative School	-0.056	0.074	-0.756	0.450	-0.018	1.063
Elementary/Middle School	0.002	0.029	0.073	0.942	0.002	1.085
Combined School	-0.038	0.177	-0.216	0.829	-0.005	1.018
High School	-0.046	0.018	-2.562	0.011	-0.093	2.486
Special Education Center	0.134	0.073	1.830	0.067	0.043	1.046
Preschool Center	0.042	0.042	1.018	0.309	0.025	1.107
Middle School	0.018	0.014	1.218	0.223	0.037	1.731
Title I School	-0.042	0.014	-3.024	0.003	-0.113	2.618
Free or Reduced Lunch	0.064	0.027	2.378	0.018	0.082	2.227
Pupil/Teacher Ratio	0.006	0.002	4.032	<0.0001	0.109	1.370
Student Absence	-0.096	0.045	-2.123	0.034	-0.057	1.332
Personal Leave Amount	0.005	0.008	0.552	0.581	0.016	1.582
Personal Leave Max	0.008	0.003	2.982	0.003	0.085	1.528
Personal Leave Expires	0.074	0.025	2.942	0.003	0.073	1.147
Leave Amount Per Yr	0.035	0.005	6.657	<0.0001	0.187	1.478
Sick Leave Maximum	0.036	0.012	2.882	0.004	0.073	1.216
Sick Leave Used in Whole/Half Days	-0.040	0.012	-3.440	0.001	-0.108	1.859
Monetary Value of Sick Leave Day	0.000	0.000	-1.359	0.174	-0.034	1.191
Income Protection Plan	-0.046	0.015	-3.154	0.002	-0.079	1.167

2011-2012 District Dataset. Making the exclusions to the dataset as previously described, data was collected on 125 districts. Chronically absent teachers was regressed on inexperienced teachers, free or reduced lunch, personal leave amount, personal leave maximum, personal leave expires, leave amount per year, sick leave maximum, sick leave use in whole/half days, monetary value of sick leave, and income protection plan. The overall regression was not significant ($F(10,114)= 1.726$), $p=.0832$ and $R^2 = .1315$. As presented in Table 15, there were no significant predictors of chronically absent teachers.

A model including the outliers was also run. Data were collected on 127 districts. The overall regression was not significant ($F(10,116)=1.757$), $p=.0764$ and $R^2 = .132$. There were no significant predictors for chronically absent teachers.

Table 15: Regression Results for the 2011-2012 District Dataset

	Estimate	Std Error	t Ratio	P Value	Std Beta	VIF
Intercept	0.029	0.196	0.150	0.882	0.000	
Inexperienced teachers	-0.004	0.311	-0.011	0.991	-0.001	1.105
Free or Reduced Lunch	0.088	0.081	1.086	0.280	0.099	1.100
Personal Leave Amount	0.021	0.023	0.896	0.372	0.104	1.755
Personal Leave Maximum	0.009	0.008	1.090	0.278	0.108	1.295
Personal Leave Expires	0.001	0.063	0.017	0.986	0.002	1.146
Leave Amount Per Year	0.016	0.017	0.921	0.359	0.105	1.695
Sick Leave Maximum	-0.050	0.030	-1.687	0.094	-0.157	1.136
Sick Leave Used in Whole/Half Days	0.048	0.031	1.546	0.125	0.143	1.126
Value of Sick Leave Day	0.000	0.001	0.013	0.990	0.001	1.044
Income Protection Plan	-0.045	0.033	-1.353	0.179	-0.122	1.058

2013-2014 District Dataset. Making the exclusions to the dataset as previously

described, data was collected on 125 districts. Chronically absent teachers was regressed on

inexperienced teachers, free or reduced lunch, student absence, personal leave amount, personal

leave maximum, personal leave expires, leave amount per year, sick leave maximum, sick leave

use in whole/half days, monetary value of sick leave, and income protection plan. The overall

regression was not significant ($F(11,113)= 1.4638$), p=.1550 and $R^2 = .1247$. As presented in

Table 16, only inexperienced teachers was a significant predictor of chronically absent teachers.

