

**An Analysis of Teacher Shortages and the Use of Daily Substitutes**

A Doctoral Capstone Project

Submitted to the School of Graduate Studies and Research

Department of Education

In Partial Fulfillment of the  
Requirements for the Degree of  
Doctor of Education

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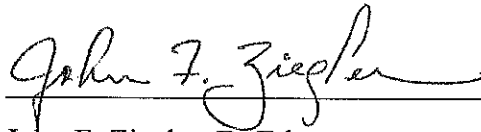
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August 2024

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### **Dedication**

This capstone research is dedicated to my two sons. Tommy and Dominic, you both are the center of my universe. Everything I do is for you both. We have been faced with tremendous challenges and each time we have found the motivation and inspiration to rise above all that is handed to us. You both have given me the endurance to be your role model. Remember open doors as you never know when you may need to walk through them in your life. Strive to never give up on goals and dreams. Stay true to who you both are and know that hard work, dedication and fierce determination can make any dream come true. I love you both!

Mom and Dad, you raised me to be a strong independent woman and I hope that I have lived up to all your expectations and more! Because without you both I would not have the high personal and work ethics you instilled in me. I thank you both for being my role models.

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### **Abstract**

This mixed methods research study sought to find solutions to teacher absenteeism and the lack of daily substitutes at the Canon-McMillan School District. The ability to fully staff when teacher absences occur a problem for the Canon-McMillan School District.

The objectives of this study included: (a) exploring the relationship between staff absences pre- and post-pandemic, (b) exploring the relationship between fill rates of staff absences pre- and post-pandemic, (c) exploring the relationship between levels of satisfaction when serving as a day-to-day substitute teacher at the Canon-McMillan School District.

The results of this study indicated that when comparing pre- and post-pandemic staff absences, the number of staff absences post-pandemic was higher than pre-pandemic.

The analysis revealed that fill rates were also higher post-pandemic at a fill rate of 79%, while pre-pandemic, the fill rate was 77%. However, when comparing pre- and post-pandemic absences, post-pandemic absences were higher, and fill rates did not appear to rise as much. Ultimately, fill rates were proportional to the number of absences, and the end result was more substitute teachers were available post-pandemic. A Google Form Survey was sent to 288 substitute teachers, of which 72 responded, giving the researcher insight into the satisfaction of substitute teachers, areas of weaknesses, and areas upon which to improve. The responses were analyzed, and the researcher was able to formulate conclusions and provide operational and fiscal recommendations based on their findings.



## **CHAPTER 1**

### **Introduction**

The Canon-McMillan School District and other school districts have been experiencing staff shortages; professional staff are a part of those statewide shortages. These shortages and increased absenteeism can be attributed to the post-pandemic downstream repercussions. The shortages can also be attributed to illness, burnout, and pandemic fatigue while being exacerbated by the profession not producing teachers at a high rate, as had been the trend a decade ago. The decline in college students not entering the teaching profession can be attributed to salaries, benefits, school shootings, violence, and other social and emotional challenges, as well as an increase in mandated challenges facing the profession.

The profession is also experiencing something non-traditional: teachers are choosing different careers midstream, which used to be very rare in public education and the teaching profession. This new trend is very troubling to education; education wasn't viewed as a starter job but rather a lifelong career choice. Thus, this leaves school districts trying to fill vacancies due to absenteeism, staffing shortages, and open positions created by teachers leaving the profession.

### **Background**

This issue is critical to research and investigate solutions to problems resulting from teacher shortages. As the Director of Finance of a school district with over 5,000 students and employing 355 teachers across nine school buildings, tasked with budgeting all district personnel, firsthand knowledge of this problem is a daily concern. This budgetary responsibility has become much more difficult, especially post-pandemic, as

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the number of available teachers and the daily absenteeism rate are at an all-time high for the District. Before the pandemic, these issues were evident but were overcome by hiring long-term and daily substitute teachers. In addition, pre-pandemic absences were minimal, and most long-term absences were typically due to maternity leaves.

However, with data available from the Pennsylvania Department of Education (PDE) due to the legislative Act 82 of 2018, the school code of 1949 was amended to require the Department to publish the number of certificates issued annually in Pennsylvania since 2010. The Educator Preparation Report shows that the number of state certificates issued in 2021-2022 was 4,220, and in 2010-2011, the first year of this reporting was 15,301 (Pennsylvania Department of Education, 2023). Post-pandemic Canon-McMillan School District is seeing this landscape, and it has been made worse with the expiration of ESSER ARP Federal Funds. The District used these funds to hire daily substitute teachers and build substitute floaters. This new district practice was implemented to secure substitute teachers on a more long-term assignment and as a way to defend against a hiring pool that had become very shallow. However, those funds are no longer available, and the District faces a financial and educational dilemma. Stabilizing absences has become much more difficult as absences have become more frequent in both duration and occurrence. Sometimes, unplanned absences leave classrooms with no direct teacher instruction, just classroom coverage. The ability to budget has become significantly challenging as a result.

### **Capstone Focus**

Teacher absenteeism has become a problem that the Canon-McMillan School District needs to explore. To try and obtain more substitutes and address this problem, t



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Canon-McMillan School District raised the salary of a substitute teacher from \$100 to \$150 a day in 2022-2023; this represented a budget increase of 50% for that budget line item. The District also maintained (though a smaller number since the expiration of federal funding) the building of day-to-day floating substitute teachers. However, even with these budgetary increases, the ability to hire substitute teachers remains a problem that the Canon-McMillan School seeks to solve.

Suppose the Canon-McMillan School District is still educating traditionally. If this was the case, the District with an adequate number of teachers present to teach because the research shows that student achievement and classroom behaviors are negatively impacted when there are inconsistencies in their classroom teachers. "Do teachers matter? Absolutely – and a great deal (Stronge, 2010).

The researcher acknowledges that teachers in the classroom have a significant impact on students and their success. As a result of this knowledge, the researcher plans to analyze the teacher shortages. This research study reviews and substantiates through data the decline in teaching certifications in Pennsylvania, pre- and post-pandemic. The researcher will review and analyze absence data from the Canon-McMillan School District. The research will take a deeper dive into the District's hiring enough substitute teachers. By coupling this with financial data, the researcher hopes to aid the Canon-McMillan School District in solving this problem.

### **Research Questions**

The researcher has asked the following questions to guide the research and seek answers to aid the Canon-McMillan School District.

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1. What is the relationship between the number of staff absences before and after the pandemic as measured by archival data housed within the Canon-McMillan School District?
2. What is the relationship between the fill rates of staff absences before and after the pandemic as measured by archival data housed within the Canon-McMillan School District?
3. What is the relationship in satisfaction when serving as a day-to-day substitute teacher compared with reasons for selecting the Canon-McMillan School District as measured through a focused survey?

### **Expected Outcomes**

Through this research study, the Canon-McMillan School District will gain insight into the level of absences the District is experiencing, both present-day and historically. It is also the researcher's expectation that through the focused substitute teacher survey, the District will gain valuable insight into the levels of satisfaction or dissatisfaction a substitute teacher experiences working at the Canon-McMillan School District, as well as identifying strengths and weaknesses as communicated through the experiences of a substitute teacher at the Canon-McMillan School District. Finally, through this study, the researcher desires to provide the Canon-McMillan School District with suggestions for attracting and retaining full-time teachers and daily substitutes.

### **Fiscal Implications**

The researcher believes this study will also support future financial decisions related to using daily building substitute teachers and the rate they pay for their services. These fiscal implications could be in the form of recommendations to increase the current daily

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rate of substitute teachers. Fiscal implications could also include a recommendation to continue and expand the practice started post-pandemic with the infusion of federal funds. This practice was costly and had both current and recurrent fiscal implications. This practice was hiring floating day-to-day building substitute teachers every day to be used at the discretion of the building principal when teacher absences occurred. The researcher believes this study will aid the District in fiscal decision-making.

### **Summary**

In summary, the researcher aspires to aid the Canon-McMillan School District in making strides to solve the teacher shortage and use of daily substitute problems by increasing the ability to fill teacher absences with a daily substitute while expanding attracting and retention methods. The following research study will explore these areas with research-based strategies to improve retention and recognize the perceptions of daily substitutes. The subsequent chapters will review the literature in these areas, research methodologies, and data from the focused survey, to offer conclusions and recommendations.

## CHAPTER II

### Literature Review

Teachers or professional staff, as they are referred to in education, and the shortages prevalent in this vocation are the focus of this literature review. When there is a teacher shortage, the lack of professional staff can result in the need for daily and long-term substitute teachers. However, when teacher shortages occur consistently and at high rates, they consistently impact the ability to acquire daily or long-term substitutes. Staff shortages are a problem that researchers try to understand because teachers serve as the primary source of direct instruction for students in public school systems. Furthermore, educational research suggests that teachers serve significant roles in student success. This chapter will also include a timeline of the teaching profession and how it has evolved over the last several decades.

Teacher shortages existed prior to March 11, 2020, when the coronavirus disease was declared a pandemic; however, the shortages have been exacerbated during the post-pandemic 2021 up to the current day. Through educational research, this chapter will explain the reasons for the shortages and why they have been accelerating. Data and statistics will support that teachers are either not entering or are exiting the profession at alarming rates. Many other factors have contributed to teacher shortages, including school violence and shootings, increased classroom demands, poor working environments or work cultures, perceptions that the teaching profession is not valued, standardized testing demands, and additional factors explored in this literature review.

While evident before the pandemic, teacher shortages in a school district were less pronounced because long-term and daily substitute teachers were readily available.

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Pre-pandemic daily absences were minimal, and most long-term absences were typically due to maternity and paternity leaves, thus not resulting in a crisis or shortage. These leaves of absence were short, and the Canon-McMillan School District and other Pennsylvania School Districts had a substitute teacher pool that quickly filled these voids. As a result of teacher shortages, hiring long-term and daily substitute teachers is challenging. The substitute hiring pools have become sparse. Thus, the teacher shortage and the lack of daily substitutes are intertwined, compounding the problem. This literature review includes the work of experts, researchers, theorists, and data and statistics provided by the U.S. Department of Education and the Pennsylvania Department of Education. Within this chapter, the research is synthesized to provide a compressive analysis of teacher shortages and how they affect the ability to hire daily substitutes.

This chapter also shares educational research to support school districts embracing recruiting and retention strategies. These recruiting and retention strategies will help stabilize the exodus from the teaching profession and attract more teachers to fill supply needs. The research will demonstrate that teachers directly impact student achievement and success in the classroom when there are inconsistencies or a lack of consistent classroom teacher's classroom behaviors impacted negatively. Recruiting and retention are essential in curtailing the teacher shortages in the United States, Pennsylvania, and the Canon-McMillan School District.

This chapter will culminate with sharing researched strategies and practices that help school districts make their teachers feel valued and safe—providing mentoring and professional development support and establishing a culture where

teachers do matter. The research will also include the financial impact that these supports require. However, additional resources may be needed to reverse the trend in the teacher profession. These efforts may pay dividends with more stable and consistent work environments, culminating in more significant student success outcomes. Finally, this chapter will explore areas where more research is necessary, for example, how to create systemic culture changes that will attract more teachers to the profession.

### **Teaching Profession Evolution**

In some form, the teaching profession has existed since humans inhabited the earth but in an unstructured, informal manner. Public education formally began in the United States in the 1800's with The Normal School. Normal schools were named after the 16<sup>th</sup>-century model and became places where teachers were trained, learning with the students they were responsible for teaching (Paterson, 2021). As our society evolved, so did public education and the training of teachers. Ultimately, the normal schools were merged with colleges and universities and became more structured. Salaries became contingent on passing and acquiring advanced degrees that had added rigor, evolving teaching into a notable profession. "Teaching has been called the noblest profession. From our earliest roots at the Buffalo Normal School to the current challenges of post-COVID America, we have never changed our dedication to that conviction" (Paterson, 2021, p. 1). Researchers are interested in studying this noble profession and its struggle to meet current educational demands. "Do teachers matter? Absolutely – and a great deal" (Stronge, 2010, p. 3). Stronge (2010) argues that in terms of impact on students, one of the most significant factors is the teacher in the classroom.

### **Effective Teachers and Student Achievement**

Teacher shortages are an essential area of research because of teachers and their direct correlation with student achievement. The most critical factor in student academic achievement is the classroom teachers. A national report examines that teacher absences contribute to learning loss and higher costs (Miller, 2012). In another research report, the researchers conclude that students must have a committed, trained, and prepared teacher in the classroom. The report further concluded that student achievement and classroom behaviors are negatively impacted when experienced teachers are absent. Absences or vacant positions lead to a vicious circle of poor student achievement, increasing demand in an environment where needs exceed available resources (Carver-Thomas & Darling-Hammond, 2019). In an extensive study, over 30 studies were examined, analyzing the effect of teachers and their experience regarding student success. This study culminated with four significant findings that correlated the relationship of teachers concerning student success. The first finding is that "teacher experience is positively associated with student achievement gains throughout a teacher's career" (Kini & Podolsky, 2016, p. 1).

Figure 1 depicts, of these 30 studies, 28 found that teaching experience is positively and significantly associated with teacher effectiveness. Approximately two-thirds of the studies analyze longitudinal datasets with teacher-fixed effects, and the method is preferred because it allows for the examination of "within-teacher" returns to the experience. Of these studies, 18 out of 18 found that teaching experience is positively associated with teacher effectiveness. (Kini & Podolsky, 2016, p. 15)

**Figure 1***Summary of Analyses of Teaching and Student Achievement*

<b>Summary of Analyses of Teaching Experience and Student Achievement</b>				
Included Studies	No. of studies	No. of studies with positive findings	No. of studies with mixed, non-significant, or negative findings	% of studies with positive findings
Teacher fixed effects & and measuring 7+ years of experience	15	15	0	100%
Teacher fixed effects (including the 15 studies above plus three studies that analyzed <7 years of experience)	18	18	0	100%
All studies looking at 7+ years of experience, with and without teacher fixed effects (including the 15 studies in the top row plus seven other studies)	22	21	1	95%
All studies total (including studies that analyzed <7 years of experience)	30	28	2	93%

*Note.* Positive studies include those where, of all the findings about experience that are statistically significant, the majority show a positive relationship between teaching experience and student achievement. Mixed studies include those with a relatively equal mix of positive and negative statistically significant results. Non-significant studies include those where the majority of findings are insignificant. Negative studies include those where most of the findings about statistically significant experience show a negative relationship between experience and student achievement.



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Their second finding is also significant as it validates classroom teachers' importance. They found that more experienced teachers have students who succeed in other areas besides test scores, such as better attendance and fewer disciplinary offenses (Kini & Podolsky, 2016). Their third finding is that "teachers make greater gains in their effectiveness when they teach in a supportive and collegial working environment or accumulate experience in the same grade level, subject or district" (Kini & Podolsky, 2016, p. 23). They came to this conclusion by analyzing a longitudinal study of 3,145 teachers and 280,000 elementary and math students over a ten-year span that, along with other studies, was able to conclude positive returns with experience (Kini & Podolsky, 2016).

Their final and most significant finding is that "more experienced teachers confer benefits to their colleagues and the school as a whole, as well as to their students" (Kini & Podolsky, 2016, p. 23). In other words, they become committed, vested, and an essential part of their entire school, not just the class or classes they teach. The research establishes that teachers are essential to student success in the school and ultimately add value to the community. Despite the significance of a classroom teacher, shortages of teachers have become more than just an absent teacher on maternity leave or fighting off a cold. Teacher shortages are something that researchers have been laser-focused on understanding; despite the importance of classroom teachers, their demand is in high regard.

### **Teacher Shortages in the United States**

Teacher shortages have reached a "crisis of epic proportions," (Perna, 2022, p. 1). He cited a recent national survey where many teachers considered quitting their jobs or

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leaving the profession altogether (Perna, 2022). "The teacher shortages in the nation's public schools – particularly in our high poverty schools – is a crisis for the teaching profession and a serious problem for the entire educational system" (Garcia & Weiss, 2020, p. 1). A national survey on staffing shortages provided by principals and district leaders found that staffing shortages in the area of substitute teachers were prevalent among more than 75% of the respondents (Lieberman, 2021).

A Brown University (Nguyen et al., 2022) study concluded that while teacher shortages are poorly understood, they certainly exist. Their research found the shortages significant from publicly available data, state by state. At the time of their research, they reported that "36,500 vacant positions along with at least 163,650 posted being held by underqualified teachers" (Nguyen et al., 2022, p. 1). Their research focused on two years (2020-2021 and 2021-2022), including all fifty states and Washington, D.C. The researchers acknowledged (Nguyen et al., 2022) challenges with states consistently reporting vacancies or unfilled professional staffing numbers. Thus, the researchers further acknowledged that their report conveys very conservative numbers, which could be much higher. However, without a doubt, it answers the question of a national shortage (Nguyen et al., 2022).

The Brown University study (Nguyen et al., 2022) also concluded with two general recommendations for a wide audience range. Their study will be helpful to educators, policymakers, researchers, and all who seek to learn more and provide solutions to the national teacher shortages. They conclude that every state should make data readily available and that all states should use consistent definitions and more detailed reporting to enable research on this significant crisis (Nguyen et al., 2022).

A call to action from Secretary of Education Cardona "to address the teacher shortage" (United States Department of Education, 2023, p. 1). This call to action is in response to a nationwide teacher shortage. The action plea is for systematic change to increase the number of teachers entering the teaching profession and support existing teachers to remain. This announcement further strengthened the knowledge that the teacher shortage crisis is a real public policy problem on the agendas of local, state, and federal governments (United States Department of Education, 2023).

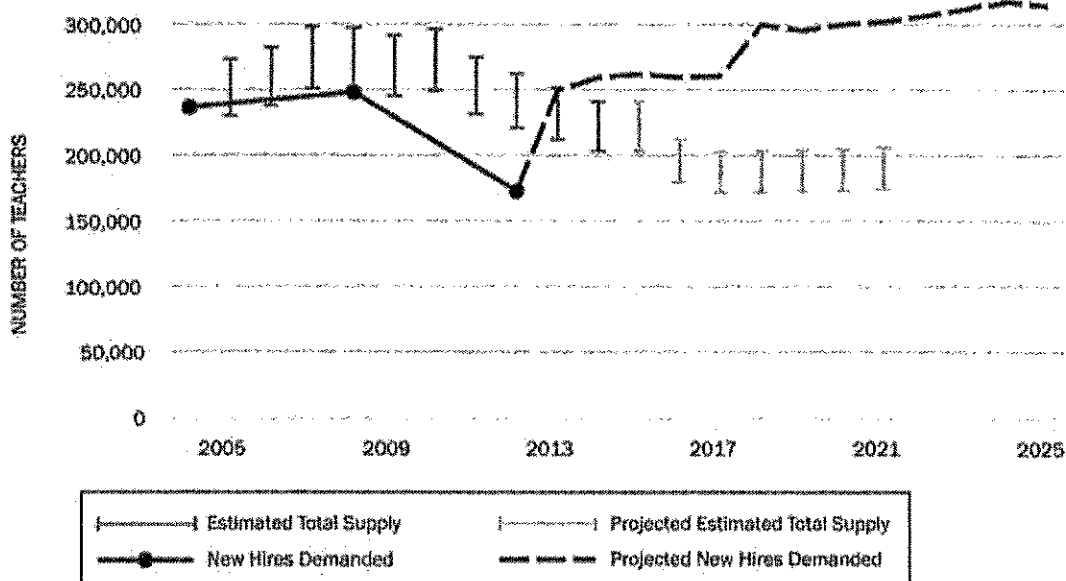
The National Education Association surveyed its members and released their results, "a staggering fifty-five percent of educators are thinking about leaving the profession" (Walker, 2022, p. 2). Data and statistics of this nature from national educational associations are alarming and cause us to consider the United States in a state of teacher shortage crisis. This crisis will directly impact students. The association reported that "eighty-six percent of members say they have seen more educators leaving the profession or retiring early since the start of the pandemic in 2020" (Walker, 2022, p. 2). However, teacher shortages are not new to the profession and very much a reality and not a myth (Ingersoll, 2003). Research found that the problem is turnover. Retirements were studied along with student increases but ultimately the research concluded that turnover is greatly affected by reasons other than retirement (Ingersoll, 2003). It was further concluded that turnover needed to be resolved through increased teacher salaries, professional development, and administrative support, especially for new teachers, and including teachers as a valuable resource for school decisions and comprehensive planning (Ingersoll, 2003). Because to not do so would be, in his opinion, "pouring more water into the bucket will not solve the problem if the holes are not first patched"

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(Ingersoll 2003, p. 151). Ingersoll spent a decade researching this topic, yet now we find ourselves in 2023 with teacher shortages reaching crisis levels.