A model including the outliers was also run. Data were collected on 127 districts. The

overall regression was not significant ($F(11,115)=1.538$), p=.1273 and $R^2 = .128$. As with the

outliers excluded, inexperienced teachers was the only significant predictor of chronically absent

teachers.

Table 16: Regression Results for the 2013-2014 District Dataset

	Estimate	Std Error	t Ratio	P Value	Std Beta	VIF
Intercept	0.082	0.195	0.421	0.674	0.000	
Inexperienced teachers	0.500	0.228	2.196	0.030	0.227	1.383
Free or Reduced Lunch	-0.063	0.092	-0.681	0.497	-0.070	1.355
Student Absence	0.035	0.175	0.202	0.840	0.019	1.183
Personal Leave Amount	0.031	0.024	1.313	0.192	0.155	1.789
Personal Leave Maximum	-0.002	0.009	-0.191	0.849	-0.019	1.336
Personal Leave Expires	0.104	0.065	1.600	0.113	0.150	1.137
Leave Amount Per Year	0.007	0.017	0.418	0.677	0.048	1.730
Sick Leave Maximum	0.037	0.030	1.222	0.225	0.114	1.126
Sick Leave Use-Whole/Half Days	-0.005	0.032	-0.156	0.876	-0.015	1.150
Value of Sick Leave Day	0.000	0.001	0.276	0.783	0.025	1.051
Income Protection Plan	0.002	0.035	0.059	0.953	0.006	1.123

Independent Variables for Schools Datasets for Both Years

Table 17 summarizes the regression results for both school years. Combining the results

enables me to discuss which independent variables were significant on a consistent basis for both

school year datasets.

Table 17: Regression Results for Both School Datasets

Independent Variable	2011-12 Estimate	2011-12 P Value	2011-12 Std Beta	2013-14 Estimate	2013-14 P Value	2013-14 Std Beta
Alternative School	0.073	0.371	0.021	-0.056	0.450	-0.018
Combined School	0.181	0.312	0.023	-0.038	0.829	-0.005
Elementary/Middle School	0.037	0.184	0.031	0.002	0.942	0.002
Free or Reduced Lunch	0.122	<0.0001	0.149	0.064	0.018	0.082
High School	0.034	0.057	0.067	-0.046	0.011	-0.093
Income Protection Plan	-0.053	0.000	-0.088	-0.046	0.002	-0.079
Leave Amount Per Year	0.030	<0.0001	0.150	0.035	<0.0001	0.187
Middle School	0.051	0.001	0.103	0.018	0.223	0.037
Middle/High School	0.015	0.807	0.006	-0.073	0.170	-0.033
Monetary Value of Sick Leave Day	-0.001	<0.0001	-0.116	0.000	0.174	-0.034
Number of Teachers	0.000	0.341	-0.031	0.000	0.048	0.063
Personal Leave Amount	-0.017	0.048	-0.057	0.005	0.581	0.016
Personal Leave Expires	-0.003	0.911	-0.003	0.074	0.003	0.073
Personal Leave Maximum	0.006	0.030	0.060	0.008	0.003	0.085
Preschool Center	-0.024	0.662	-0.010	0.042	0.309	0.025
Pupil/Teacher Ratio	0.014	<0.0001	0.205	0.006	<0.0001	0.109
Sick Leave Maximum	-0.071	<0.0001	-0.138	0.036	0.004	0.073
Sick Leave Used in Whole/Half Days	0.045	0.000	0.118	-0.040	0.001	-0.108
Special Education Center	-0.125	0.321	-0.023	0.134	0.067	0.043
Student Absence				-0.096	0.034	-0.057
Inexperienced teachers	-0.370	<0.0001	-0.129	-0.040	0.462	-0.018
Title I School	0.019	0.185	0.048	-0.042	0.003	-0.113

Research question 1. In answering the first research question, there were policy

variables that were significant in both school year models. Compared to schools with no income

protection plan, schools with income protection plans are estimated to have a lower percentage

of teachers missing more than 10 days. In the 2011-2012 model, schools with income protection plans are estimated to have .053 % less teachers absent and in the 2013-2014 model, schools with income protection plans are estimated to have .046 % less teachers absent more than 10 days. This was unexpected because the existence of income protection plans, which provide insurance against the loss of pay once accumulated leave is exhausted, typically result in increased teacher absences.

As would be expected and logical, every extra day of total leave granted per year (sum of sick leave and personal leave granted annually) results in a higher percentage of teachers chronically absent. Every extra day of total leave was estimated to increase the percentage of teachers absent more than 10 days by .030% (2011-2012 model) and .035% (2013-2014 model).

Also as would be expected, districts with larger personal leave maximums are estimated to have a larger percentage of teachers absent more than 10 days. In the 2011-2012 model, it was predicted that for every extra day in the maximum, the percentage of teachers absent more than 10 days will increase by .006 % and in the 2013-2014 model, it was predicted the percentage of teachers absent will increase by .008 %.

Finally, although the variables of the existence of sick leave maximums and the requirement of using sick leave in whole or half day increments were significant in both school year models, the signs of the coefficients were opposite for these respective variables in the two school year models. This inconsistency limits the estimates' usefulness in predicting teacher absences of greater than 10 days as there was no consistent pattern in the two school years.

Three policy variables were significant predictors of chronically absent teachers in only one of the two school year models. Two of those variables were personal leave expiration and

personal leave amount. For these two variables, the signs of the coefficients were opposite in the two models, limiting the estimates' usefulness in predicting teacher absences of greater than 10 days, despite the significance in one of the years.

The remaining policy variable that was a significant predictor of chronically absent teachers in one of the school year models was the monetary value of sick leave day. In the 2011-2012 model, for every dollar increase in monetary value of a sick leave day, the number of teachers absent more than 10 days was estimated to decrease by .0009%. While this result was expected, the magnitude was very small and was not significant in the 2013-14 model.

Research question 2. In answering the second research question, several school variables were significant in both school year models. For every 1 percentage point increase in free and reduced lunch percentage, the number of teachers absent more than 10 days was estimated to increase by .122% (2011-2012 model) and .064% (2013-2014 model). This was not surprising because research has consistently shown that the lower the socio-economic status of students enrolled in a school, the higher the rate of teacher absence (Clotfelter et al., 2007; National Council on Teacher Quality, 2014; Pitkoff, 1993; Schools and Staffing 2003-04 Survey).

For every 1 student increase in the pupil teacher ratio, the number of teachers absent more than 10 days was estimated to increase by .014 % (2011-2012 model) and .006 % (2013-2014 model). Although the relationship of teacher absence and pupil teacher ratio was not examined in the literature, the relationship in this study was not surprising because it is logical that as class size increase, a teacher's workload increases. Increased workload is more likely to lead to fatigue and job stress, and possibly result in increased teacher absence.

Both free and reduced lunch percentage and pupil teacher ratio were significant in both models. However, the magnitude of the coefficients for both free and reduced lunch and pupil teacher ratio was small.

Student absence (the percentage of students absent 15 days or more) was only a variable in the 2013-2014 model because 2013-2014 was the first school year the CRDC collected this information. Student absence was a significant predictor of chronically absent teachers in the model. For every 1 percentage point increase in the percentage of students absent 15 days or more, the number of teachers absent more than 10 days was estimated to decrease by .096%. That was an interesting finding. Based on the literature reviewed (Ehrenberg et al. 1991; Miller, 2008; Pitkoff ,1993), I would have expected that as the percentage of student chronically absent increased, so would the percentage of teachers chronically absent.

Although inexperienced teachers (the percentage of teachers with less than two years' experience) was only significant in the 2011-2012 model, it was the variable with the largest magnitude in predicting the percent of teachers that miss more than 10 days. For every 1 percent increase in teachers with less than two years' experience, it was estimated that the percent of teachers that miss more than 10 days will decrease by .370%. This was expected as some districts give less leave to teachers with less experience.