A different set of researchers from Arizona State University, using data from the National Education Association and the United States Department of Education, further examined teacher shortages by defining, quantifying, and looking closely at teacher supply and demand to understand teacher shortages further. The researchers wanted to fully comprehend and investigate these components separately, then apply them in real life and see their interactions. The researchers wanted to analyze teacher supply and demand economics to extrapolate future scenarios. Their research found that teacher demand will continue to increase over the next decade (Sutcher et al., 2019). Their research also shows that while some new teachers enter the profession, more is needed to match demand. The researchers noted the following statistics in Figure 2, suggesting “that the United States is amid a teacher shortage that, if current, would worsen further” (Sutcher, L et al., 2019, p. 21).

More qualified teachers are needed to meet the demand. The shortages in the 2015-16 school year were estimated to be between 47,000 and 80,000 teachers. We estimate that if supply trends persist at these lows in 2017-2018, supply will be around 112,000 teachers short of demand as demand increases again. We expect an increase in the number of individuals entering teaching in response to a greater demand. Even if supply increases to pre-recession levels of 260,000 teachers a year, demand will outstrip supply by approximately 40,000. (Sutcher et al., 2019, pp. 20-21)

**Figure 2***Projected Teacher Supply and Demand*

*Note.* Adapted from Education Policy Analysis Archives.p. 21

(<https://learningpolicyinstitute.org/blog/teacher-supply-and-demand-getting-numbers-solutions-right>).

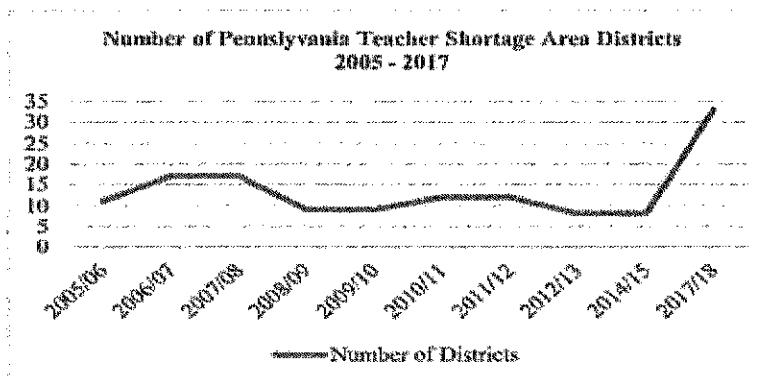
The Brown University study grouped states into three categories: Group 1 were states with a clear vacancy, Group 2 were states with a less clear vacancy, and Group 3 were Unknown vacancies (Nguyen et al., 2022). Pennsylvania fell into their Group 1 category, while Minnesota, Colorado, Connecticut, Pennsylvania, and Oklahoma report from one to five hundred vacant positions for school years from 2014 to 2021 (Colorado Department of Education, 2021; Connecticut State Department of Education, 2015; Eger, 2018; Minnesota Professional Educator Licensing Standards Board, 2021; Pennsylvania Department of Education, 2018). In a Pennsylvania State University research study, the

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researcher identified Pennsylvania as one state with "persistent teacher shortages" (Goodale, 2019, p. 9). The shortage in Pennsylvania is depicted in Figure 3.

**Figure 3**

*Pennsylvania Teacher Shortage*



*Note.* The Figure shows the Number of Pennsylvania Teacher Shortage Area Districts, Adapted from the Teacher Shortage Nationwide Listing 1990-91 through 2017-2018 (Goodale, 2019, p. 9).

### Teacher Shortages in Pennsylvania

Through examinations of teacher shortages, researchers have examined the supply of available teachers, the demand for teachers, and factors influencing both categories. How data is reported at the state and national levels is also examined, as each can vary in data reporting. As a result of a legislative act in 2018, the Pennsylvania Department of Education was required to administer through reporting Act 82, a Report on Educator Preparation and Certification. This act amended the Public-School Code of 1949. This legislative reporting mandate required reporting and data collection at a state level regarding teaching certifications issued for different instructional levels by grade and age

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span. This data was then reported annually to the Governor, Legislators of the House and Senate of Pennsylvania, and publicly on PDE's website. The report compared results to national trends of grade spans and age limitations. Figure 4 shows the number of Instructional I Certificates that Pennsylvania issued from 2010 through 2022 both in and out of state. It also shows additional credentials earned as Add On's in those years. Instructional I certificates are the initial certificates offered in Pennsylvania. Instructional II certificates are acquired when additional state requirements are completed. The chart shows a decline from 2010 to 2020 of 13,350 Instructional I Certificates issued. The decline was more than double the number of certificates issued to new teachers in 2021-2022. Figure 4 also depicts the number of Instructional II Certificates issued over the same period from 2010 through 2022. This group represents already established teachers moving up in their credentialing. This chart also shows a decline. The trend is similar: 56% fewer certificates, or a difference of 8,388, were issued in 2020 vs 2010 (Pennsylvania Department of Education, 2024). Pennsylvania's supply of teachers has decreased over time, but the need for teachers has not declined.

**Figure 4***Number of Instructional I Certificates Issued*

<i>Year</i>	<i>In-State</i>	<i>Out of State</i>	<i>Add On's</i>	<i>Total</i>
2010-2011	15,031	2,080	3,934	21,045
2011-2012	13,503	1,396	4,939	19,838
2012-2013	16,614	2,343	6,771	25,728
2013-2014	9,893	1,1290	1,724	12,907
2014-2015	8,751	1,329	2,102	12,182

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2015-2016	8,271	1,402	1,763	11,436
2016-2017	4,412	992	1,055	6,459
2017-2018	5,842	1,076	1,052	6,459
2018-2019	5,505	1,125	999	7,629
2019-2020	5,128	878	931	6,937
2020-2021	5,440	1,101	1,154	7,695
2021-2022	4,220	881	1,052	6,153
2022-2023	5,577	938	988	7,503

*Note.* Figure 4 depicts the number of Instructional I Certificates issued in Pennsylvania over a ten-year period. Adapted from The Pennsylvania Department of Education, 2024 (<https://www.education.pa.gov/DataAndReporting/Pages/Act82.aspx>). In the public domain.

The chart also shows a steady decline in Instructional I certificates issued from 2010-2024. Looking to Figure 5, this chart illustrates that the declining trend continues with Instructional II certificates. This data is even more concerning as it indicates that already certified teachers are not obtaining additional certifications. The downward trend in obtaining Instructional II certificates indicates that teachers may not remain in the profession.

**Figure 5***Number of Instructional II Certificates Issued*

<i>Year</i>	<i>In State</i>	<i>Out of State</i>	<i>Add On's</i>	<i>Total</i>
2010-2011	13,165	46	1,178	14,389
2011-2012	9,286	33	1,406	10,725



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2012-2013	12,093	60	1,946	14,099
2013-2014	10,125	34	493	10,652
2014-2015	8,809	38	970	9,817
2015-2016	8,538	29	633	9,200
2016-2017	6,023	16	364	6,403
2017-2018	6,472	16	452	6,940
2018-2019	6,705	27	429	7,161
2019-2020	5,820	10	356	6,186
2020-2021	5,870	30	450	6,350
2021-2022	5,413	15	573	6,001
2022-2023	6,101	20	479	6,600

*Note.* Figure 5 depicts the number of Instructional II Certificates issued in Pennsylvania over a ten-year period. Adapted from The Pennsylvania Department of Education, 2024 (<https://www.education.pa.gov/DataAndReporting/Pages/Act82.aspx>). In the public domain.

Pennsylvania Department of Education provided supply data on the number of new teachers in Pennsylvania and those staying and advancing in their credentials. Based on student enrollments, the demand data reported by the Learning Policy Institute (Sutcher et al., 2016) is one of three essential elements they recognize as impacting teacher shortages. The other two essential elements are shifts in pupil-teacher ratios and attrition (Sutcher et al., 2016). Goodale (2019), found that teachers are leaving for reasons other than retirement or status, which she calls preretirement attrition. This status refers to teachers leaving due to organizational factors: student enrollment, student-teacher ratio or life changes, and job dissatisfaction. Organizationally, the researcher focused on salary, workload, and resources as key contributors. Goodale (2019)

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concluded that organizational and school characteristics are directly responsible for Pennsylvania School Districts' inability to attract and retain teachers and recommended a focus on salary, financial incentives, and professional development and induction programs.

In a similar study conducted at the University of Pennsylvania, attrition, length of tenure, and the relationship between organizational factors were studied. The study yielded "among 3,947 teachers in the base cohort, and the median survival time was 4.8 years" (Allen-Platt et al., 2019, p. 11). The study also revealed that some organizational factors protected or improved survival time and tenure in a district. They were annual salary, hours of professional development, administrative support, and the size of the school (Allen-Platt et al., 2019). This study also highlighted salary as a crucial contributor to retaining and recruiting teachers.

Moreover, the teacher shortages in Pennsylvania have had downstream consequences that compound the problem. These consequences mean that while teachers are in demand, some school district solutions have only worsened the problem. For example, cyber enrollments have increased, increasing mandated costs to districts for cyber education. Thus, School Districts end up with limited discretionary revenues available for things that are not mandated. Ultimately, resulting a lack of funds is available to increase teachers' salaries.

Pennsylvania School Boards Association shared critical findings in their 2023 "State of Education Report." Among the top four key findings from their report were staffing shortages. They reported from 281 school districts (57%) across the Commonwealth that 92% of school districts reported experiencing a shortage of

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substitute teachers (Pennsylvania School Boards Association, 2023). The demand for education and in-classroom teachers has remained vital for Pennsylvania children. The PSBA Report went on to further report that Pennsylvania is ranked seventh in public school enrollments in the United States, with more than 1.7 million children enrolled in public education, and 90% of Pennsylvania attend a public school (Pennsylvania School Boards Association, 2023). However, absent from the list of top budget pressures was teacher salaries. Instead, the report reported seven areas, of which six were unfunded mandates imposed on school districts, with charter school tuition ranking number one for another year. The PSBA report reported that 30.5% of school districts reduced or eliminated staff to balance budgets.

In 2024 Pennsylvania School Boards Association reported again in their “State of Education” survey that based on a fifty-six (56%) percent response rate that “nearly 90% of school districts reported experiencing a shortage of substitute teachers” (Pennsylvania School Boards Association, 2024, p. 4). In the same report, it was reported that of the responding school district, fifty percent (50%) had open positions at the beginning of the school year (Pennsylvania School Boards Association, 2024). The survey asked district leadership if their districts are still experiencing burnout. The report shared that respondents indicated, “teacher burnout may be easing but still very high” (Pennsylvania School Boards Association, 2024, p. 40). This report similar to the 2023 report, did not have teacher salaries as one of the main budget pressures. Instead, unfunded mandates continued to top the list.

Another study on that teacher recommends that solutions include salary increases, scholarships, loan forgiveness programs, working conditions, elevated public perception

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of teachers, and professional development supports (Fuller, 2022). In another research study conducted at Brown University, the researchers quoted and cited other researchers, "Such severe impacts of teacher shortages on both schools and students have prompted substantial research around teacher preparation pipelines as well as recruitment and retention policies" (Nguyen et al., 2022, p. 3) cited the following researchers as in line with her research (Cowen et al., 2016; Darling-Hammond, 1997, 2010; Garcia & Weiss, 2020; Glazerman et al., 2013; Goldhaber et al., 2015; Hussar, 1999; Ingersoll, 2003; Ingersoll, 2017, 2019; Podolsky et al., 2016). Pennsylvania has significant teacher shortages and difficulties recruiting and retaining teachers. School districts within the Commonwealth exhibited these same deficiencies. The Canon-Millan School District, located in southwestern of Pittsburgh, Pennsylvania, is one of these districts affected by the teacher shortage.

### **Teacher Shortages at the Canon-McMillan School District**

Canon-McMillan School District, a growing school district in western Pennsylvania, had student enrollment of 4,836 students, in 2010. By 2023, that number had increased to 5,358, as the District reported to the Pennsylvania Department of Education. The Canon-McMillan School District engaged a demographer from Stewman Demographics, LLC, a professor at Carnegie Mellon University, Dr. Shelby Stewman, for the purpose of predicting future enrollments. The school district administration wanted to understand the grade level enrollment and growth across the Canon-McMillan School District as it spans fifty-seven square miles and includes two municipalities and a borough. The school district administration also wanted to know what grade levels to expect future growth.

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The two demographic studies, one in 2017 and another in 2021, were conducted to aid the Canon-McMillan School District in planning for increases in the number of school-age children attending the Canon-McMillan School District. The results of these two studies strengthened district beliefs that enrollments would be on the rise over the next decade. The Canon-McMillan School District is projected to have 6,152 students in attendance by 2029. The Canon-McMillan School District administration used the data from the two studies to recommend a long-range capital improvement plan for district facilities and staffing.

The second demographic study concluded with the following findings and this statement: "rather explosive growth in enrollment again" (Stewman, 2021, p. 5). His first study, in 2017, indicated that there would be significant student enrollment growth. The report contained five scenarios as predictors of future enrollments, and the fifth scenario matched most closely with actual data. Therefore, the second study, in 2021, confirmed the student enrollment growth and cited that student enrollment growth will continue over the next decade.

Between 2000 and 2010, total student enrollment in the Canon-McMillan School District increased by 902 students, an average of 90/year; in the subsequent decade (2010-2020), student growth has averaged 40/yr. In the present study, the most likely scenario is a return to rapid growth over the next decade – an increase in student enrollment of 920 students or 92/year. (Stewman, 2021, p. 1)

The two demographic studies proved excellent resources for student enrollment trends for Canon-McMillan School District administration. The studies yielded grade level increases from an in-migration of families from local economic changes due to the

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gas and oil industry. Gas and Oil analysts and workers were moving here from western states where gas and oil has been predominant and had more experience. These families were moving here with school age children at higher grade levels than expected as they were more mature families. In addition, many families were moving to the Canon-McMillan School District to begin their careers and start families. The studies followed birth and death rates, yielding substantial increases. Finally, the studies remarked on new housing developments as a result. The Canon-McMillan School District accommodated this growth due to large tracts of undeveloped farmlands. These farmlands are being sold and developed at a breakneck pace. In the 2022 school year, a trailer had to be placed at one elementary school to accommodate increased enrollment. That school site is slated for a new elementary school by 2026 to accommodate the growth.

However, the studies could not provide data on the Canon-McMillan School District's ability to staff for the increased enrollments. While preparing for the increased enrollments, the Canon-McMillan School District faced many unanticipated staffing challenges. The challenges were in the form of three trends not previously recognized by the Canon McMillan School District. Those three trends are directly related to the teacher shortage and lack of daily and long-term substitutes at the Canon-McMillan School District. They are a decrease in applicants applying for open positions, a lack of daily and long-term substitutes, attrition due to reasons other than retirement, and an increase in daily absences of teachers.

### **Trends Creating Hiring Challenges at the Canon-McMillan School District**

The current hiring trends creating challenges for the Canon-McMillan School District are the low number of applicants, decreased availability of daily and long-term

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substitutes, teachers leaving the profession for reasons other than retirement, and steady increases in the daily absences of teachers. The first trend is the number of applicants applying for open positions. In the past, there used to be many across the board in any open teaching position. It was expected to have 200-300 applicants for a single elementary teacher opening. However, the pool of applicants has been shrinking in the last five to ten years. The Canon-McMillan School District now considers themselves fortunate to have 100 applicants for an elementary teacher opening; in 2023, not one open position ever had more than 100 applicants. The applicant pool shortage has been especially evident when seeking specialized teachers; there are sometimes no applicants who meet the minimum certifiable qualifications. In September of 2021, this was the case for an open Spanish teacher position. For instance, the Canon-McMillan School District had to look outside the country for a Spanish teacher and recruited one from Puerto Rico.

The second trend challenging the Canon-McMillan School District, is the lack of daily and long-term substitute teachers. The Canon-McMillan School District now actively recruits residents of the Canon-McMillan School District. The Canon-McMillan School District created a substitute academy in 2020-2021 to increase the hiring pools and acquire daily substitutes recruited from within the constituents of the school district. The Emergency Substitute Teaching Program offered by the Pennsylvania Department of Education, allows the Canon-McMillan School District to recommend substitute teachers on an emergency basis to counteract the problem.

While the Canon-McMillan School District attempts to anticipate and adapt to a shrinking applicant pool and lack of available daily and long-term substitutes, a new

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problem has surfaced. The Canon-McMillan School District has seen a new trend regarding teachers leaving the Canon-McMillan School District. Historically, early career teacher exodus was a rare trend at the Canon-McMillan School District before the coronavirus disease pandemic in 2020. An early career exodus is not a new trend; it is new to the Canon-McMillan School District. As cited by the Pennsylvania Department of Education in their report on "Attrition of newly recruited K-12 Teachers in Pennsylvania", "between 30% to 50% of new or beginning teachers left their school or profession within five years of recruitment" (Allen-Platt et al., 2019; Gray & Taie, 2015; Ingersoll, 2001, p. 4).

Currently, the Canon-McMillan School District is experiencing new hires leaving within a year or two of being hired. They are exiting the profession to stay home or move to a school district that pays more money. The Human Resource Department acquired this information during exit interviews of the teachers leaving the Canon-McMillan School District. The Human Resource Director attempts to schedule an exit interview with all staff who leave voluntarily. Exit interviewing is a routine practice that provides valuable information for the Human Resource Director to share with the Superintendent and the other Central Office Administrators.

This new trend comes when the Canon-McMillan School District should increase staff numbers for new facilities and enrollment, as reported in demographic studies by Dr. Shelby Stewman (Stewman, 2021). Instead, the Canon-McMillan Board of Directors is presented with recommendations to hire professional staff each month. These recommendations are primarily a result of vacancies from teachers leaving the district. For example, in the 2021-2022 school year, the Canon-McMillan School Board



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of Directors hired twenty-four replacement teachers, whereas in the 2017-2018 school year, only one replacement teacher was hired (Canon-McMillan School Board of Directors, 2017-2022). The last challenge contributing to the overall teacher shortage and lack of daily and long-term substitutes is the increase in the daily absences of teachers. This trend is evident in the data gathered from the district; significant increases in daily absences (Frontline Education, 2023). Teacher absences and their increasing numbers are an area that researchers have concluded is yet another issue contributing to teacher shortages. At the Canon-McMillan School District, this has affected operations and directly contributed to teacher shortages as depicted in Table 1.

**Table 1***Daily Absence Trends*

Date Range	Daily Absences	
	Professional Staff	Increase
2019-2020 SY	3,487	
2023-2024 SY	7,215	+ 3,728

*Note.* Absence data obtained from Frontline Education, 2024. *Canon-McMillan School District Software* [Unpublished raw data].

The ability to fill vacancies becomes more challenging when the district attempts to fill those vacancies from absenteeism with daily or long-term substitute teachers, but only some are available. The available substitute teachers are at an all-time low as is shown in Table 2.

**Table 2**

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*Daily Absence and Substitutes Availability*

Date Range	Daily Absences	Absences Filled with a Substitute Teacher	Absences Not Filled No Substitute Available
2019-2020 SY	3,487	2,584	903
2023-2024 SY	7,215	6,366	849

*Note.* Table looks at absence data as well as the availability of substitute teachers to fill vacancies. Data obtained from Frontline Education, 2024. *Canon-McMillan School District Software* [Unpublished raw data].