Although the specific school level that was significantly different from the elementary level was not consistent from one school year to the next, the model's predictions are not contradictory. In the 2011-2012 model, it was predicted that middle schools will have .051 % more teachers absent for more than 10 days than elementary schools and in the 2013-2014

model, it was predicted that high schools will have .046 % less teachers absent for more than 10 days than the elementary schools.

There were two school variables that were only significant predictors of chronically absent teachers in the 2013-2014 model. The two variables were the number of teachers and Title I status of the school. However, the signs of the coefficients were opposite for these respective variables in the two school year models, limiting the estimates' usefulness in predicting teacher absences of greater than 10 days.

Summary

This study involved computing descriptive statistics, correlating the continuous variables, and running multiple linear regressions using an alpha level of .05 for all statistical tests. The two specific research questions guided this study:

1. What is the relationship between certain school district policy provisions (personal leave amount granted annually, personal leave maximum accumulation amount, personal leave expiration, maximum accumulation of sick leave, total days of leave granted annually, smallest increment for use of sick leave, income protection plan exists, monetary value of sick leave day) and teacher absenteeism?

2. What is the relationship between certain school characteristics (Title 1 School, grade level of school, percentage of teachers with less than two years' experience, size of teaching workforce, free and reduced lunch percentage, size of student enrollment, student absenteeism, and pupil/teacher ratio) and teacher absenteeism?

Only the regression models for the two school level datasets were significant and within each of these datasets, there were policy variables and school variables that were significant predictors of chronically absent teachers. However, the models only account for 15.2 % variation in the

percent of teachers missing more than 10 days (2011-2012 model with R2=.152) and 9.6 %

variation (2013-2014 model with R2=.096) in the percent of teachers missing more than 10 days

that was predicted by the independent variables. Although significant, neither model was a

particularly strong predictor of the percentage of teachers missing more than 10 days.

Chapter 5: Conclusions and Recommendations

The research literature to date indicates that teacher absences may be related to various school and policy variables. The purpose of this study was to examine selected school and policy data to determine if patterns exist among teacher absences in public school districts in the Commonwealth of Virginia and the relationship between teacher absences and school and policy characteristics. This study involved both secondary and primary data analysis. The data for school variables were extracted from the Office for Civil Rights 2011-2012 and 2013-2014 CRDC and National Center for Educational Statistics. The policy variables were gleaned from Virginia district leave policies. Specifically, this study aimed to answer the following research questions:

1. What is the relationship between certain school district policy provisions (personal leave amount granted annually, personal leave maximum accumulation amount, personal leave expiration, maximum accumulation of sick leave, total days of leave granted annually, smallest increment for use of sick leave, income protection plan exists, monetary value of sick leave day) and teacher absenteeism?

2. What is the relationship between certain school characteristics (Title 1 School, grade level of school, percentage of teachers with less than two years' experience, size of teaching workforce, free and reduced lunch percentage, size of student enrollment, student absenteeism, and pupil/teacher ratio) and teacher absenteeism?

The evidence gained from this research study supports a relationship for some school and policy variables. Conclusions from the results area examined further in this chapter and recommendations for further research are suggested.

Discussion of Research Question One: Policy Variables

In answering the first research question, there were policy variables that were significant in one or both school year models. Ehrenberg et al. (1991) found that the larger the number of leave days permitted by the school district, the higher the number of leave days that were taken. The findings in this study support this research. In both school years, every extra day of total leave granted per year (sum of sick leave and personal leave granted annually), was estimated to increase the percentage of teachers absent more than 10 days by .030% (2011-2012 model) and .035% (2013-2014 model). Also as would be expected, in both school years, the districts with larger personal leave maximums are estimated to have a larger percentage of teachers absent more than 10 days. However, one contradictory finding in the 2011-2012 schools dataset was that as the number of personal days increased, the number of teachers absent more than 10 days decreased slightly. This could be because the study examined the number of teachers absent more than 10 days and not actual teacher absences.