The concern over teacher absences has yielded research on this topic. In a study entitled "When a paycheck is not enough," the researcher sought to determine how incentives would impact attendance (Lauk, 2022, p. 63). The only significant conclusion the study confirmed was that chronic teacher absenteeism resulted in high student absenteeism. The researcher cited statistics indicating that teacher absenteeism is challenging for school districts (United States Bureau of Labor and Statistics, 2023).

A rise in educators' rate of absences (2.2%) is currently lower than the general workforce (3.0%) and lower than reported in 2003-2004 when 5.6% of American teachers were absent daily; the issue is still significant for school districts. The pandemic has added another layer to the absenteeism issue in education. Sarah Sparks sums it up in her article, "How to find (and keep) substitutes," when she says, "There is no substitute for a good substitute teacher". (Sparks, 2023, p. 1)

The research is sure of one finding: There is a teacher shortage. This teacher shortage crisis has trickled down to Canon-McMillan School District in western Pennsylvania, where the crisis is affecting daily operations. Researchers who have conducted extensive research on this issue have similar conclusions. In an extensive landmark study that has spanned over three decades (1987-2021) on this topic, concluded.

The teacher workforce has been transformed over the last 30 years, with significant financial, structural, and educational consequences. Too often researchers, school leaders, and policymakers are still operating under false assumptions who goes into teaching and how teaching careers unfold. If we want to improve student performance, we must understand this new reality. (Ingersoll et al, 2018, p. 1)

Findings cites that one in ten teachers leave their first year before settling in and fine-tuning their skills (Ingersoll et al., 2018). Darling-Hammond (2022) following the teacher crisis and has conducted several studies on the topic, suggests, "In the face of yet another crisis in teachers, it is time for a bold and comprehensive plan to revitalize and better support the profession" (Darling-Hammond, 2022, p. 1). In order to better support the teaching profession, a better understanding of how to keep and attract teachers is needed.

### **Teacher Retention and Recruiting**

In order to support the profession and make systemic changes, a better understanding is needed of why teachers leave the profession and the organizational factors that contribute. Gaining this understanding will allow for ways to overcome the

teacher shortages. In an article entitled "Teacher well-being: Promoting social, emotional learning to alleviate burnout," a key takeaway is "supporting teachers' well-being is critical" (Isbell & Miller, 2023, p. 20). The authors conclude their article with, "If we want teachers to stay in the classroom, we must create a multi-layered environment that acknowledges, cares and fosters teachers' well-being" (Isbell & Miller, 2023, p. 23). A teacher's well-being comes in many forms: providing a safe and secure work environment, providing adequate support and resources while listening to feedback, demonstrating a sense of caring, and mentoring teachers are just a few factors explored in this literature review. However, all come together in a comprehensive systemic manner that transcends any one school and suggests that more significant societal changes are needed to surmount this problem."

School Health and Safety has been an emerging topic or factor in the teacher retention challenge. However, incidents of school violence and shootings have been occurring since 1764, when an American Indian entered a schoolhouse in Pennsylvania and killed the schoolmaster and students (Strait, 2023). However, in recent years, the increased number of occurrences nationwide has created a heightened fear in teachers. A recent article in District Administrator reported that "school staffing and school safety are intrinsically linked" (Sams, 2023, p. 61). The article shared that a study conducted at Brown University found that "a school's climate, including its leaders' commitment to safety, has a significant impact on teacher retention" (Sams, 2023, p. 61). The heightened awareness of school health and safety issues has researchers looking at this factor and its impact on the social-ecological framework of schools. While this literature review includes health and safety as an organizational factor, the researcher recognizes that

health and safety is an area that needs to be studied more deeply for future educational research. In addition to well-being, this literature review explores other factors contributing to retention and recruiting, such as burnout, training, school climate, leadership role, and salary.

Dworkin (1987) conducted extensive research on this topic decades earlier. His research was a landmark longitudinal study, which he conducted in this first-time large-scale study that examined the sociological analysis of teacher burnout. Dworkin (1987) listed and cited the following social causes of teacher burnout and turnover: low pay, problematic security on some school campuses, oversized classes, culture shock, the growing bureaucratization of urban education, and the belief by teachers that students, parents, school administrators, and the general public are unconcerned about teachers and schools. He cited several researchers and presenters listing these factors (Collins & Noblit, 1976; Dworkin, 1982; Lortie, 1975; Moeller, 1964; National Education Association, 1982; National Institute of Education, 1976; Orfield, 1975). In his research, Dworkin concludes, like current-day researchers: "It is unlikely that our society can significantly alter the magnitude of teacher burnout in American schools without putting forth a monumental effort" (Dworkin, 1987, p. 9).

Moreover, Dworkin (1987) concluded that the main theme areas of focus should be on the following: fundamental changes in recruitment and training, how teachers are employed and deployed in public education needs to be more deliberate and strategic, and finally, a focus or re-focus on principals as more than supervisors, but rather managers. As an aside but equally important, regarding salary, Dworkin (1987) concluded that his research demonstrated that teaching was a vocation that was more of a calling than a

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salary-seeking one. However, wages still need to be competitive to attract and retain teachers.

Another researcher focused on teacher attrition and the relationship between organizational climates. In her study, she concluded that researchers need to go deeper to correlate the interconnectedness of teacher attrition, school climate, and campus leadership (Cotton, 2023). However, concluded that teacher attrition is not related to the principal's leadership but to other organizational factors (Cotton, 2023). Findings included that instructional support was related to teacher attrition, and aligned with other researchers (Allen-Platt et al., 2019; Carver-Thomas & Darling-Hammond, 2019; Goodale, 2019; Ingersoll, 2003).

McFeely (2018) highlighted why our best teachers are leaving and how to retain them. Concluding that 60% of teachers voluntarily left their jobs due to lack of development or advancement, pay, and benefits then next highest category at 13% (McFeely, 2018). He went on to list four approaches or strategies to attract and retain teachers further. They were similar to Dworkin's recommendations from 1982. The first was understanding teacher candidates because, with his knowledge, a better placement, training, and deployment of teachers. The second one the Canon-McMillan School District uses extensively is an exit survey. These surveys provide data to understand the organization's weaknesses and challenges. Exit surveys can guide where to focus professional development, training, and resource availability in retaining teachers, using data analytics, like Frontline Education software, to predict turnover, make plans to make data-driven decisions, and ensure that top talent is engaged. Dworkin concluded that principals should be managers and play a crucial role in teacher development and

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retention. Therefore, principals do not just lead teachers through the school day; they also need to be inspirational leaders who motivate, influence, and mentor their teachers.

Furthermore, attrition, teachers, and political climate once again claimed center stage. It is recognized in writing and research that the important role a principal has on student learning (Leithwood et al., 2020). Another researcher notes, "The principal is second only to the teacher in terms of impact on student learning" (Mitchell, 2022, p. 3). The theme that principals play a critical role in student achievement and staff retention is still cited as a best practice almost three decades after Dworkin's research. Professional Learning Cultures and teacher attrition in political times further explored the role of principals when it comes to early teacher turnover.

Another study yielded empirical evidence that principals have an essential leadership role in reducing early career teacher turnover was (Kim, 2019). Principal leadership is just one-factor affecting teacher retention and attrition. The data strongly indicates that principals are an essential aspect of retention. The researcher acknowledges that there were limitations to survey data and recommends a further dive for future researchers in this area of teacher turnover. Figure 6 illustrates the empirical evidence from the study.

Figure 6 examines the "potential impact of principal leadership on Early Career Turnover" over five years in a data set gathered from the National Center for Education Statistics (NCES) and the Beginning Teacher Longitudinal Study (BTLs) (Kim, 2019, pp. 127-129). The researcher further identified six reasons or "gaps" related to early teacher turnover: Instructional leadership, student behaviors, and culture, as well as those areas related to the "Professional leadership" of their principals. The data in the figure

below concludes, "The findings from this study suggest that principal support might be much more important than expected" (Kim, 2019, pp. 127-129).

**Figure 6**

*The Impact of Principal Leadership*

*The Influence of Specific Aspects of Principal Leadership on Leaving the School*

	MODEL 1 {Leaving the School: Instructional Leadership}	MODEL 2 {Leaving the School: Leadership Related to Student Behavior}	MODEL 3 {Leaving the School: Leadership Related to Culture}	MODEL 4 {Leaving the Profession: Instructional Leadership}	MODEL 5 {Leaving the Profession: Leadership Related to Student Behavior}	MODEL 6 {Leaving the Profession: Leadership Related to Culture}
T2	2.03* (.60)	2.17* (.60)	2.08* (.63)	1.75 (.54)	1.86* (.58)	1.73 (.55)
T3	.98 (.31)	1.06 (.35)	1.02 (.33)	.81 (.29)	.88 (.31)	.89 (.31)
T4	.78 (.26)	.81 (.27)	.82 (.28)	1.41 (.49)	1.39 (.51)	1.51 (.52)
Principal leadership	.94 (.07)	.86*** (.06)	.88 (.07)	.97 (.10)	.82* (.08)	.96 (.09)
FRL	1.01*** (.003)	1.01*** (.003)	1.01*** (.003)	1.01 (.004)	1.01 (.004)	1.01 (.004)
Urban schools	.92 (.29)	.92 (.29)	.94 (.29)	.96 (.25)	.97 (.25)	1.01 (.27)
Elementary	.95 (.17)	.98 (.18)	.92 (.17)	.74 (.16)	.77 (.17)	.70 (.16)
Middle	1.02 (.27)	1.03 (.27)	.99 (.28)	.99 (.34)	.99 (.33)	.98 (.34)
Alternative certification	1.01 (.21)	1.01 (.22)	.99 (.21)	.66 (.17)	.87 (.17)	.62 (.16)
Preparation	.93 (.13)	.96 (.14)	.92 (.13)	.85 (.14)	.88 (.15)	.85 (.14)

*Note.* The figure shows the importance of principals in a teacher's early career, especially through first three years. After first three years other factors become more significant (Kim, 2009).

### Effective Teachers and Job Satisfaction

Steiner and Woo (2021) conducted a national study with a representative sample of K-12 teachers having a 55% retention rate. The key takeaways from this study were that job-related stress is an issue that needs to be recognized and addressed. The study reveals that not enough attention or credence is given to job related stress. But rather if recognized could be an aid to maintaining teachers. The second was that there is a correlation between the mental and well-being of a teacher and student outcomes, and the final takeaway is that teacher stress directly linked to turnover and attrition of teachers



(Steiner & Woo, 2021). However, most importantly, this study confirms that high levels of job stress from a myriad of organizational climate factors directly contribute to teacher attrition and, ultimately, to the teacher shortage crisis.

The researcher recommends several ways systemic change can occur at all levels to help aid in this crisis, improve teacher attrition rates, and eventually slow down or reverse the teacher shortages. The recommendations are categorized into five categories. A survey was conducted post-pandemic, so the first recommendation directly relates to aiding teachers during mitigation measures so they can concurrently focus their energies on instruction rather than implementing safety measures. For example, the pandemic caused classroom teachers to focus on cleaning and adhere to social distancing guidelines rather than classroom instruction. This recommendation was relevant to other mandates often placed on teachers that distracted or sidetracked them from their primary goal of student instruction. Standardized testing was reported in a survey of teachers, principals, and district leaders as one of those mandates that teachers feel sidetracks them from their primary objective, student instruction (Stanford, 2023).

The second recommendation, much like that of other researchers, is that school districts' administrators should make data collection routine and maintain a constant improvement mindset when it comes to teacher well-being and work conditions (Darling-Hammond 2022; Isbell et al., 2023; Isbell & Miller, 2023). The third recommendation is a newer approach than previous researchers have recommended and may have resulted directly from post-pandemic surveying. Post-pandemic surveying is a way for principals and district leaders to get back in synch and gauge staffs' well-being. Thus, inherent within this recommendation is the need for school districts to develop, foster, and

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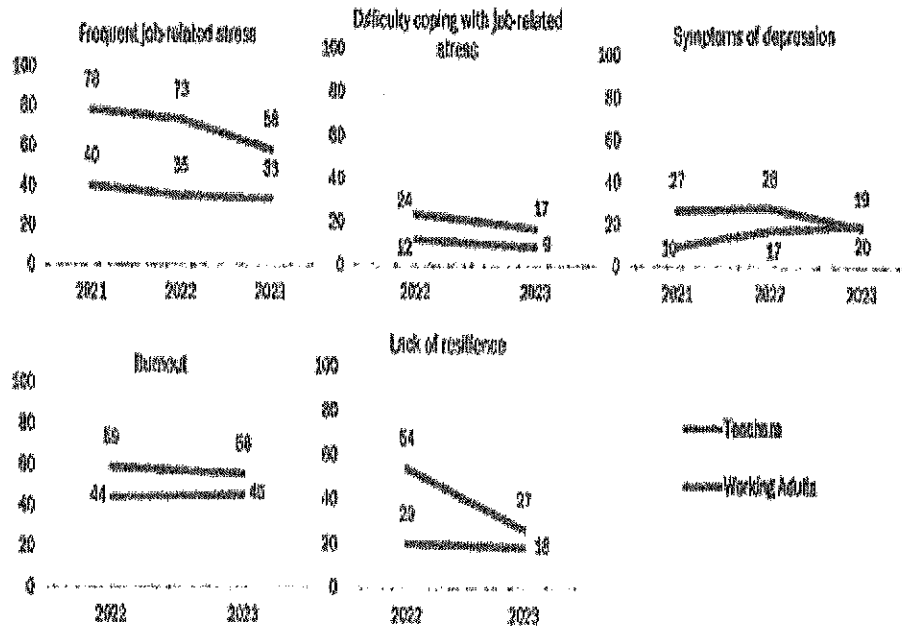
maintain partnerships with professional associations and community partnerships to establish mental health and wellness support for teachers. The last two recommendations were directly related to post-pandemic issues such as teacher childcare and technology policies and procedures. As implied, the main takeaway from this research is that implementing organic organizational changes is necessary for the rate of teacher turnover to improve. "Teachers need social and emotional support now more than ever (Ferren, 2021, p. 1).

Doane et al. (2023), in support of organizational change explored teacher well-being and their intention on leaving. This study, like their previous study, compared the well-being of teachers to other working adults, and the results showed some improvement, but teacher burnout did not change, see Figure 7 (Doan et al., 2023). The top line represents Teachers, and the bottom represents Working Adults. Teacher results were higher in all five areas: frequent job-related stress, difficulty coping with job-related stress, burnout, and lack of resilience. The researchers cite a study from Pennsylvania State University entitled "Teacher Stress and Health; Effects on Teachers, Students, and Schools" and also recommend "restoring teacher well-being could improve job performance and job satisfaction and boost retention for teachers of all backgrounds" (Greenberg et al, 2016, p. 2). The study clearly shows that teachers have reported job related factors impacting them and their well-being more than other working adults.

**Figure 7**

*Well-Being of Teachers and Working Adults*

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*Note.* The figure shows the weighted percentage of teachers (top line) and the weighted percentage of the general working employed adult population (bottom line) (Greenberg et al., 2016).

When asked why teachers are leaving the profession, a common research finding is presented. "...offer a path to improving conditions for teachers consistent with past research into teacher retention." "Teachers with supportive administrators and the space and flexibility to do their professional work are less likely to consider leaving the classroom" (Marshall, et al., 2022 p. 3). Additionally, when teachers feel valued, they are less likely to leave the classroom. "Teachers who perceive parents as supportive also report greater levels of job satisfaction and professional accomplishment" (Skaalvik & Skaalvik, 2009, p. 1).

Another examination of teacher satisfaction and the ability to retain teachers points to the principal's role in teacher retention. A 2020 research study by Southern Connecticut State University examined a principal's role in teacher retention (Shuls & Flores, 2020).

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The study concluded with a consistent theme that supportive administration creates a positive work culture and an environment where teachers want to work and are less likely to leave. The core theme of the study was a deep dive into how administrators can create a positive work environment. They ended their study with a citation from researchers (Brown & Wynn, 2007), which is a perfect summation of this literature review, and a critical quality that successful administrators have in reducing teacher turnover is shared decision-making and working collaboratively for shared goals, values, and professional improvement (Shul & Flores, 2020).

### **Summary**

The teacher shortage and downstream substitute and long-term teacher shortages are a problem facing the United States, Pennsylvania, and the Canon-McMillan School District. The literature review is a deliberate attempt to cite research and data that offer reasons for the shortages that have only been exacerbated during the post-pandemic period. This review also shared why it is essential to attract and retain teachers in order to continue to maintain positive student outcomes and behaviors. The review culminated with recommendations for implementing strategies to attract and retain teachers. Research on what methods show the best results, and even some studies indicate more research is needed on specific areas of this problem.

The focus will now shift to data gathering to answer the research questions regarding teacher shortages and their effects on daily and long-term substitute teachers. Data collection will be conducted using a mixed-method approach. A survey, entitled "An Analysis of Teacher Shortages and the Use of Daily Substitutes," was sent to 288 substitute teachers in September and will close in December. The Pennsylvania Western

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University Institutional Review Board approved a research survey with Demographic, Likert, and open-ended questions. The results will be coded and triangulated to analyze the data and aid the researcher in answering the research questions. Data will also be collected from the Canon-McMillan School District school district software, Frontline Education. This data will be the absence data of teachers within the Canon-McMillan School District and the daily fill rates associated with the daily absences when an absence occurs, on either a daily or long-term basis, the opening created by the absence needs filled with either a daily or long-term substitute. Often, the opening is not filled. Thus, the Canon-McMillan School District software calculates the percentages of openings needing to be filled daily. In the research, that percentage is referred to as a daily fill rate. The researcher intends to use both methods to enhance and complement the data collection for a more substantive analysis. The data collection ultimately culminates with research outcomes and recommendations of this action research study.

### CHAPTER III

#### Methodology

“Do teachers matter? Absolutely – and a great deal” (Stronge, 2010 p. 3).

Recognizing the current teacher shortage is a crucial problem to solve, and the shortages are occurring at national, state, and local levels. Teacher shortages have reached a "crisis of epic proportions" (Perna, 2022, p. 1). "The teacher shortages in the nation's public schools – particularly in our high-poverty schools – is a crisis for the teaching profession and a serious problem for the entire educational system" (Garcia & Weiss, 2020, p. 1).

In Pennsylvania, the shortage trend was evident when the number of professional teaching certificates issued were researched. Pennsylvania issued 56% fewer professional teaching certificates in 2020 than in 2010 (Pennsylvania Department of Education, 2023). Canon-McMillan experienced first-hand the impact of the teacher shortage crisis. A 2021 demographic study concluded with this statement: "rather explosive growth in enrollments again" (Stewman, 2021, p. 5). However, while enrollments are soaring, the availability of teachers and substitute teachers has yet to keep pace. While the Canon-McMillan School District demographic studies could provide good enrollment data, the studies could not provide data on the Canon-McMillan School District's ability to staff for the increased enrollments. While enrollments were rising, the Canon-McMillan School District faced three new staffing trends that were not evident pre-pandemic. There was a decrease in applicants applying for open positions, thus a lack of daily and long-term substitute teachers, attrition due to reasons other than retirement, and an increase in daily absences of teachers.

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Since the global pandemic, teacher shortages and downstream effects have been particularly evident in the Canon-McMillan School District. The District has faced teacher shortages, hiring challenges, and a need for more available daily and long-term teacher substitutes. These shortages are reaching all-time district highs, causing District Administration to look for solutions so that student achievement will not be impacted. Pre-pandemic, it was very common to have 200-300 applicants for a single elementary teacher opening. Whereas, in 2023, not one open position ever had more than 100 applicants.

Furthermore, the research supports the idea that attracting and retaining teachers is essential. In an article on teacher well-being, the authors concluded, "If we want teachers to stay in the classroom, we must create a multi-layered environment that acknowledges, cares for, and fosters teachers' well-being (Isbell & Miller, 2023). In conclusion, it was determined that attracting and retaining teachers is essential to maintain positive student outcomes and behaviors. In an extensive study analyzing the effect of teachers on student success, the researchers concluded that teacher experience is positively associated with student achievement gains through a teacher's career (Kini & Podolsky, 2016).