Most districts (126 of 132) allow personal leave above the maximum to carry over into sick leave, rather than have unused personal leave above the maximum expire. In the 2013-2014 schools model, schools where personal leave expired were predicted to have a higher percentage of teachers absent more than 10 days. This could be reflective of the "use it or lose it" mentality and is congruent with Pitkoff's (1993) finding that when teachers with historically low absence rates approached a leave maximum, absence rates increased. Similarly, Ehrenberg et al. (1991) found that districts with unlimited accumulation of sick leave experience a lower usage of leave. Although the existence of a sick leave maximum was significant in both school year models, the signs of the coefficients were opposite for this variable in the two school year models. This inconsistency limits the estimates' usefulness in predicting the number of teachers exceeding 10

days of absence as there was no consistent pattern in the two school years. This could be because the study examined the percentage of teachers that missed more than 10 days and not actually total teacher absenteeism.

Similarly, the policy provision requiring the use of sick leave in whole or half day increments only, which was significant in both school year models, had opposite signs of the coefficients in the two school year models, limiting the usefulness. Although research on this policy provision was not found in the literature reviewed, logically, it is expected that in schools where teachers can only take sick leave in half or whole days, as opposed to the option to go to a doctor appointment during their planning period, the impact would be increased teacher absence. The conflicting results in each of the school year models could be because the study examined the percentage of teachers that missed more than 10 days and not actually total teacher absenteeism.

Ehrenberg et al. (1991) showed that the existence of buyback provisions of unused sick leave days reduced the number of leave days taken annually. Buyback provisions upon retirement exist in 130 of the 132 school districts in the Commonwealth of Virginia and in this study. The two districts that do not have buyback provisions are Albermarle and Martinsville. In the 2011-2012 dataset, data from Albermarle was excluded, leaving only one district with 5 schools without buyback provisions. Therefore the relationship of buyback provisions and the percent of teachers that were absent more than 10 days was not studied. However, a related variable, the monetary value of sick leave day upon retirement was examined and found to be a significant predictor in the 2011-2012 schools model. As the value of the sick leave day increased, the number of teachers absent more than 10 days decreased slightly.

Winkler (1980) found that the existence of income protection plans, which provide

insurance against loss of wages once accumulated leave is exhausted, resulted in higher short

term absenteeism. In this study, 106 of 132 districts offered income protection plans of either a

sick leave bank or a short term disability plan. Compared to schools with no income protection

plans, schools with income protection plans are estimated to have a lower percentage of teachers

missing more than 10 days in both school models. While this was not congruent with Winkler's

research, it could be because this study did not isolate short term absenteeism and only examined

the relationship to the percentage of teachers that missed more than 10 days.

Discussion of Research Question Two: School Variables

In answering the second research question, there were school variables that were

significant in one or both of the school year models. This section discusses those results.

The socioeconomic status of students has been found to have an impact on teacher

absence (Pitkoff, 1993). In various studies (Clotfelter et al, 2007; NCTQ, 2014; Schools and

2003-04 Staffing Survey), teachers at schools serving higher percentages of free and reduced

lunch students were absent more. Findings in this study for both school years support the existing

research in that the higher a school's free and reduced lunch percentage, the higher the percent of

teachers that are estimated to miss more than 10 days. However, the magnitude of the

coefficients was small .122 percent (2011-2012 model) and .064 percent (2013-2014 model).

Research has revealed that the grade level of the school has an effect on teacher

absenteeism. The evidence is mixed at the elementary and middle levels. Some research shows

that elementary teachers have more absences than middle school (Clotfelter et al., 2007; Miller et

al.,2007; Rosenblatt & Shirom, 2006; Scott & McClellan, 1990; Speas, 2010) and other studies

show the opposite (Tingle et al., 2012; USDOE, 2009). Consistently, research shows that high

school teachers have lower average absenteeism than middle or elementary teachers. In

examining the means for the school level datasets in our study, the high schools in our datasets

have, on average, the lowest percentage of teachers absent 10 or more days as compared to the

elementary and middle schools. In the 2011-2012 dataset, on average, 33 percent of high school