Connecting the research-based review and the methodology plan for the data collection is essential to the action research study. A mixed-methods approach will be used to answer the research questions posed by this doctoral capstone project. Solutions will be sought utilizing quantitative and qualitative approaches to provide substantive triangulation in the methodology. This triangulation will enhance and complement the

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data collection for more substantive analysis. The use of multiple methods and data collection sources only enhances the validity of research findings (Mertler, 2022).

Prescribed methodology and data collection defined the researcher's questions and their justification for why it is essential to research them. The researcher described the research study's setting and participants. The researcher set forth the context of the action research by defining the who and where of the research study. The researcher provided the foundational context for the action research. The researcher conveyed the research plan by outlining the steps that will be taken in the research process. The data collection and research methods supported or refuted the research questions posed by the researcher in this study.

Two constructs were also examined throughout this process. A focus was placed on the fiscal implications that resulted from seeking answers to the researcher's problem and questions. The fiscal short- and long-term implications were outlined as critical components. The researcher recognized that budgeting and responsible fiscal planning are paramount to any organization. "Education Secretary Miguel Cardona has urged districts to use pandemic recovery funding to build short-term substitute teacher pools and longer-term pipelines of new teachers" (Sparks, 2023). The problem with using federal funds to make these systemic changes is that they ultimately expire, and a funding cliff will be created for school districts to overcome in their budgeting processes. The researcher then examined the validity of the action research study. The researcher defined "the level of quality in the action research"; "this can be referred to as its *rigor*" (Mertler, 2022, pp. 167-168). "In general, *rigor* refers to the quality, validity, accuracy, and credibility of the action research and its findings" (Mertler, 2022, pp. 167-168). Once the researcher



establishes the rigor of their research design, the chapter will conclude with a summary and introduction to the next chapter on data analysis and results.

### **Purpose**

The teacher shortage crisis plaguing our state and nation, including the Canon-McMillan School District, has also been evident locally. The District has experienced measurable growth over the last decade, as evidenced by recent census data and the District's demographic study in 2021 (United States Census Bureau, 2020; Stewman, 2021). However, the expected "rather explosive growth in enrollment again" (Stewman, 2021) is not accompanied by the same outcome when attracting and retaining teachers.

While preparing for the increased enrollments, the Canon-McMillan School District has faced many staffing challenges. These challenges have presented themselves in different ways than in the past. Thus, the District has yet to overcome these challenges in the traditional hiring practices that the administration has traditionally utilized. Linda Darling Hammond, an educational researcher following the teacher crisis, suggests that more support for the teaching profession needs to be put in place (Darling-Hammond, 2022).

Subsequently, the way the shortages are occurring is different, too. As a result, the Canon-McMillan School District has revised its marketing and recruiting strategies for open teaching positions and daily and long-term substitute teachers. These strategies have included recruiting outside of the country for an open specialized foreign language position, creating a district substitute teacher academy recruiting from within the constituents of the school district, and seeking private sector marketing firm consultation on different marketing strategies. However, after exploring and implementing various

strategies to attract and retain teachers, the Canon-McMillan School District has teacher open positions daily. These trends occurred at national levels as well. Richard Ingersoll, a researcher who has spent three decades researching teacher shortages, found that one in ten teachers leave their first year (Ingersoll et al., 2018).

While attempting to find creative ways to attract teachers from a very shallow hiring pool, the Canon-McMillan School District experienced unexpected trends exacerbating the teacher shortage crisis. Fewer applications have been received in recent years, indicating a decreased interest in teaching. A research study conducted at Brown University concluded that "such severe impacts of teacher shortages on both schools and students have promoted substantial research around teacher preparation pipelines as well as recruitment and retention policies" (Nguyen et al., 2022, p. 3). Furthermore, fewer applicants are applying for open positions, and a new problem has surfaced. This new trend is remarkable as it was not associated with the teaching profession before the pandemic. This new trend is the early career exodus of teachers. The early career exodus trend the Canon-McMillan School District is experiencing is another downstream problem associated with teacher shortages. Teachers join the profession and then leave in the first five years or less, but in most cases, they do not take other teaching jobs but rather leave the profession. These voids create more teaching positions that need to be filled in a very sparse hiring environment. The teacher exodus and shortage crisis is a significant national trend, as evidenced in a 2022 research study.

Over three-fourths (76.4%) of teachers surveyed considered leaving their position during the 2021-2022 school year. Some were looking for jobs at another school and not leaving the profession entirely; however, more than half (57.6%) looked

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at non-teaching job postings, and more than one in five (22.4%) applied for a job outside of education during the past school year. (Marshall et al., 2022, p. 3)

In yet another area, the Canon-McMillan School District has also been challenged, and that is an increased number of teacher absences. Teacher absences are a direct outgrowth of the teacher shortage crisis. At the Canon-McMillan School District, it has affected operations and, indirectly, student outcomes and positive behaviors. Because filling vacancies has been a tough challenge, daily and long-term substitute teachers are at an all-time low regarding availability. Canon McMillan School District data shared in Chapter II is that of the 5,779 professional staff absent in 2019-2020, the District was only able to fill 2,910 of those absences; 2,769 were unfilled. From 2022 to 2023, of the 10,408 professional staff absences, the District could not fill 6,742 openings due to absenteeism (Frontline Education, 2023).

The Canon-McMillan School District has tried a few strategies to increase fill rates for absent and vacant positions but has yet to do so without a research plan or process. Out of desperation, non-traditional methods to attract and retain teachers have been implemented at the Canon-Millan School District. One was to recruit a teacher from another country to teach a foreign language. Another non-traditional approach was to reach out to the community to find degreed but non-teaching professionals to become emergency certified. This new dynamic has altered a teacher's traditional pathways and education, leaving noticeable gaps in classroom management and other essential aspects of teaching that a non-teaching professional would have needed to be taught.

The Canon-McMillan School District also explored more traditional pathways as well. For example, one way included raising the salary of a substitute teacher from \$100

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to \$150 a day in 2022-2023; this represented a budget increase of 50% for that budget line item—a significant fiscal investment by the Canon-McMillan School District. The Canon-McMillan School District has also maintained (though a smaller number since the expiration of federal funding) the building of day-to-day floating substitute teachers—another significant fiscal investment by the Canon-McMillan School District.

Nevertheless, even with these significant measures, the ability to hire substitute teachers remains problematic at the Canon-McMillan School District.

To date, no study or action research has been conducted at the Canon-McMillan School District to understand or solve this growing problem, mainly due to this problem needing to be more evident and pronounced since the global pandemic. Thus, in an era of anticipated student enrollment growth, it became critical for the student's future success at the Canon-McMillan School District to explore solutions for this teacher shortage crisis. Coupled with the fiscal implications that could continue to occur, the researcher hoped to aid the Canon-McMillan School District in solving this problem. The following questions guided the research and provided gaps for further exploration of the Canon-McMillan School District.

1. What is the relationship between the number of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?
2. What is the relationship between the fill rates of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?

3. What is the relationship between satisfaction with serving as a day-to-day substitute teacher and reasons for selecting the Canon-McMillan School District, as measured through a focused survey?

### **Setting and Participants**

#### ***Setting***

The Canon-McMillan School is located in Southwestern Pennsylvania and is recognized as a Second-Class school district. The class size of a school district is defined by population as defined by the Census Bureau. (United States Census Bureau, 2020). The Canon-McMillan School District spans fifty-seven square miles and three municipalities: Canonsburg Borough, Cecil Township, and North Strabane Township. The Canon-McMillan School District's current enrollment is five thousand four hundred and seventy-nine students (5,479). The Canon-McMillan School District has five elementary schools, two intermediate schools, one middle school, and one high school. The school district has suburban and rural areas and continues to be an attractive family living destination in the region.

The Canon-McMillan School District began a long-range capital facility improvement plan in 2014, with an anticipated completion in 2027. This long-range facility plan aims to address the increased enrollments the school district anticipated to experience. This plan has included a high school and stadium renovation, the consolidation of elementary schools with the building of two new elementary buildings, the closure of three to date, and the building of a new middle school and the closure of the old one. It is important to note that this plan began due to the anticipated increased enrollments the Canon-McMillan School District would be experiencing over two

decades. It had become evident that additional teachers would be needed once the plan was completed. The extended long-range capital facility plan also included indirect costs associated with the growth, one relevant to this action research, the need for additional teachers to offset the anticipated increase in enrollments.

### *Participants*

The Canon-McMillan School District employs three hundred and fifty-five and a half (355.5) professional teachers as of the 2023-2024 school year. The Canon-McMillan School District has increased the number of teachers since the inception of the long-range facility plan in 2014. This increase ensured that the Canon-McMillan School District was adequately staffed for future growth. During this time of hiring for future growth, the District was also hiring to replace teachers who had left the District either to work in another district or to become professionals altogether. At this crossroad of increased population and identified need for increased faculty, the administration started to experience shallow hiring pools, which were once more than abundant in meeting staffing needs. It was also during this time, especially post-pandemic, that the administration saw marked increases in teacher absences both on a short-term and long-term basis.

Extracted data from the Canon-McMillan School District software, Frontline Education (Frontline Education, 2023) indicates the number of professional staff absences by building, year, month, and each day of the week. This data provides the researcher with the ability to identify gaps and patterns. The data extraction also allows for a summary fashion so that no names or confidential information is viewed during extraction. The district administration had used this data to help assign federal monies the

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Canon-McMillan School District was awarded post-pandemic. One of the assignments of the grant monies was for additional substitute teachers districtwide.

The administrative decision for one of the uses of the federal grant monies post-pandemic was to address the increased teacher absences substantiated by district software Frontline Education (Frontline Education, 2023). These federal grant monies were used to help staff for these vacancies and ensure each building had a set number of daily building floating substitute teachers. Setting the number of daily floating substitute teachers was done with the idea that if the Canon-McMillan School District could offer guaranteed daily work as a substitute teacher, more teachers would be interested in working for the Canon-McMillan School District. Due to the excessive absenteeism, the District saw in their professional staff, some classrooms still needed a teacher. However, based on the trends identified in the Frontline Education data review, this did offer some relief to the inability to fill daily open positions. District administration recognized this was a short-term fix because federal funds would not be available for years beyond 2024. At the same time, the district administration recognized that future systemic changes would be necessary to correct this teacher shortage problem.

The original intention was that once federal funds expired, the building day-to-day floating substitutes would as well. However, the Canon-McMillan School District Administration, at the last minute, when finalizing the 2024-2025 Canon-McMillan School District budget, decided to maintain a less set number. Canon-McMillan School District Administration recognized the value of using the federal funding to add substitute supports but also recognized that moving forward, a cost-effective solution and demonstrated fiscal responsibility to the school district's taxpayers needed to be sought.

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Thus, it was decided that eleven (11) day-to-day building floating substitutes would be maintained utilizing the budgetary reserves of the District. The allotment was less than half the original building of day-to-day floating substitutes. The intention at that time was to use this action research study to determine if the guarantee of a daily building day-to-day substitute was why a substitute teacher chose the Canon-McMillan School District or where there were other reasons they chose to do so.

As a result, an email Google Form survey questionnaire was sent to all substitute teachers of the Canon-McMillan School District from school years 2019-2020 through 2023-2024. The sample was anticipated to be approximately two hundred (200) in nature but ended up being two hundred and eighty-eight (288). The sample comprised adults aged twenty to seventy who can legally substitute teach in Pennsylvania. All genders and races/ethnicities were eligible to be substitute teachers, and no criteria for intentional inclusions or exclusions were included in the survey.

An honest broker was utilized to send out the Google Form survey questionnaire. The Institutional Review Board (IRB) recommended that senior district administration may impact survey results, thus assigning an honest broker from the District to send the survey on their behalf. Therefore, the Administrative Assistant of the Deputy Superintendent, in her daily roles and responsibilities, interacts with substitute teachers at the Canon-McMillan School District. The researcher has no daily interactions and is in a senior management position. To avoid influencing the decision to complete the Google Form survey questionnaire, the person communicating with this group remained the same. As a result, the researcher utilized the Administrative Assistant to gather all substitute emails from 2019-2020 through 2023-2024. These emails are maintained in the

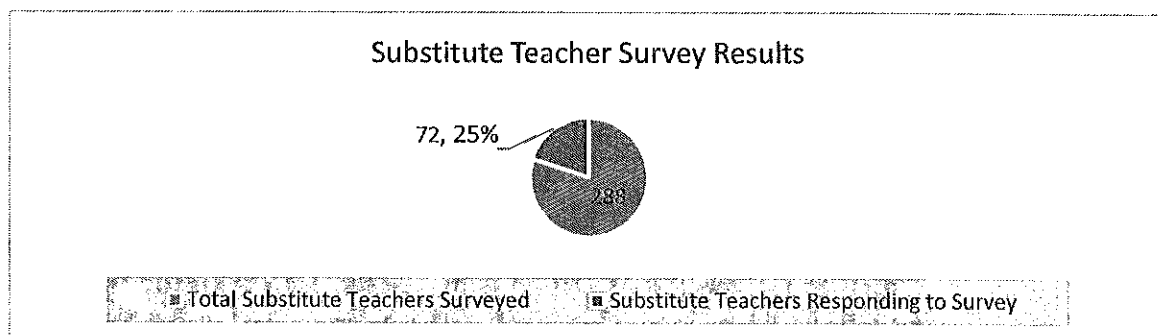


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software she uses daily to interact with and assign substitute teachers. On behalf of the researcher, she sent a Google Form questionnaire via email to the list of substitute teachers during that timeframe. The Google Form survey questionnaire included the letter of consent and the details for opting out of the research. This email also indicated that the questionnaire results would go directly to the researcher without identifying information. The initial Google Form Survey email was sent on September 7, 2023, by the administrative assistant. The Administrative Assistant sent reminder emails on October 6, 2023, and November 6, 2023, and a final reminder on December 8, 2023. The survey closed on December 15, 2023. Of the two hundred and eighty-eight (288) substitute teachers who received the Google Form survey questionnaire, seventy-two (72) responded to the Google Form survey. The respondents represented twenty-five (25%) percent of the sample surveyed. (Frontline Education, 2023). Extracted responses of the seventy-two (72) respondents to the Google Form survey provided insights into the satisfaction of Canon-McMillan School District substitute teachers as noted in Figure 8. The Google Form survey allowed respondents to indicate their satisfaction or dissatisfaction on a Likert Scale and open-ended response areas.

**Figure 8**

*Substitute Survey Results*



*Note.* This data was obtained from Google Survey results

### **Research Plan**

Through this research study, the Canon-McMillan School District gained insight into attracting and retaining teachers—centering the action research around absence data and engaging in participatory action research with the substitute teachers of the Canon-McMillan School District. Participatory action research centers on investigating a reality so it can be changed (Hendricks, 2017). This type of research will align with the goals of the Canon-McMillan School District.

Substitute teachers of the Canon-McMillan School District were sent an email that started with a survey disclosure letter of consent (Appendix A). If they consented, they were asked to complete a Google Form survey questionnaire (Appendix B). The questionnaire was created to preserve the respondent's identity, as the researcher never reviewed the master list, and the results were returned anonymously. By responding to this survey, substitute teachers provide demographic information and pertinent feedback on their experience as substitute teachers within the Canon-McMillan School District. The demographic information provided one set of variables for the researcher to examine further. The survey also probed deeper to identify areas of improvement: they included suggestions for improvement through a series of Likert-style questions. There is also a section of directed questions with open-ended responses. Input is sought on the number one reason a permanent teaching position would be accepted if offered. Conversely, input is sought on why, if offered a permanent teaching position, one would be accepted if one were offered. Tables generated through Google Forms and Sheets.

The literature review captured the importance of attracting and retaining teachers. A few areas examined in the literature review provided ways to alleviate stress to reduce turnover and attrition (Steiner & Woo, 2021), and another was to provide a safe and secure environment to work (Sams, 2023). Salaries and benefits for teachers are also linked to attracting and retaining teachers (Lauk, 2022; McFeely, 2018). The literature review also focused on a principal's supportive and impactful role in teacher retention (Shuls & Flores, 2020). This action research, while the first conducted at the Canon-McMillan School District, may offer further insights into other areas that should be explored to attract and retain teachers. The Google Form survey questionnaire was deliberately designed to probe for in-depth feedback on the areas identified in the literature review.

The researcher purposely used methods to triangulate and support multiple aspects of this crisis. Doing so also provides an in-depth examination of teacher absences, and the fill rates associated with the vacancies those absences create will also be part of this action research plan. The research clearly states that the teacher is one of the most significant influences in the classroom (Stronge, 2010). The action research plan will examine the problem from both angles, with input from substitute teachers, then coupling that with absence and fill rate data. Examining the absence of data from 2019 through the end of the 2024 school year will strengthen this action research by providing quantitative data to analyze alongside qualitative data. The primary objective of this action research is to find ways to attract and retain teachers. Before starting this research study, the researcher established a timeline to ensure the thoroughness and timeliness of this action research study.

### Research Methods and Data Collection

The researcher received support from the Canon-McMillan School District's Superintendent of Schools and School Board of Education on August 9, 2023. Then, the research timeline began with Institutional Review Board (IRB) approval on August 14, 2023. The IRB approval would expire on August 13, 2024 (Appendix A). Once that approval was granted, the Google Form survey questionnaire opened shortly after the school year started, in early September. The Google Form survey questionnaire closed in December; during this same timeframe, absence data was being collected for the same years of the substitute teacher database, 2019 through the end of the 2023-2024 school year. Table 3 illustrates the researcher's timeline.

**Table 3**

#### *Data Collection Timeline*

TYPES OF DATA TO COLLECT	DATA SOURCES (detailed explanation of the types of data you will collect)	TIMELINE FOR COLLECTING DATA
Quantitative	<p>Raw data has been extracted from school district software. This data includes the number of absences by building for each day, week, and month. The information was pulled in a summary fashion so that no names or confidential information could be viewed based on what was submitted to the IRB for approval.</p> <p>This information has already been extracted for 2021, 2022, 2023, and 2024. The researcher worked with the software company to pull archived data from 2019 and some of 2020. Once all data is received, it must be compiled to</p>	<p>In August 2023, we began compiling the raw data and continued for the current year. The expectation is that by May 2024, all raw data will be collected from school years:</p> <p>2019-2020 (Pandemic Year)</p> <p>2020-2021</p>

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	<p>demonstrate the relationship between the number of staff absences before and after the pandemic.</p> <p>Compilation of data for triangulation and analysis</p>	<p>2021-2022</p> <p>2022-2023</p> <p>2023-2024</p> <p>Data will be compiled for analysis and triangulation.</p> <p>Completion: May 31, last day of school.</p>
Qualitative	<p>A survey questionnaire was sent to add a qualitative aspect to the research to triangulate the data best. The survey's purpose is to ask questions to a list of substitute teachers who worked in the District from 2019 (pre-pandemic) to the 2023-2024 school year.</p> <p>The qualitative questionnaires were designed to help identify why a substitute teacher chooses a particular district or assignment and what influences that decision. The research will also help answer whether creating a day-to-day substitute floater position would improve district fill rates.</p> <p>Pre-pandemic, there were no floating day-to-day substitute teachers.</p> <p>Due to many absences during the pandemic, the school district used federal grant (ESSER ARP) Monies to create a day-to-day floater position (s) in each building. These monies funded up to 20 day-to-day substitute positions.</p> <p>From 2023 to 2024, the federal grant expired (ESSER ARP). The District then budgeted in the</p>	<p>The researcher received IRB approval on 8/14/2023.</p> <p>A survey was sent to all Canon-McMillan School District substitute teachers in 2019-Current (8/23).</p> <p>The survey was sent to 299 potential respondents, and 11 were returned as undeliverable, leaving 288 surveys sent.</p> <p>1<sup>st</sup> reminder was sent on 10/6/2023.</p> <p>2<sup>nd</sup> reminder was sent on 11/6/2023</p>

	<p>2023-2024 budget for up to 11 day-to-day building substitute positions.</p> <p>The survey contains the following types of questions: demographic, open-ended, and Likert-type questions to aid in answering the research question, as it will include a priority list of reasons that could impact current and future assignment decisions and the relationship to assignment satisfaction.</p>	<p>3<sup>rd</sup> and final reminder was sent on 12/8/2023</p> <p>The survey closed on 12/15/2023 with 72 respondents, with a total response rate of 25%.</p>
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*Note.* This summary data was obtained from the researcher's Data Collection Timeline.

The researcher's creation of the Google Form survey questionnaire was a deliberate, thoughtful process. The researcher wanted to create a concise, manageable questionnaire that included questions that would yield substantive data and various information. This deliberate planning allowed the researcher to align the research questions and data collection methodologies.

### **Fiscal Implications**

Through a mixed-methods approach, the researcher examined the research questions regarding teacher shortages and the use of day-to-day substitute teachers. To find solutions to a problem, once identified, it needs to be researched through a scholarly literature review. While that process is occurring in any action research project, a key component to include is the fiscal implications. All organizations have limited resources and, to enact change, must include the costs for budget planning. At the same time, the core problem is the need for more available teachers, resulting in a lack of day-to-day building and long-term substitutes. This further results in a lack of classroom coverage and educational disruption. However, while no costs were incurred to research this

problem, there are costs associated with teacher shortages and the use of daily substitute teachers.

The researcher believed this study provided insight into future financial decisions, especially regarding the use of daily building substitute teachers and long-term substitutes, as well as the rate at which they pay for their services. This practice is different from the current practice as it relates to hiring a daily building and long-term substitutes. The researcher believed this study aided the administration of Canon-McMillan School District in determining if the post-pandemic practice of providing daily building and day-to-day floating positions stays in place. Especially since this practice was started with federal grant money to help fill the daily rates of substitute teacher's post-pandemic. The action research provided data to support Why substitute teachers should take a permanent position if offered and why they might not. What areas attract them to the District, and what are the areas or circumstances that do not? The results also offered insight into areas the District can improve that might not have a direct cost but yielded a higher retention and attraction rate as a hiring school district.

Table 4 depicts raising the daily substitute teacher pay rate from \$100 to \$150 a day. While this represented a substantial budget increase of 50% to this line item in the Canon-McMillan General Fund Budget, it still needed to be entirely determined if this was a valid remedy to the problem or final impact because of the number of unprecedented variables co-occurring. While acquiring substitute teachers was challenging, the pandemic and unprecedented absences made budgeting difficult. Predicting the number of absences also became very difficult, and budgeting was made without supporting data as it needed to follow prior benchline data. It was unknown how

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many daily and long substitutes would be needed as too many vacancies would be filled daily. Thus, this remedy was put into place without really research-based reasoning. The results of the Google Form questionnaire should provide data regarding how daily rate or salary impacts a substitute teacher's decision to work at Canon-McMillan School District.

**Table 4**

*Financial Implication – Increase in daily rate to \$150*

School Year	Substitute Rate of Pay/Day	Federal Funds Used
2019-2020*	\$100	No
2020-2021**	\$100	Yes – Supplanting Occurred
2021-2022**	\$100	Yes – Supplanting Occurred
2022-2023**	\$150	Yes – Supplanting Occurred
2023-2024	\$150	No

*Note.* This data was obtained from the Canon-McMillan School District

Table 5 illustrates the impact of infusing federal monies to help alleviate a problem that is a re-occurring expense. Table 5 further illustrates that federal funds helped offset rapidly rising costs of a budgetary item with many unknowns associated. However, it also illustrates that with some data and research-based investigation into this problem, future solutions will be able to solve the underlying problem and will only be superficial, costly solutions.



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**Table 5***Fiscal Implication – Long-term and building day-day floating substitute teachers*

School Year	Budgeted	Budgeted Portion Paid with Federal Grant Monies	Actual Expenditure	Impact on Budget after Federal Grant Relief
2019-2020	\$486,000	None	\$651,427	\$651,427
2020-2021	\$529,250	\$529,250	\$805,288	\$276,038
2021-2022	\$486,000	\$401,000	\$834,303	\$433,303
2022-2023	\$711,150	\$274,650	\$1,012,647	\$737,997
2023-2024	\$688,022	None	Estimate based on remaining pay periods: \$1,175,254	\$1,175,254

*Note.* The table includes Canon-McMillan financial data obtained from Canon-McMillan School District Accounting Software, Frontline Education

Table 6 illustrates the number of daily absences and the number of absences not filled daily. This giant swing in absences and those left unfilled is a vital budgeting variable that can make budgeting difficult. As a result, they cause fiscal implications that occur when a budget includes unknowns of a significant number. School district budgets

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTE

are built with limitations on resources, and the inability to accurately forecast both absences and fill rates of absences is challenging.

**Table 6***Daily Absence and Substitute Availability*

Date Range	Daily Absences	Absences Filled with a Substitute Teacher	Absences Not Filled No Substitute Available
2019-2020 SY	3,487	2,584	903
2023-2024 SY	7,215	6366	849

*Note.* The table looks at absence data and the availability of substitute teachers to fill vacancies. This data was obtained from Canon-McMillan School District Software, Frontline Education, 2024

In summary, while the administration of the Canon-McMillan School District took measures to help offset or lessen the impact of the teacher shortage crisis and the ability to get teachers for open positions and substitute teachers for daily open positions, the crisis remained. It was determined that systemic change and fiscal implications are needed to further improve the teacher shortages crisis, especially in an era of increased enrollments. The Canon-McMillan School District increased the daily rate of pay for substitute teachers, which has already been budgeted and is an area that will need continued monitoring. The reinstatement of building daily substitute teachers at a lesser

amount than what was federally funded will also need further financial investment and measures to ensure continued efforts placed on the attraction and retention of teachers.

### **Validity**

The researcher's primary concern in this mixed-method action research study was to recommend solutions to the problems regarding teacher shortages and the use of daily substitute teachers at the Canon-McMillan School District. The researcher involved in this action research project was very cognizant of their ability to demonstrate the validity of their action research study. They recognized that they "must consider both the credibility and validity of their research study" (Hendricks, 2017, p. 64). Credibility in qualitative action research can be defined as "establishing the results are believable from the perspective of the participants in the research." (Mertler, 2022, p. 203). Credibility coupled with validity in quantitative action research can be defined as, "Essential quality in quantitative research that has to do with whether the data are what they are believed or purported to be" (Mertler, 2022, p. 203).

The researcher used the referenced Lincoln and Guba trustworthiness criteria when defining and safeguarding validity for qualitative research (Hendricks, 2017; Lincoln & Guba, 1985). The researcher did this by ensuring that the research was in the context of the defined criteria as follows:

1. Credibility—Does the action research provide plausible findings for the context studied? Thus, when designing research methodologies, the researcher contemplated ways to ensure that the results were accurate and truthful.
2. Transferability - Do the action research results transfer to other studies in the same regard? Thus, in their methodology contemplation, the researcher

confirmed that other school districts could use this action research study for their school districts.

3. Dependability—Can the action research be replicated with identical or similar participants? In their methodology contemplation for this study, the researcher confirmed that other school districts could replicate this study to yield district-specific results.
4. Confirmability—Do the action research results provide an accurate representation? The researcher designed the action research so that their direct involvement in data collection was collected to ensure that the researcher did not impact the results.

In this action research study, the survey questions were designed to be aligned directly with the research questions. According to Mertler (2022), validity is defined as the degree to which all the accumulated evidence supports the evidence of validity. As a result, the researcher contemplated both recommended tests from Mertler and Hendricks and determined that the methodologies used were valid. The researcher further acknowledged that aspects of the data collection process, like response rate, could impact validity. The response rate for the survey was 25%, accounting for 72 of the 288 potential survey respondents.

The other action research component was to use multiple data sources to strengthen the research results through triangulation. Thus, the researcher used quantitative data collection in their action research study. Triangulation required the researcher to ensure the reliability of their data. The researcher identified the target population as all substitute teachers during the 2019- May 2024 research timeline.

The researcher also identified that using Canon-Mc-Millan School District software, Frontline Analytics, all daily teacher absence data and daily fill rate percentages would be gathered in an anonymous summary manner for the same time frame. While the researcher acknowledged that variables could impact the research results, the researcher believed that the validity and reliability tests had been met in this action research study. Nevertheless, the researcher acknowledged that summary data may generalize absence and fill rate percentage data. The researcher ensured that systematic data trials were in place for this action research and disclosed any researcher biases in upcoming chapters of this action research study.

### **Summary**

This action research study examined the teacher shortages and the use of daily substitutes at the Canon-McMillan School District. This action research study used a mixed methods approach relying on absence data pre-pandemic and post-pandemic through the 2023-2024 school year. The researcher sought to aid the administration of the Canon-McMillan School District in making sound research-based financial decisions. Those decisions included raising the rate of substitute teacher pay and hiring building day-to-day substitute teachers to minimize the impact of the shortage. The study also recognized the research-based strategies to improve retention and recognize the perceptions and realities of attracting daily substitute teachers. The results provided data-driven recommendations in both regards. Thus, the next chapter, Chapter IV, Data Analysis and Results, will analyze this chapter's data collection and methodology. Culminating in providing the quantitative and qualitative results sought for each research question in this study.

## CHAPTER IV

### Data Analysis and Results

Examining teacher shortages and using daily substitutes at the Canon-McMillan School District is the focus of this action research study. The data analysis and results were guided and aligned with the following research questions:

1. What is the relationship between the number of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?
2. What is the relationship between the fill rates of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?
3. What is the relationship in satisfaction when serving as a day-to-day substitute teacher compared with reasons for selecting the Canon-McMillan School District as measured through a focused survey?

The purpose of this research study was to aid the Administration of the Canon-McMillan School District in making sound research-based financial decisions. This in-depth investigation will also examine data to improve retention and recognize the effects of perceptions and the practice of employing daily substitute teachers. The research was designed to use multiple data sources to strengthen the research results through triangulation using a mixed-method approach. Quantitative data on teacher absences and fill rates were extracted from the District's software to aid data triangulation. This extraction aimed to demonstrate the relationship between the number of staff absences before and after the recent pandemic. The research also served as an opportunity to

analyze the relationship between the fill rates of staff absences before and after the pandemic, measured by archival data housed with the Canon-McMillan School District. The fill rate is the rate at which open or vacant teaching positions are filled with daily or long-term substitutes; the ideal would be 100% per day.

Additionally, qualitative data was collected through a Google Form survey of substitute teachers who worked in the District from 2019 through the 2023-2024 school year. The survey was designed to help identify why a substitute teacher chooses a particular district or assignment and what influences that decision. Both data collection sets were aligned with the research questions for analysis and results.

### **Data Analysis**

The data analysis was conducted using a mixed-method approach, using quantitative and qualitative data. Data was collected in two different investigative approaches. The first, quantitatively, was to collect raw data extracted from the Canon-McMillan School District Absentee Software, and then SPSS statistical software was used to conduct the analysis. This data included the number of absences by building for each month of the year for years 2019-2020 (pre-pandemic) through 2023-2024. This data directly correlated to this action research study's first two questions. Statistical quantitative measures collected both descriptive and inferential statistics. In addition, Bivariate correlation tests involving regression analysis were conducted to determine if there were statistical differences in teacher absentee and fill rates pre- and post-pandemic.

The second approach, using qualitative data, was collected through a Google Form Survey sent to all substitute teachers who worked in the Canon-McMillan School District from 2019 (pre-pandemic) through the 2023-2024 school year. The qualitative

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questionnaires were designed to help identify why a substitute teacher chooses a particular school district, building within a district, or an assignment and what influences that decision. The survey contained demographic, open-ended, and Likert-style questions. The questionnaire was also designed to solicit feedback on District improvement regarding substitute teaching and determine if daily building substitutes help improve district fill rates. The survey opened and was sent to two hundred eighty-eight (288) potential survey respondents on August 23, 2023. The survey closed on December 15, 2023, with seventy-two (72) respondents yielding a 25% response rate. Since the survey was administered online through Google Forms, responses were summarized by responses—a coding scheme used for open-ended responses to track trends and themes that emerged from the results.

### Quantitative Results

The quantitative analysis results of staff absences and fill rates pre- and post-pandemic are depicted in Table 7. A comparison of the schools' average absences before March 2020 yielded the following results.

**Table 7**

*Comparison between the Average Number of Staff Absences and Fill Rate Pre and post-pandemic*

	Average number of staff absences	Average fill rate
Canon-McMillan High School	138	73%
Canonsburg Middle School	71	76%
Cecil Intermediate School	43	71%
North Strabane Intermediate School	48	79%
Hills-Hendersonville Elementary School	24	76%
Borland Elementary School	38	81%



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Muse Elementary School	75	82%
South-Central Elementary School	47	74%
Wylandville Elementary School	24	78%

*Note.* Average number of staff absences and fill rates

According to the table above, the highest average number of staff absences was at the Canon-McMillan High School, with 138 staff absences. In contrast, Hills-Hendersonville Elementary and Wylandville Elementary had the lowest staff absences, with 24, respectively. Regarding the fill rate, Muse Elementary had the highest fill rate at 82%, while Cecil Intermediate had the lowest with 71%.

Table 8 illustrates that the High School had the highest staff absences post-pandemic, with an average of 196 staff absences. In contrast, Wylandville Elementary School had the lowest, averaging 31 staff absences. The Canon-McMillan High School has the lowest fill rate at 66%, while Wylandville Elementary School has the % fill rate at 89%. The result implies that the higher the number of staff absences, the lower the fill rate because only some will be filled. Similarly, the lower the number of staff absences, the higher the fill rate because the staff absences have a better chance of being filled. Also, from a financial perspective, the higher the staff absences, the higher the costs. When teachers are absent, there are direct and indirect costs associated with the absence. The direct cost is the cost of a daily substitute and payment for time off paid for the absent teacher. Examples of indirect costs associated with acquiring the substitute are the time and effort of the Human Resource Department and administrative time to ensure that the daily substitute has the proper resources and materials to succeed in their temporary role.

**Table 8**

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

*Comparison between the Average Number of Staff Absences and Fill Rate post-pandemic*

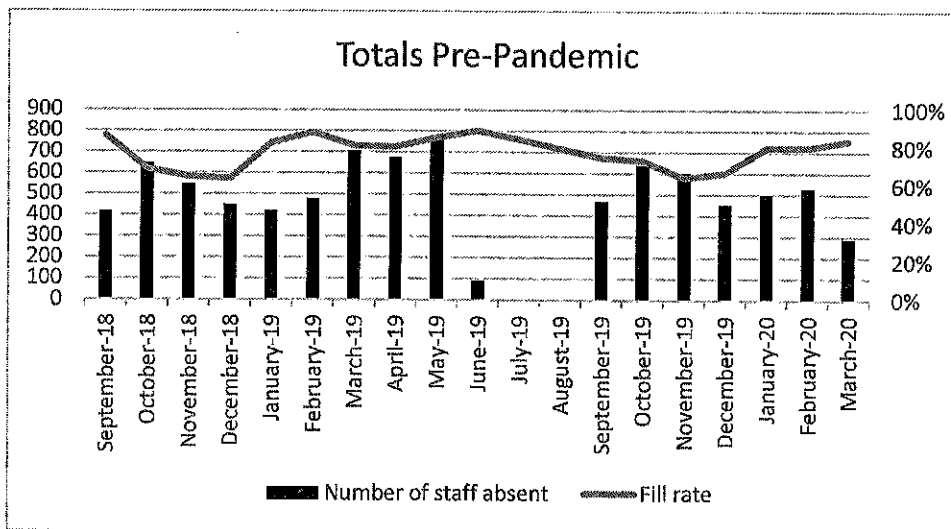
	Average number of staff absences	Average fill rate
Canon-McMillan High School	196	66%
Canonsburg Middle School	71	82%
Cecil Intermediate School	46	83%
North Strabane Intermediate School	43	84%
Hills-Hendersonville Elementary School	23	78%
Borland Elementary School	36	85%
Muse Elementary School	72	84%
South-Central Elementary School	63	80%
Wylandville Elementary School	31	89%

*Note.* Average number of staff absences and fill rates

In Figure 9, the highest number of staff absences pre-pandemic was in May 2019, with 769, while the lowest was in June 2019, with 92 staff absences and not an entire month of school. Similarly, the highest fill rate was in June 2019, with an 89% fill rate, while the lowest was in December 2018 and November 2019, with a fill rate of 64%. On average, the staff absences and fill rate pre-pandemic were 511 and 77%, respectively.

**Figure 9***Pre-Pandemic Number of Staff and Fill Rate*

TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

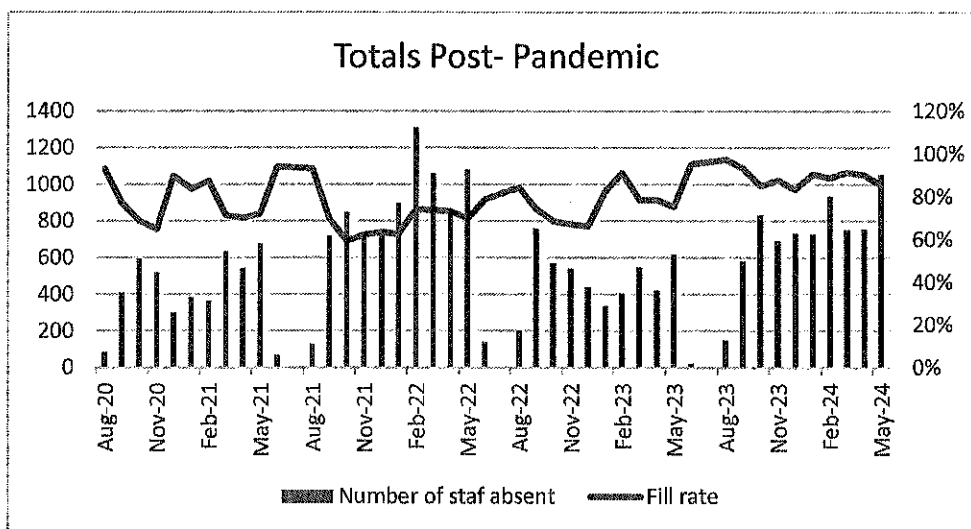


*Note.* Data obtained from Canon-McMillan District Software, Frontline Education (2018-2020)

According to the Figure 10, the highest number of staff absences post-pandemic was 1,310 in February 2022, while the lowest was 23 in June 2023. Similarly, the highest fill rate was 97% in August 2023, while the lowest was 59% in October 2021. On average, the number of staff absences and the fill rate pre-pandemic were 584 and 79%, respectively.

**Figure 10**

*Post-Pandemic Number of Staff and Fill Rate*



*Note.* Data obtained from Canon-McMillan District Software, Frontline Education (2020-2024)

Comparing pre- and post-pandemic staff absences, the number of staff absences post-pandemic was higher than pre-pandemic. The highest and the average number of staff absences post-pandemic was higher than pre-pandemic ( $n=1,310 > 769$  and average =  $584 > 511$ ). Similarly, the average fill rate was higher post-pandemic as the post-pandemic average fill rate was 79%, while the pre-pandemic average fill rate was 77%.

A bivariate correlation is used to analyze the relationship between the number of staff absences. Bivariate correlation was conducted to determine if there is a statistically significant linear relationship between the two variables. Table 9 illustrates the correlation between the number of staff absences (March 2020) and after the pandemic (2021-2024).

**Table 9**

*Bivariate Correlation between the Number of Staff Absences Pre- and post-pandemic*

Correlation
-------------

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

Canon-McMillan High School	-0.36703
Canonsburg Middle School	-0.28016
Cecil Intermediate School	-0.13687
North Strabane Intermediate School	-0.434
Hills-Hendersonville Elementary School	-0.11974
Borland Elementary School	-0.15663
Muse Elementary School	0.094449
South-Central Elementary School	0.116426
Wylandville Elementary School	-0.33182

*Note.* SPSS Statistical Analysis (2018-2024)

The bivariate correlation between number of staff absences before and after the pandemic in the Canon-McMillan High School, Canonsburg Middle School, Cecil Intermediate School, North Strabane Intermediate School, Hills-Hendersonville Elementary School, Borland Elementary School, Muse Elementary School, South-Central, and Wylandville Elementary Schools are -0.36703, -0.28016, -0.13687, -0.434, -0.11974, -0.15663, 0.09449, 0.116426, and -0.33182, respectively.