teachers were absent more than 10 days as compared to an average of 36.1 percent for

elementary, and 36.6 percent average for middle schools. Similarly, in the 2013-2014 dataset, on

average, 29.3 percent of high school teachers were absent more than 10 days as compared to an

average of 33.2 percent for elementary, and 35.5 percent average for middle schools. Moreover,

in this study's 2011-2012 school model, it was predicted that middle schools would have a

higher percentage of teachers absent than elementary schools and in the 2013-2014 model, it was

predicted that high schools would have a lower percentage of teachers absent for more than 10

days than the elementary schools. The findings in this study were congruent with research and

offered additional insight to teacher absence at school levels other than elementary, middle and

high school. In the 2011-2012 schools dataset, Alternative schools had, on average, the lowest

percentage of teachers (18.8%) that had missed more than 10 days and Elementary/Middle

schools (those serving grades PreK-8) had the highest percent (41.7%). In the 2013-2014 schools

dataset, the combined school had the lowest percent of teachers absent more than 10 days

(23.1%) and PreK centers had the highest average (37.2%).

The size of the school staff has been shown to have an effect on teacher absenteeism

(Winkler, 1980). In this study, size of school staff was only a significant predictor of chronically

absent teachers in the 2013-2014 model. However, the signs of the coefficients were opposite in

the two school year models, limiting the estimates' usefulness in predicting teacher absences of

greater than 10 days. It also could be that a threshold effect exists in this study as it did in Winkler's (1980) study. A recommendation for future study would be to examine the size of school staff in relationship to teacher absence as Winkler did by studying teacher absence for small schools (20 or less staff members) as compared to large schools (more than 20 staff members).

Student attendance rates appear to be related to teacher attendance rates in that higher student absenteeism is associated with higher teacher absenteeism (Ehrenberg et al., 1991; Miller, 2008; Pitkoff, 1993). Student absence (the percentage of students absent 15 days or more) was only a variable in the 2013-2014 model because 2013-2014 was the first school year the CRDC collected this information. Although student absence was a significant predictor of chronically absent teachers in this study, an increase in the percentage of students absent 15 days or more predicted a decrease in the percentage of teachers absent more than 10 days. This result could be because this study was examining the percentage of teachers that are absent more than 10 days and not actually teacher absenteeism. Or, it could be that districts erroneously reported student absence as the 2013-2014 CRDC was the very first year of collecting this data.

Research supports that probationary teachers, those with the least amount of teaching experience and possibly earning less leave time than others, averaged fewer absences. In this study, the datasets contained the number of teachers in their first year of teaching and the number of teachers in their second year of teaching. The sum of these data was used to compute the percentage of teachers with less than two years' experience. Although inexperienced teachers was only significant in the 2011-2012 model, it was the variable with the largest magnitude in predicting the percent of teachers that miss more than 10 days. This study was congruent with the research.

The relationship of chronically absent teachers to the pupil/teacher ratio was not found in the research reviewed. However, it is logical to assume that as the student/teacher ratio increases, so might teacher absences due to the increased workload and corresponding fatigue of the teacher. In this study, for both school years, as the pupil/teacher ratio was significant and as it increased, so did the predicted percentage of teachers that missed more than 10 days.

Summary and Recommendations

Overall, this investigation did reveal evidence that both school and policy variables are related to the number of teachers that are absent more than 10 days per year. Considering the magnitude of the problem with 35.2% and 32.9% of teachers absent more than 10 days during the 2011-2012 and 2013- 2104 school years respectively, in the Commonwealth of Virginia public schools, there is no doubt there is a problem worth further study.

There are recommendations for further scholarly research as a result of this study. In this study, for both school years, the pupil/teacher ratio was significant. Further study of pupil/teacher ratios in relationship to teacher absences is warranted. Furthermore, in conducting the content analysis of the district leave policies, it was noted that there were districts that offered annual payouts of leave to all teachers (not just those retiring) for leave in excess of the leave maximums. Further study of the relationship between these monetary incentives and teacher absence is recommended.