The results imply a negative relationship between the number of staff absences before and after the pandemic at the Canon-McMillan High School, Canonsburg Middle School, Cecil Intermediate School, North Strabane Intermediate School, Hill-Hendersonville Elementary School, Borland Elementary School, and Wylandville Elementary School. On the other hand, there is a positive relationship between the number of staff absences before and after the Pandemic in Muse and South-Central Elementary Schools.

Additionally, regarding the degree of relationship, there is a negligible negative relationship between the number of staff absences before and after the pandemic at Canonsburg Middle School, Cecil Intermediate School, Hills-Hendersonville Elementary School, and Borland Elementary School. Similarly, there is a weak negative

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

relationship between the number of staff absences before and after the Pandemic in High School and North Strabane Intermediate School. On the other hand, there is a negligible positive between the number of staff absences before and after the pandemic in South Central and Muse Elementary Schools.

Overall, the bivariate correlation between the number of staff absences before and after the pandemic is -0.19727 as depicted in Table 10. The results indicate a negative negligible relationship between the number of staff absences before and after the pandemic

**Table 10**

*Bivariate correlation between the Number of Staff Absences Before and After the Pandemic*

	Correlation
Overall correlation	-0.19727

*Note.* SPSS Statistical Analysis (2018-2024)

Regarding the second research question, what is the relationship between the fill rates of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?

In Table 11, the bivariate correlation between the fill rate of staff absence before and after the pandemic in Canon-McMillan High School, Canonsburg Middle School, Cecil Intermediate School, North Strabane Intermediate School, Hills-Hendersonville Elementary School, Borland Elementary School, Muse Elementary School, South-Central

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

Elementary School, and Wylandville Elementary School is 0.202233, -0.20932, 0.001431, -0.14488, -0.25832, -0.25889, 0.051819, -0.15909, and 0.354335, respectively.

**Table 11**

*Bivariate Correlation between Fill Rate of Staff Absence Pre- and post-pandemic*

	<b>Correlation</b>
Canon-McMillan High School	0.202233
Canonsburg Middle School	-0.20932
Cecil Intermediate School	0.001431
North Strabane Intermediate School	-0.14488
Hills-Hendersonville Elementary School	-0.25832
Borland Elementary School	-0.25889
Muse Elementary School	0.051819
South-Central Elementary School	-0.15909
Wylandville Elementary School	0.354335

*Note.* SPSS Statistical Analysis (2018-2024)

The bivariate correlation implies a negative relationship exists between the fill rate of staff absence before and after the pandemic in Canonsburg Middle School, North Strabane Intermediate School, Hill-Hendersonville Elementary School, Borland Elementary School, and South Central Elementary. On the other hand, there is a positive relationship between the fill rate of staff absence before and after the pandemic in Canon-McMillan High School, Cecil Intermediate School, Muse Elementary School, and Wylandville Elementary School.

Additionally, regarding the degree of relationship, there is a negligible negative relationship between the fill rate of staff absence before and after the Pandemic in Canonsburg Middle School, North Strabane Intermediate School, Hills-Hendersonville Elementary School, Borland Elementary School, and South Central Elementary School. In contrast, there is negligible positive between the fill rate of staff absence before and

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after the pandemic in Canon-McMillan High School, Cecil Intermediate School, and Muse Elementary School, and there is a positive weak relationship in Wylandville Elementary School.

In conclusion, Table 12 depicts, the bivariate correlation between the fill rate of staff absence before and after the pandemic is 0.268629. This indicates a statistically linear relationship between the two variables. The bivariate correlation also indicates a positive, negligible relationship between the fill rate of staff absence before and after the pandemic.

**Table 12**

*Bivariate Correlation between Fill Rate of Staff Absence before and after the Pandemic*

	Correlation
Overall correlation	0.268629

*Note.* SPSS Statistical Analysis (2018-2024)

### **Qualitative Results**

The qualitative analysis results of survey responses to the Google Form Survey are attached in Appendix G. The survey questions were designed to provide data to be analyzed in response to the following research question:

What is satisfaction when serving as a day-to-day substitute teacher compared with reasons for selecting the Canon-McMillan School District as measured through a focused survey?

The survey examined the satisfaction of serving as a day-to-day substitute teacher and compared the reasons for selecting the Canon-McMillan School District to work.



## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

The Google Form Survey had a response rate of 25%, which is considered a reasonable survey response rate. Nevertheless, the researcher acknowledges there is a standard deviation of error with a survey response rate of less than 100%. However, the results are a good predictor of overall demographics used with other sections of survey data responses.

The qualitative survey was divided into sections: the first provided demographical information, the second contained Likert-style questions, and the third contained open-ended questions. In the first section, survey respondents were asked to respond to several demographic questions to contextualize the research results. The series of figures depicts the results of each demographic question.

Figure 11 shows that the respondents were predominately female, with an 81.9% response rate. The results were as expected by the researcher, as typically, there is a higher female percentage of substitute teachers at the Canon-McMillan School District. Surprisingly, the male response rate was higher in the 2023-2024 survey than has traditionally been evident at the Canon-McMillan School District. Since gender distribution was outside the scope of this action research, future consideration could be given to determining the gender distribution of the Canon- McMillan teaching staff to correlate with the Substitute Teacher response distribution.

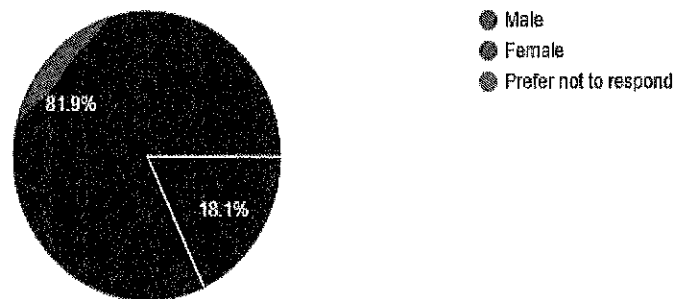
**Figure 11**

*Substitute Teacher Survey Demographic Results – Gender*

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

**1. Gender (must select 1)**

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

Figure 12 illustrates the age range of the respondents. These results were varied but not significantly. As illustrated, there were no respondents under the age of 20. The other four categories were pretty even with age ranges, with 20-30 years being the smallest at 20.8% and 50 or over at 27.8%. These results were not the distribution the researcher expected; instead, the opposite had been expected. The Canon-McMillan School District's pre-pandemic trend showed a higher age range of 20-30 for substitute teachers from August 2019 through May 2024. The distribution depicted in Figure 12 could be evidence of fewer college graduates entering the teaching profession. This illustration of age distribution is an area to further examine in future district surveys or action research.

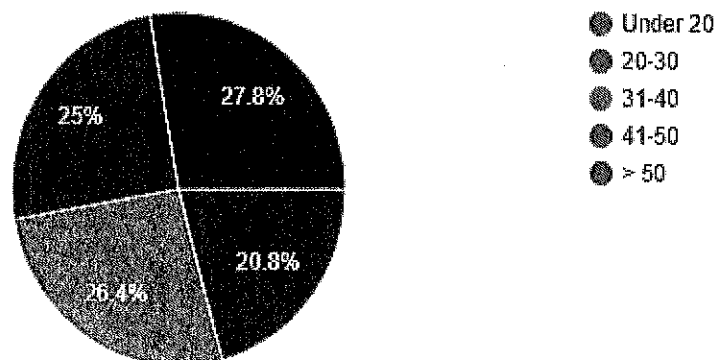
**Figure 12**

*Substitute Teacher Survey Demographic Results – Age Range*

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

**2. Age Range (must select 1)**

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

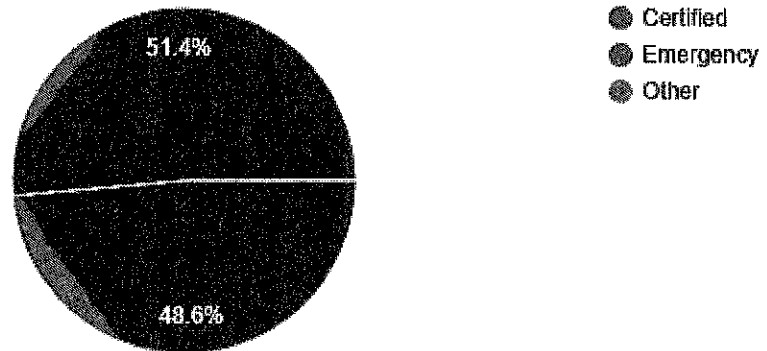
The following demographic area was the type of substitute depicted in Figure 13. The results illustrate that 51.4% of the respondents were emergency certified as opposed to 48.6% who were certified. This result was also different from what the researcher expected. Traditionally, the Canon-McMillan School District realized that most of their substitute teachers were certified. The high percentage of emergency-certified substitutes could indicate the new trend facing fewer traditional teachers entering the profession using traditional pathways; why fewer certified substitute teachers is another area to examine further in future district surveys or action research.

**Figure 13**

*Substitute Teacher Survey Demographic Results – Type of Substitute*

### 3. Type of Substitute (must select 1)

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

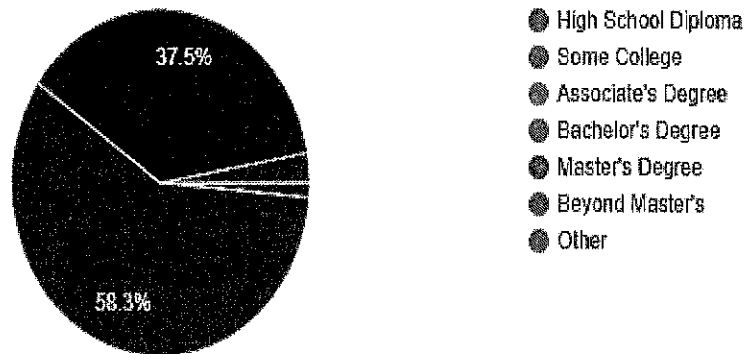
The following demographic category depicted in Figure 14 is the highest level of education attained. Not surprisingly, 58.3% held a Bachelor's Degree and 37.5% held a Master's Degree. What the researcher should have asked as a follow-up question was in what areas the degrees were held. In future research, it is recommended to do so; that information would have been valuable. The researcher was left reflecting on the prior question about this one. If not certified to teach, the researcher would question the types of degrees held. The researcher also would have inquired further to see if substitute teaching selections were made in areas of those degrees. The researcher would also recommend a further examination of state data regarding emergency certifications and what % ultimately are converted to teaching certificates. Additionally, these results may also be an indicator of the profession evolving in terms of formal training. Examination of certifications would be an area where further research could be conducted to investigate why a teacher shortage exists.

**Figure 14**

*Substitute Teacher Survey Demographic Results – Highest Level of Education*

#### 4. Highest Level of Education (must select 1)

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

The next series of demographic questions in the Google Form Survey centered on substitute teacher job assignments. Respondents were asked if they worked as a substitute teacher at other school districts. Figure 15 depicts that 77.8% of substitute teachers working at the Canon-McMillan School District also substitute teachers at other school districts. As a follow-up question, if the response was yes, what districts did they work as substitute teachers other than Canon-McMillan School District? Only 13 of the 72 respondents answered this question. The reactions were mentioned multiple times in the order of most other districts that worked: Trinity Area School District, Washington School District, Bethel Park School District, and Upper St. Clair School District. Districts only mentioned once were Peters Township, Keystone Oaks, Chartiers Valley,

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

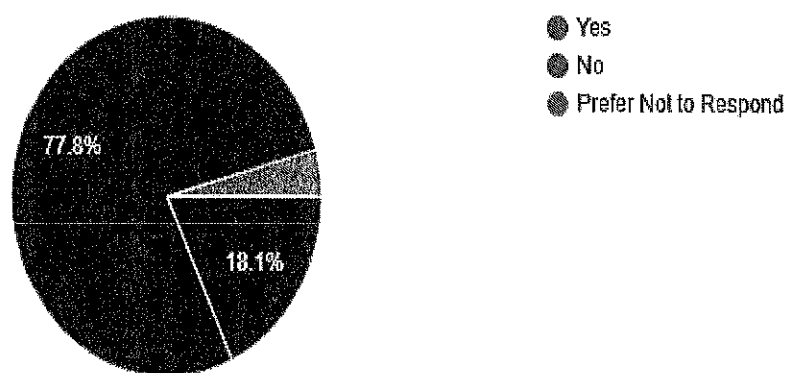
Fort Cherry, and Franklin Regional School Districts. The next area to be examined was the Substitute Satisfaction closed response questions.

**Figure 15**

*Substitute Teacher Survey Demographic Results – Substitute at Other School Districts?*

**7. Are you a Substitute at other School Districts? (must select 1).**

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

The Substitute Teacher Satisfaction Section of the survey collected data regarding why the respondents chose Canon-McMillan School District as a place to substitute teach. These were Likert-style questions where the respondents were asked questions and then asked to respond based on the "Level of Importance." The scale ranged from "1," Extremely Important, "5, and" Not At All Important. Figures 16 through 22 depict the questions and responses to the Likert-style responses. The first question was regarding assignment selection. Was it essential to have the same consistent assignment day to day? Only 15.3% considered it extremely important, whereas 20.8% considered

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

it unimportant. The low response rate for day-to-day assignments does not support the assumption that assignments are taken when consistency in schedule can be provided as a sole indicator of the level of importance.

**Figure 16**

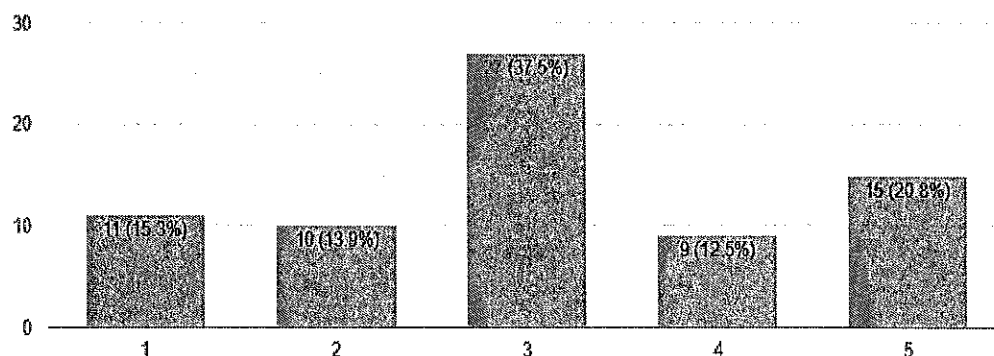
*Substitute Teacher Satisfaction Section: Level of Importance – Consistent Day-to-Day*

Level of Importance

"It is important to me..." (must respond to each)

**9. To select an assignment that is consistent day to day**

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

The next question, depicted in Figure 17, was similar but was asked differently. Was assignment selection longer than one day important? 36.1% of the respondents indicated that this was not important at all. The responses do not support the assumption that assignments are selected when offered longer than a day.

**Figure 17**

*Substitute Teacher Satisfaction Section: Level of Importance – Longer than a Day*

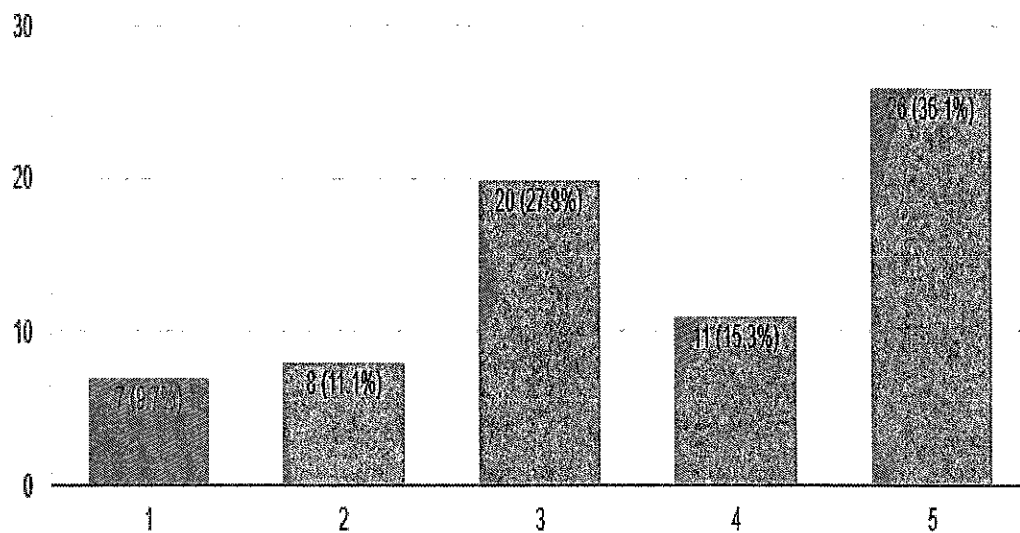
## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

## Level of Importance

"It is important to me..." (must respond to each)

## 10. To select an assignment that is longer than one day

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

Figure 18 depicts the level of importance of the school's location within the District for a substitute teaching assignment. Fifty percent of the respondents indicated that location is extremely important. The location of the assignment is a strong indicator that it is essential; only 4.2% indicated it was not important at all.

**Figure 18**

*Substitute Teacher Satisfaction Section: Level of Importance—Location*

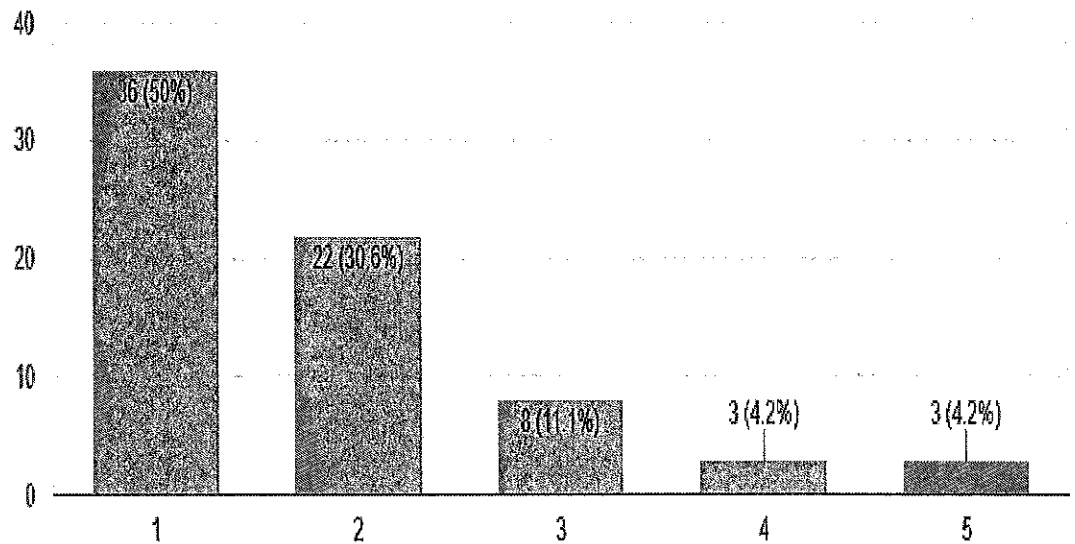


Level of Importance

"It is important to me..." (must respond to each)

11. To select based on location

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

Figure 19 reaffirms that the freedom and ability to choose varied assignments are more important than day-to-day ones, with 41.7% indicating freedom of choice as extremely important. Only 12.5% of the respondents felt that the freedom to choose assignments could have been more critical. This response was not one that the researcher expected. Especially with such a high percentage indicating that freedom of choice was extremely important when making an assignment selection.

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**Figure 19**

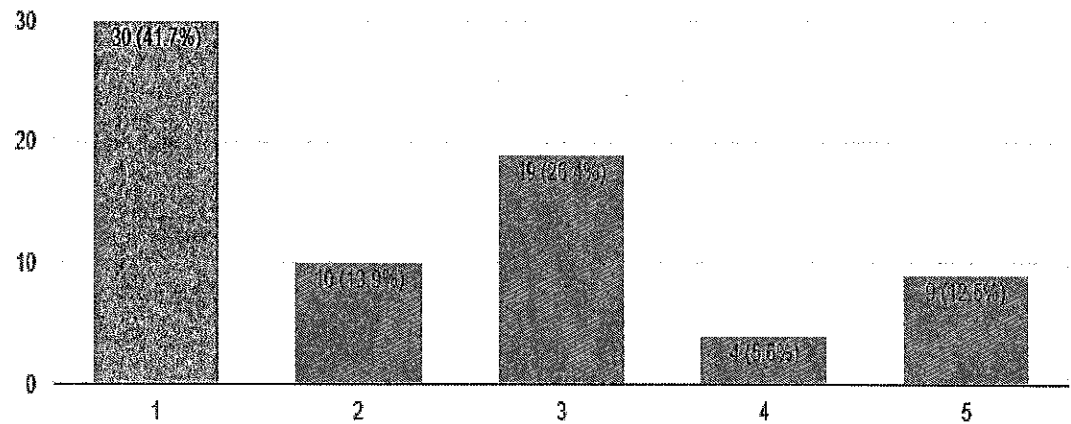
*Substitute Teacher Satisfaction Section: Level of Importance– Freedom to choose-variety*

Level of Importance

"It is important to me..." (must respond to each)

**12. To have the freedom to pick and chose varied assignments instead of consistent ones**

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

Figure 20 illustrates the importance of available resources for substitute teachers. The results were in the middle of the scale, with 45.8% responding that it was of medium importance.

**Figure 20**

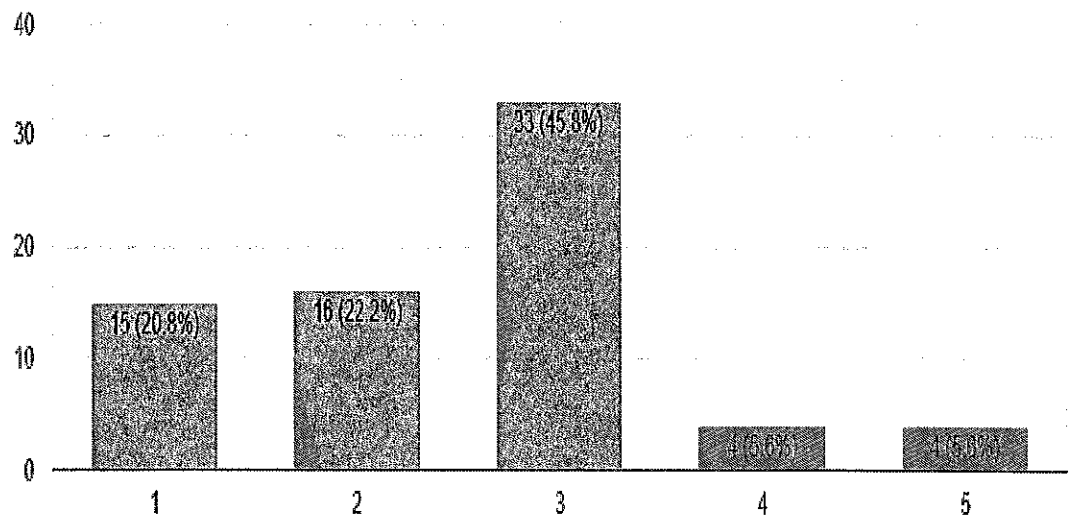
*Substitute Teacher Satisfaction Section: Level of Importance– Available Resources*

Level of Importance

"It is important to me..." (must respond to each)

**13. To select an assignment at Canon-McMillan because of available substitute resources**

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

Figure 21 asks about the level of importance of the wage paid. The level of importance is tied to the freedom of assignment selection, with 41.7% of respondents indicating that this area is critical. However, upon totaling the percentages in the first two categories, wages rank higher than freedom of selection.

**Figure 21**

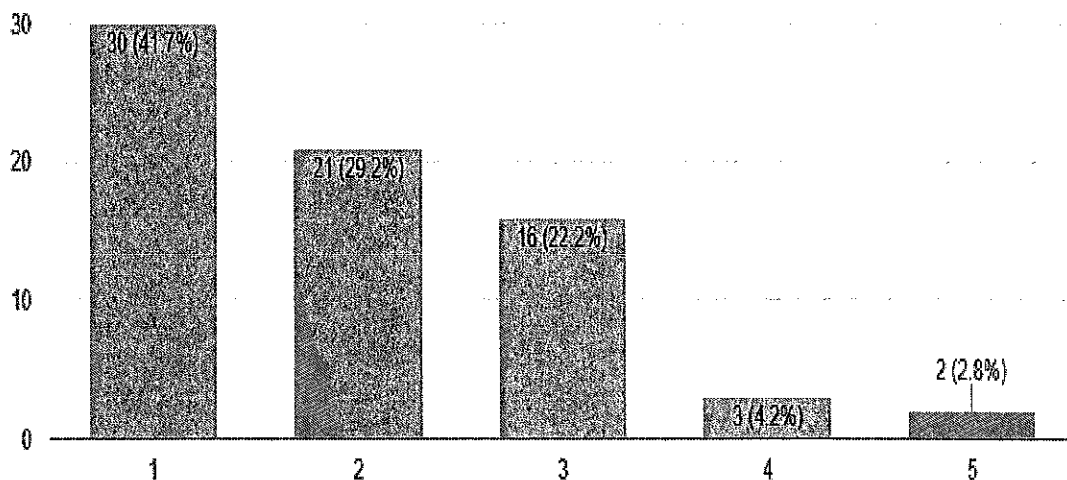
*Substitute Teacher Satisfaction Section: Level of Importance– Wages Paid*

## Level of Importance

"It is important to me..." (must respond to each)

**14. To select an assignment at Canon-McMillan based on the wage paid to a substitute**

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

The last substitute satisfaction Likert-style question, illustrated in Figure 22, asked about the importance the administration and staff place upon assignment selection. This area ranked high, with 31.96% indicating it was very important and only 2.8% indicating it was not important at all.

**Figure 22**

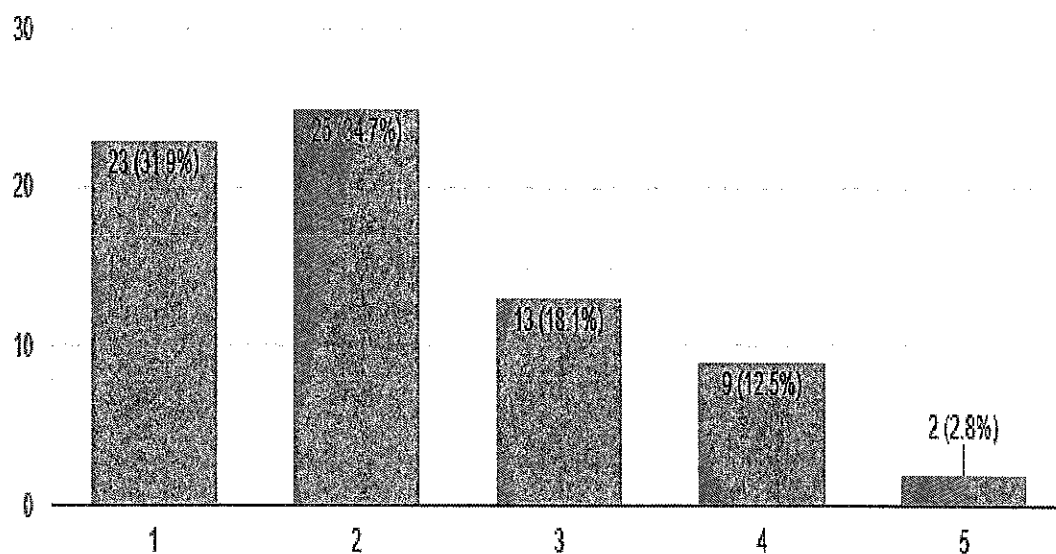
*Substitute Satisfaction Section: Level of Importance-- Administration and Staff*

## Level of Importance

"It is important to me..." (must respond to each)

## 15. To select an assignment based on the administration and staff of a building

72 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

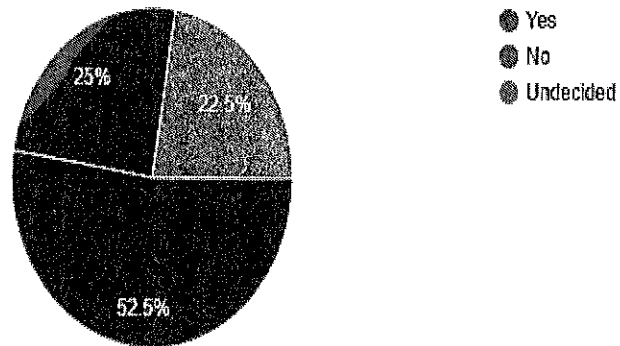
The final section of the survey results were based on questions and open-ended responses. When asked if a permanent teaching position was available, would they accept it? Of the 40 respondents who responded, 52.5% would accept a permanent position, as depicted in Figure 23.

**Figure 23**

*Substitute Survey Demographic Results – Type of Substitute*

**18. I would accept a permanent teaching position at Canon-McMillan School District if one were available? (must select 1)**

40 responses



*Note.* This data was obtained from Google Form Survey Results of substitute teachers from August 2019 through May 2024

Untimely, when adding together the first two scores for each question in this section, the top three in terms of the level of importance would be the following: Location with the highest ranking at 80.6%, then wages at 70.90% and at 66.6%, where the selection based on administration or staff. These results, while in some regard what the researcher expected based on the Literature Review, also revealed that location was not expected to be the most important in assignment selection. The results also indicated that assignments based on consistency or duration were less important than location, wages, administration/staff in a building, and the freedom to choose assignments.

The last section of the survey had an open-ended section where respondents could indicate their reasons. Tables 13 through 15 summarized and coded the open-ended

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responses by category. The first question, in Table 13, asked respondents to suggest the #1 reason for not accepting the position if offered a permanent teaching position.

**Table 13**

*Substitute Teacher Satisfaction – Why a permanent position would not be accepted*

Ranking	Reasons for Not Accepting Permanent Position	Number of Respondents
1	Currently, I hold another position Outside Education	11
2	Retired	6
3	Hired as a teacher somewhere else	5
4	Stay at Home Mom/Not Seeking Full-Time Employment	5
5	Only Emergency Certified	4
6	Likes Flexibility	4
7	Hired at Canon-McMillan	4
8	Moved	3
9	Other/Unsure	3
10	Hired as a Para-Educator	3
11	Wages	1

*Note.* The table derived from open-ended responses from the Google Form Survey of substitute teachers from August 2019 through May 2024

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When asked the number one reason a substitute has selected Canon-McMillan as a School District to substitute teachers, the responses were summarized and coded in table 14.

**Table 14**

*Substitute Teacher Satisfaction – #1 Reason to select Canon-McMillan to Substitute Teach*

Ranking	#1 Reason Selected Canon-McMillan to Substitute Teach	Number of Respondents
1	Administration and Staff at a Building	17
2	Location	15
3	Child in the District	15
4	Live in the District	6
5	Wage	4
6	None	4
7	Availability of Assignments	3
8	Student Taught at Canon-McMillan	2
9	Retired	2
10	Referral	2
11	Emergency Certification Training	1
12	Coach at Canon-McMillan	1



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*Note.* The table derived from open-ended responses from the Google Form Survey of substitute teachers from August 2019 through May 2024

Survey respondents were asked to indicate the number one area that Canon-McMillan School District needs to improve. The results were summarized, coded, and illustrated in Table 15.

**Table 15**

*Substitute Teacher Satisfaction – #1 Area of Improvement Needed*

Ranking	#1 Area Improvement is Needed	Number of Respondents
1	Wages	18
2	Training/Communication	11
3	Nothing	10
4	Resources	9
5	Improved Office Staff and Respect Given to Substitute Teachers	6
6	Full-Time Opportunity	3
7	Building Substitutes	3
8	More Substitute Opportunities	3
9	Unsure	3
10	Other	2

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*Note.* The table derived from open-ended responses from the Google Form Survey of substitute teachers from August 2019 through May 2024

### **Discussion**

The data in this action research was obtained to determine if a teacher shortage affected the Canon-McMillan School District, pre- and post-pandemic, from August 2018 through May 2024. Examining teachers' sick and personal time absences fill rate data, the researcher analyzed a survey response. The results determined that staff absences have remained at high levels post-pandemic, and fill rates have also declined. The survey results provided abundant data for the school district to use in their recruiting methods and retention of daily substitute teachers. When asked about the level of importance of six key factors, the following were ranked as the top three items of significance. The first was a selection of assignments based on location, which ranked the highest, with 50% or half of the respondents ranking this as extremely important. Tied for second place were wages and the freedom to select assignments at 41.7% or thirty of the seventy-two respondents ranking this area as extremely important. Conversely, the least important area in this section was the selection of an assignment that was longer than a day; 36.1% or 26 of the respondents ranked this as their highest least important factor.

The following section revealed that 52.5% or forty seven-two of the respondents plan to continue to take assignments as a substitute teacher at the Canon-McMillan School District. The survey also revealed that 52.5% or twenty-one of the seventy-two respondents would accept a permanent teaching position if one were offered. The survey also asked if the in-house building day-to-day substitute teachers had a reason to

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substitute teach at the Canon-McMillan School District, and 55.6% or forty of the seventy-two respondents responded yes.

The last area of the survey provided open-ended reasons why a position would not be accepted if offered. The top reason was that eleven respondents were already working in education. The survey did not expound on whether employment was at the Canon-McMillan School District or elsewhere. The second reason is that six respondents are already retired. The third reason, tied at five respondents each, is that either they were hired as a teacher somewhere else, a stay-at-home parent, or not seeking full-time employment.

The final question asked respondents to list the number one improvement area needed at the Canon-McMillan School District for substitute teachers. The number one area listed was wages, with eighteen respondents listing that as the most important. Eleven of the respondents felt the second area needed improvement was training and communication. The third highest area for improvement was none required, as reported by ten of the seventy-two respondents. However, the Canon-McMillan School District administration can review all ten regions to improve recruiting and retaining substitute teachers. These results will continue to enable open conversation and dialogue to further explore strategies for improvement in these areas. These strategies include exploring the data obtained from this action research study that will allow the administration of the Canon-McMillan School District to make inferences in future staffing discussions and, ultimately, financial recommendations to the Canon-McMillan Board of Directors. Specifically, an increase in substitute teacher wages was recommended, as this rose to the top of survey results as the main area for improvement. Additionally, continuing to fund

building day-to-day substitutes is also something that grew as crucial in retaining substitute teachers while still allowing for freedom of assignment selection. Thus, the administration of the Canon-McMillan School District validated in their budgeting of both the day-to-day substitute teachers while also ensuring that other monies are budgeted outside of the building day-to-day substitute teachers.

### **Summary**

In summary, the data presented in this action research study provides responses to the researcher's questions. The quantitative data collected from Canon McMillan District Software and Frontline Analytics was analyzed through statistical analysis, providing summarized data for District Administration. The data collected through the qualitative Google Form Survey responded to the researcher's questions regarding substitute teacher job satisfaction and afforded District Administration with areas of improvement.

In the next chapter, the researcher will conclude by revisiting the three research questions in this action research study. Recommendations will be offered based on the quantitative and qualitative data analyzed in this chapter. The researcher will also outline areas that could be considered in future research studies and areas of limitations of this action research. Finally, the next chapter will present recommendations regarding recruiting and retaining both day-to-day and long-term substitute teachers at the Canon-McMillan School District.

**CHAPTER V****Conclusions and Recommendations**

This Doctoral Capstone Action Research Project was designed to examine teacher shortages and the use of daily substitute teachers at the Canon-McMillan School District. The action research encompassed school years from August 2018 through May 2024. This timeframe included data pre- and post-pandemic, 2018-2024.

The Canon-McMillan School District, a growing school district in western Pennsylvania, has student enrollments 5,436 as of December 2023, reported to the Pennsylvania Department of Education, Pennsylvania Information Management Systems (PIMS). The Canon-McMillan School District spans fifty-six square miles; in those fifty-six square miles, the District maintains five elementary schools, two intermediate schools, a middle school, and a high school. The Canon-McMillan School District General Fund Budget in 2023-2024 was \$107,757,359. The District employed three hundred and forty-eight and a half teachers (348.5) in 2023-2024 and expects to hire five additional full-time teachers for 2024-2025.

While the Canon-McMillan School District has made financial investments in the attraction and retention of daily substitute teachers at the Canon-McMillan School, those decisions were made without the benefit of formal research, data collection, and structured analysis. The financial investments included a modest increase to the substitute teacher's daily rate of pay and building day-to-day substitutes for what was believed to be an incentive for substitute teachers at the Canon-McMillan School District.

The Administration of the Canon-McMillan School District acknowledges that future fiscal choices, such as additional increases to the substitute rate of pay and

absorbing other professional development costs, will require an ongoing fiscal investment for daily substitute teachers. This study aims to provide Canon-McMillan School District Administration recommendations to improve retention and recognize perceptions and realities to attract daily substitute teachers. This chapter will share conclusions, recommendations, and implications for each of the following research questions:

### **Research Question 1**

What is the relationship between the number of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?

### **Research Question 2**

What is the relationship between the fill rates of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?

### **Research Question 3**

What is the relationship in satisfaction when serving as a day-to-day substitute teacher compared with reasons for selecting the Canon-McMillan School District as measured through a focused survey?

## **Conclusions**

### ***Research Question 1***

The researcher asked, “What is the relationship between the number of staff absences before (March 2020) and after the pandemic (2021 through 2024) as

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measured by archival data housed within the Canon-McMillan School District?" Raw data results were extracted from the Canon-McMillan District Software, Frontline, through quantitative analysis. The data concluded that staff absences were higher post-pandemic, 2021-2024. The highest and the average number of staff absences during this post-pandemic was higher than pre-pandemic ( $n=1,310 > 769$  and  $average = 584 > 511$ ). On average, the number of staff absences during this pre-pandemic was 584. Meanwhile, post-pandemic, the number of staff absences was 1,310.

The researcher used bivariate correlation to analyze the relationship between the numbers of staff absences, pre- and post-pandemic. Bivariate correlation was conducted to determine if there is a statistically significant linear relationship between the two variables. The researcher concluded through the use of SPSS Statistical Analysis that the overall bivariate correlation between the numbers of staff absences before and after the pandemic was  $-0.19727$ . The results indicated a negative negligible relationship between the number of staff absences before and after the pandemic. This means the relationship of the two variables moves in opposite directions.

During their budgeting process in 2022-2023, 2023-2024 and 2024-2025, the Canon-McMillan School District Administration planned for additional teacher absences. Along with budgeting for additional teacher absences, Canon-McMillan School District Administration should track and monitor staff absences overall and by individual building. The researcher recommends, The Executive Leadership Team conduct an annual survey to solicit feedback from teachers and day-to-day substitute teachers. The survey should inquire about the reasons a teacher was absent by category. For example,

sick, vacation, personal, workshop or other reason. The purpose would be to collect data to continue attracting and retaining teachers.

The fiscal implications for the Canon-McMillan School District Administration are that teacher absences have risen since the pandemic. Pre-pandemic 2018-2019, total teacher absences were 5,209, and the total absences filled with a substitute teacher were 4,074. Compared with post-pandemic, 2023-2024, total teacher absences were 7,215; of those, 6,366 were filled with a substitute teacher. Teacher absences result in additional vacancies to be filled, which will require additional monies to be earmarked for this anticipated rise in staff absences. The cost of a substitute teacher for 5,209 teacher absences at a \$125 daily rate is \$651,125 compared with 7,215, which, if filled 100%, would have cost \$901,875. After analyzing the relationship of staff absences pre-pandemic, before (March 2020), and after the pandemic 2021 through 2024), the Canon-McMillan School District Administration should anticipate these rates will continue to rise and budget accordingly.