This research informs policy for districts in Virginia and there are some practical recommendations that may reduce teacher absences. While the total leave granted per year (sum of personal and sick leave granted annually) was a significant predictor of the percentage of teachers that miss more than 10 days, school districts in Virginia have little flexibility in the

minimum amount of sick leave. As outlined in the Virginia Administrative Code, 8VAC20-460-10, school districts may offer no less than 10 days of sick leave each year. However, there are no statutory requirements about personal leave. Based on this research, limiting the number of personal leave days that can be taken in one school year may reduce teacher absences. In addition, a policy provision that provides for excess personal leave to carry over into sick leave rather than accumulate to a personal leave maximum could also reduce teacher absences.

There were several variables that were significant predictors of an increased percentage of chronically absent teachers that, in my experience as a school human resource professional, are variables associated with increased workload for teachers. Those variables include: percentage of free and reduced student population and student/teacher ratio. It is recommended to use staffing ratios designed carefully around these variables. Although adding personnel increases costs, the benefit may be reduced teacher absence resulting in cost savings in substitute payroll expense.

Nearly one in every three teachers in Virginia is absent more than 10 days per year. In the present state of teacher accountability and challenging budgets, it is critical that districts gain better understanding of teacher absences and take measures to improve teacher attendance. The result could yield increased student academic success and savings for the school district. To echo a quote the National Council on Teacher Quality Study (2014) that is worth repeating, "We may be overlooking one of the most basic, solvable and cost effective reasons why schools may fail to make educational progress" (p.14).

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Appendix A

Dear Colleague,

I am the human resource director at Winchester Public Schools. I am currently working on my doctorate at Virginia Tech. My area of research is teacher absenteeism and the relationship of policy for all public school districts in the Commonwealth of Virginia.

I have reviewed your school division's leave policies and am seeking clarification. Your answers will be identifiable by school district. It should take you less than 10 minutes to reply to this email with the answers to the clarifying questions below.

Personal Days

- What is the total number of paid personal days a teacher gets each year?

- What is the maximum number of personal days a teacher can accumulate?

- Can unused personal days carry over from one year to the next?

- Do unused personal days transfer to accumulated sick leave?

Sick Leave

- What is the total number of paid sick leave days a teacher gets each year?

- What is the maximum number of sick days a teacher can accumulate?

- What is the smallest increment that teachers can use for sick leave (i.e. whole day, half day, hourly)?

Payout of Sick Leave

- Is there a payout of accumulated sick leave upon retirement?

- What is the value of each day of accrued sick leave for a teacher?

- What is the maximum amount of the payout for accrued sick leave, either in number of days or total dollar amount?

Income Protection Plan

- For employees participating in Plan 1 or Plan 2 of the Virginia Retirement System, does your school district provide employer sponsored (noncontributory by the employee) income protection plans? If so, please specify the type of plan (i.e sick leave bank, short term disability plan).

The purpose of the study is to inform policy with the potential benefit of reducing teacher absenteeism. There is minimal risk in participating in this study. There is no promise or guarantee of benefits to encourage you to participate. By replying to this email and answering the questions below you consent to participate in this research.

Kind regards,

Donna Eagle

Appendix B

Leave Policy (for Teachers) Content Analysis Data Collection Form

Name of District_____

Date of Last Policy Revision: _____

Personal Leave

Total amount of personal leave granted annually_____

Personal Leave Maximum Accumulation_____

Personal leave expires if not used   Yes/1   No/0

Notes: _____

Sick Leave

Total number of sick leave days granted annually _____

Maximum accumulation for sick leave exists   Yes/1   No/0

Sick leave maximum accumulation amount _____

Sick leave must be used in half or whole day increments   Yes/1   No/0

Notes: _____

Payout of Leave

Accrued leave expires upon retirement   Yes/1   No/0

Monetary value of sick leave_____

Maximum amount of sick leave payout _____

Employer Sponsored Income protection plan exists   Yes/1   No/0

_____Sick Leave Bank   _____Short-term Disability

Notes: _____