### ***Research Question 2***

The researcher asked, "What is the relationship between the fill rates of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?" Raw data results were extracted from the Canon District Software, Frontline, through quantitative analysis. The analysis revealed that fill rates were also higher post-pandemic at a fill rate of 79%, while pre-pandemic, the fill rate was 77%. At first glance, this would not seem significant, but staff absences have more than doubled post-pandemic (2021 through 2024), but fill rates only rose by 2%. However, when comparing pre- and post-pandemic



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absences, post-pandemic absences were higher, and fill rates did not appear to rise as much. However, the fill rates were proportional to the number of absences, and the end result was more substitute teachers were available post-pandemic.

The researcher also used a bivariate correlation to analyze the relationship between pre- and post-pandemic fill rates. The researcher found negative and positive correlations between individual school buildings in the Canon-McMillan School District. The overall conclusion is that the bivariate correlation between the fill rates of absences before and after the pandemic was 0.268629. This indicates a statistically linear relationship between the two variables. It was further concluded that this bivariate correlation shows a positive, negligible relationship between the rapid rate of staff absences before and after the pandemic. This means that while a relationship exists between the fill rate and absences, and they move in the same direction, it is not a strong relationship.

For example, the highest number of teacher absences was post-pandemic, in February 2022. One thousand three hundred ten teachers were absent; if all those absences were filled at 100%, it would have cost the Canon-McMillan School District \$163,750 for that month. The actual fill range for February 2022 was only an average of 74% or 970 positions filled. The actual cost was \$121,250, \$42,500 less than if 100% of the absences that were filled. As illustrated, a rise in teacher absences results in a higher cost to the District. However, this example illustrates that the rate of filling absences is also essential to consider when budgeting.

While a rise in teacher absences is a concern, the fill rate of those absences is also vital to student learning. Thus, based on the fill rate analysis, the researcher found that fill

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rates are also a problem that needs to be addressed. Thus, the researcher recommends using the results from the Google Form Survey to improve the fill rates at the Canon-McMillan School District. The first recommendation would be to increase the wages of substitute teachers. This recommendation is made because survey results found wages are essential in selecting a substitute position and an area the Canon-McMillan School District should prioritize for improvement. The second recommendation is based on evidence the researcher found when analyzing teacher absence and fill rate data. A comparison of the schools' average absence data before March 2020 yielded varying average absences and fill rates. For example, Wylandville Elementary School had a pre-pandemic (before March 2020) monthly average of 24 staff absences with a 78% fill rate.

In contrast, Borland Manor had an average of 38 staff absences or an 81% fill rate. Perhaps the numbers vary due to building enrollments, but the survey results found that substitute teachers selected where to work based on the administration and staff of a building. Thus, the researcher recommends exploring further why some buildings are more desirable to work in than other buildings regarding fill rates of teacher absences.

The researcher also recommends that the Canon-McMillan School District Building Principals and Human Resource Department conduct annual surveys and utilize exit interview data to report annually on staffing. This feedback will be vital to understanding why a teacher is leaving the district. This feedback will aid in determining if there is a building cause for that exit. This will also aid administration in determining why staff absences and fill rates vary significantly between individual school buildings within the Canon-McMillan School District and identifying best practices that can be shared with all buildings within the Canon-McMillan School District.

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The fiscal implications of accepting the researcher's recommendation would be to increase the wage of substitute teachers. The Google Form Survey indicated this was the number one area for improvement when substitute teachers were asked. The second recommendation does not have hard dollar fiscal costs but is still an indirect cost to the Canon-McMillan School District. This recommendation will require an investment of time to accomplish this recommendation. The final indirect cost determination will be conducted through a time study regarding this recommendation.

***Research Question 3***

The researcher asked, "What is the relationship in satisfaction when serving as a day-to-day substitute teacher compared with reasons for selecting the Canon-McMillan School District as measured through a focused survey?" Through qualitative analysis, the researcher sent a Google Form Survey to 288 substitute teachers of the Canon-McMillan School District who substitute taught in the District during the school years being analyzed, 2018-2019 through 2023-2024. The survey yielded a response rate of 25% or seventy-two respondents.

The results of the survey were conveyed in three different sections. The first section provided a demographic context for the researcher. While the results of the demographic section are beneficial in giving contextual data for the administration of the Canon-McMillan School District, the results are outside the scope of this action research and the research questions asked. However, the recommendations for future research are provided later in this chapter, as the researcher was left with several additional research questions after reviewing the data provided by this section of the survey.

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The second area of the survey yielded results based on Likert-style questions, providing the researcher with a coding methodology based on the respondent's level of importance. Survey respondents were asked to rank a survey statement by level of importance, "It is important to me..." from 1 being the highest and five the lowest. The data revealed that location, either by building or the District itself, is the main reason a substitute teacher chooses to select an assignment, followed by wages and the administration or staff of a building.

The final section of the survey yielded results based on open-ended responses to a series of substitute teacher satisfaction questions. The researcher sought to identify specific areas for improvement and why substitute teachers indicated why they would accept full-time employment as classroom teachers at the Canon-McMillan School District.

As a result of the survey results, the researcher has the following recommendations for the Canon-McMillan School District. Wages appeared in multiple areas of the Google Form Survey results: It was included in the Likert style questions of the level of importance of wages, it was listed as an area of improvement in the open-ended section and was also listed as a reason why Canon-McMillan School District was chosen as a school to substitute teach. As a result of the survey responses and the superintendent goals to maintain and grow staff, it is recommended that all day-to-day substitute wages be increased. This recommendation would be shared with the Superintendent and the Executive Leadership Team, based on the results of that discussion, this could move forward as a budgetary consideration for future budgets. Inclusion in future budgets would require school board approval during the budget

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approval process. The researcher further recommends the increase should remain competitive and be annually reviewed. Survey results concluded that 77.8% of respondents are substitute teachers at other school districts. As a result, the researcher inquired regarding the daily rate of substitute teachers at school districts that survey respondents also named as school districts that also substitute teach. The top two were Washington School District and Trinity Area School District, which are less than Canon-McMillan School District at \$120 and \$125 a day, respectively.

On the other hand, Canon-McMillan's daily substitute rate is \$150 per day. Bethel Park School District, Upper St. Clair School District, and Peter's School District are all tied for second most school districts, where survey respondents also substitute teach. The average daily rates were \$140, \$150, and \$150. The school district that was in third place was South Fayette School District; their daily rate is also less than Canon-McMillan at \$140 per day. Annually providing data regarding daily substitute pay rate critical to the Superintendent, Executive Leadership Team and ultimately the School Board of Directors in order to make sound, responsible financial decision for the stakeholders of the Canon-McMillan School District.

The researcher recommends that while the Canon-McMillan School District substitute teacher wage is competitive, the daily rate of pay may need to be increased annually to stay competitive and stand out as a premier district where substitute teachers seek to work. Annually obtaining daily substitute teacher rates of surrounding and competing districts will help ensure that Canon-McMillan remains competitive, a destination workplace and a best practice. Substitute teachers are not in the collective bargaining teachers' union, and their wages are separate and distinct.

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The Canon-McMillan School District should also consider whether there should be a Certified Substitute Teacher Rate and an Emergency Substitute Teacher Rate, especially given the high percentage of emergency certified substitute teachers. The survey results also indicated that 51.4% of respondents were emergency certified to teach. Emergency versus Certified Substitute Teachers is an area that could be further explored.

The researcher also recommends developing an annual substitute teacher satisfaction survey to seek feedback annually. This feedback will enable data-driven decisions regarding areas to improve, change, or continue, specifically, why a particular building is selected over others when choosing a substitute teaching assignment. This recommendation could be made through an annual Human Resource Survey for substitute teachers. Then, any building data received should be incorporated into district-wide substitute teacher training and resources. This feedback is integral to the third researcher's recommendation to develop further and improve existing substitute teacher training and resources. This recommendation also includes substitute teachers attending district in-service days. This recommendation would be included in the hiring packet of daily substitutes as days expected to work and that they will be compensated for district in-service days.

The researcher recognizes fiscal implications to the recommendations offered above; however, the current substitute teacher rate of \$150 per day will be used as the baseline, as survey results indicated that many respondents chose assignments based on the current wage. However, it will enable the administration of the Canon-McMillan School District to recommend an annual increase for substitute teachers responsibly. For

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example, if this recommendation had been made timely for the 2024-2025 budgeting process, it would have included an additional \$7.50 a day per substitute teacher, taking their daily rate to \$157.50. The increase represents a 5 % increase or annually increasing with the Act 1 tax index. Incremental annual increases will aid the District in keeping pace with salary increases for substitute teachers while maintaining fiscal responsibility.

The second recommendation will require the human resource department to invest time and resources. These resources could be targeted professional development for things like classroom management strategies, curriculum updates, special education mandates, and other federal, state, and local law legislation that impact education. Professional development content will be driven by survey data feedback. Annual surveys are a best practice that is ultimately a timely, inexpensive method to obtain valuable feedback for improvement.

The final recommendation, also related to professional development would be determining if including substitute teachers on certain in-service days would be beneficial and maybe an area for future research. Because this recommendation will result in a cost. The cost would be the daily rate of a substitute multiplied by the number of substitute teachers attending. Perhaps this day(s) would allow for time to be set aside by the administration to evolve further and expound on substitute training, communication, and overall resources.

### **Limitations**

The researcher acknowledges limitations based on the survey design, sample size, absence and fill rate data, and external factors or potential weaknesses that could impact the conclusions of the action research. The list of limitations are:

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- The inherent weakness of the sample size is less than 100%, and the 25% response rate low are it is representative of the entire group.
- Inherent weakness of Likert scale data
- Teacher absence and fill rate data – human data entry error
- Researcher Bias
- Unknown external factors like the lack of exploration into the quality or abilities of a substitute teacher in this research study.

The respondents to the Google Form survey indicated a 25% response rate. While the researcher maintains the survey was credible, transferable, dependable, and confirmable, it still yielded results less than 100%. While a sample size of 25% provides valuable insights and areas upon which to improve, it is important to note that it is specific to the Canon-McMillan School District, and while representative, generalization cautions are noted by the researcher.

Likert-style questions have the inherent weakness of not sharing why a respondent feels as they do in their response. Thus, while designed not to suggest or include biases in their design, the Likert scale question could only present a response to the specific question. However, the researcher's use of triangulation with open-ended questions and Likert-style questions was purposeful to avoid or minimize this limitation.

The action research included Canon-McMillan School District Software and Frontline Education data. This software is used to place substitute teachers and manage absence data. However, a potential limitation is that employees self-report their absence. Although rare, a wrong absence category could be selected, not entered at all, or changed once



archived. The researcher believes that since the Building Principal must approve and monitor the data entered, this limitation is relatively tiny but noted as a potential area of research limitation.

Another potential limitation is researcher bias. The researcher is employed as the Director of Business and Finance, responsible for all district finances; it could be perceived that in that role, the researcher has certain biases regarding finances. Thus, the researcher used an honest broker to send out and solicit survey responses. An honest broker was used intentionally to minimize researcher biases on survey respondents based on the researcher's position within the Canon-McMillan School District. The researcher also employed various research methods and analytical techniques. Data collection was done through an honest broker of the district software, and analysis included triangulation of multiple methods. The researcher intentionally remained neutral to avoid affecting research results and conclusions.

The researcher acknowledges that there could be other external factors and limitations that could impact this research. Survey design and question-wording, while carefully crafted, could have placed limitations on responses by respondents. How respondents felt at the time of the survey may have been impacted by other factors impacting their responses or simply unknown factors the researcher failed to consider. Acknowledging any potential limitation will aid further research on teacher shortages and the use of daily substitute teachers.

Future research can expound on the survey questions and data extraction and strive to improve upon them, as well as broaden the scope of this research beyond the Canon-McMillan School District to other school districts in Pennsylvania and beyond. This

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could include follow-up interviews to ask probing questions for the Canon-McMillan School District. For example, some of those questions could be: Why are you emergency certified to teach when you hold a Master's Degree? Another follow-up question is, what makes you choose to work in a specific building over other buildings in the Canon-McMillan School District? Finally, what wage would you consider fair to substitute teachers? School districts in Pennsylvania and beyond the research questions could be revised to better fit with their culture and demographic landscape.

### **Recommendations for Future Research**

The data analysis, results, and conclusions of this Doctoral Capstone Project answered the researcher's questions in this study. The researcher concluded and made recommendations as a result. However, based on the results and conclusions of this Doctoral Capstone Project, the researcher would recommend expanding on several components of the research and has recommendations for future research. To narrow the scope of the action research, the researcher left several areas that needed to be thoroughly examined. Future research studies could further examine the teacher shortage and the use of daily substitutes at the Canon-McMillan School District and other school districts of the Commonwealth of Pennsylvania.

The first area in which the researcher recommends further studies or explorations is the expansion of the Google Forms Survey. Upon analysis of the survey respondents' responses, the researcher had follow-up questions that needed to be considered when creating the survey. For example, 51.4% of the respondents were emergency-certified substitute teachers. This was much higher than the researcher expected without this survey data. Had the researcher included additional questions in this area or invited some

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respondents to a follow-up interview, the researcher's data would have generated more information in this area. Another example is when the researcher asked what the highest level of education obtained was, 58.3% held a bachelor's degree, and 37.5% held a master's degree. Again, had the researcher added an open-ended section to list the degree the substitute teacher held; it would have added more depth to the action research.

The researcher also recommends that this study be replicated in other school districts in the Commonwealth of Pennsylvania. Replicating the study multiple times to include other districts with the same and different populations (small, large, urban, rural, etc..) would provide action research studies that then could be combined for a longitudinal study across Pennsylvania in the attempt to find answers to the teacher shortage and the use of daily substitutes. This type of large-scale research project could add lawmakers, higher-level universities, school districts, and our communities to find ways to address teacher shortages systemically. On a smaller scale, the researcher also recommends partnering with a neighboring school district and having them replicate the study and then compare and contrast the results.

The researcher would also recommend changing the research questions and altering the substitute teacher survey questions and instead surveying existing teachers on staff. A few questions could be asked: What would they indicate as areas of improvement the District could make in their educator role? What would they like to see as incentives to remain in the school district? How do they feel about training and communication, and what can be improved in those areas? In this same vein, future research could drill down on existing staff absences to determine why they have been rising post-pandemic. Teacher absences should be closely examined to understand if there are trends or patterns

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associated with the absences. The hiring of substitute teachers is costly and adversely disrupts student learning. "Do teachers matter? Absolutely – and a great deal!" (Stronge, 2010).

The researcher believes that further exploration of why particular administration and staff at a building draw more substitutes than others in the District. Thus, the research would recommend a future study on building specific surveys, focus groups, or interviews. This would enable the Canon-Millan School District administration to mentor and add additional professional development opportunities, job shadowing, performance goals, and other leadership methods to model or replicate that administration and staff that exude best practices, mannerisms, and leadership.

A final area that could be considered for future research is to build an action research project on why teachers leave the District. At what point in their career is this occurring, and what can or could be done to retain them? Exploring this area more thoroughly is recommended using exit interview data, demographic data, and additional surveys. Understanding why teachers leave could arm school district administration with valuable tools and resources to retain teachers.

### **Summary**

This Doctoral Capstone Project examined teacher shortages and the use of daily substitute teachers at the Canon-McMillan School District. The study sought to find answers and focused on the following research questions:

1. What is the relationship between the number of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?

2. What is the relationship between the fill rates of staff absences before (March 2020) and after the pandemic (2021 through 2024) as measured by archival data housed within the Canon-McMillan School District?
3. What is the relationship in satisfaction when serving as a day-to-day substitute teacher compared with reasons for selecting the Canon-McMillan School District as measured through a focused survey?

The study reviewed Canon-McMillan School District Software, Frontline data from school years 2018-2019 through 2023-2024. This data provided absence data and fill rate percentages for existing professional staff. The researcher analyzed the data and provided recommendations and conclusions regarding staff absences pre- and post-pandemic. Using this data, the researcher could also analyze the data and provide recommendations and conclusions regarding fill rate percentages of absences pre- and post-pandemic.

The study also reviewed survey responses from Canon-McMillan School District substitute teachers from 2019 through 2024. A Google Form Survey was sent to 288 substitute teachers, of which 72 responded, giving the researcher insight into the satisfaction of substitute teachers, areas of weaknesses, and areas upon which to improve. The responses were analyzed, and the researcher was able to formulate conclusions and provide operational and fiscal recommendations based on their findings. The recommendations included fiscal implications regarding substitute teacher wages, training, and professional development. Potential cost increases were recommended in a manner that could be phased in over time while maintaining consistency and offering competitive wages.

The survey results also enabled the researcher to make other operational recommendations that did not have direct fiscal costs but rather an investment of time or shifting of resources based on improvement feedback received. The researcher offered that the operational recommendations would ultimately decrease other areas that have become resource-laden. For example, countless hours are currently being spent trying to fill vacancies both of a short and long-term nature. By making some improvements, the Canon-McMillan School District will be able to recruit and retain these valuable human capital resources that will pay dividends to the district, taxpayers, and most importantly, the students of the Canon-McMillan School District.

The culmination of this Doctoral Capstone Project has given the researcher insights they did not previously have, even though the researcher has been a member of the district central office for seventeen years. Examining a real-life district problem that transcends the Canon-McMillan School District and extends to the state and national levels was invaluable to the researcher—working as the Director of Finance in a suburban growing school district with many financial needs over the last decade. The financial funding list has included (but is not limited) to a long-range facility plan, technology upgrades and improvements to achieve 1 to 1 initiative, the creation of a cyber academy, and the ability to offer a full-day kindergarten, to name just a few of the significant initiatives. However, despite that long list, the District has had to maintain fiscal responsibility and oversight to fund all these areas responsibly and transparently.

Throughout this study, the researcher had financial knowledge of those crucial initiatives but chose to examine a critical area of education: teachers. Teachers and their presence are invaluable to our students, and their absences are felt in large and small

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ways. Thus, the researcher embarked on this research project to seek answers to teacher absences and the District's ability to fill those absences with substitute teachers.

Thus, undertaking this Doctoral Capstone Project has not only expanded the researcher's knowledge but also their ability to dive into district data and receive valuable input to inform the administration of the Canon-McMillan School District on ways to recruit and retain substitute teachers to open pathways to future district projects to seek information. Through this process, the researcher has gained knowledge and experience and was forced to draw from areas outside their comfort zone. The researcher sought to explore other areas of the educational area that will be modeled for others. Using data, analyses, and sound research methodologies will elevate district communications and foster a transparent, data-driven, and evidence-based culture for making decisions.

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**APPENDICES**

**Appendix A****Survey Disclosure Letter with Consent for Substitute Teacher Participation**

You are invited to participate in a research study examining "An Analysis of Teacher Shortages and the Use of Daily Substitutes." You were selected because you have been board approved as a substitute for the Canon-McMillan School District. Joni Mansmann will be conducting the research to address a critical issue and improve upon it in addition to satisfying requirements for the Doctoral Program at PennWest University. Like other districts in the Commonwealth of Pennsylvania, Canon-McMillan is experiencing teacher shortages for open positions and temporary and long-term substitutes.

Should you accept this invitation and participate in the Action Research Study, you will complete this electronic survey which will take less than 20 minutes. Participation is entirely voluntary and submission confidential, and you may stop the survey at any time by closing the browser and not submitting responses. This action indicates that you chose to "opt-out"; and can be done any time before the survey is submitted. If you proceed and respond to all survey questions and submit responses, you have accepted the terms and agreed to participate.

This survey will remain open until December 15th, 2023; after that time, it will be closed, and no more submissions will be accepted. The survey is in this Google Form, and all responses are electronically returned with no email address or identifying information attached. Therefore, all responses will be confidential. There are minimal risks to this study. The questions asked in the survey are to obtain information about you as a survey participant and to ask for your perceptions regarding substitute teaching at Canon-McMillan School District and your reasons for doing so. Suppose you choose to accept this invitation to be part of this study. In that case, you will assist the researcher in better understanding and improving upon why Canon-McMillan is selected as a school district to substitute. The data will be analyzed and included in a report to the district to make improvements starting in the 2024-2025 school year.

If you have any questions about this study, don't hesitate to contact Joni Mansmann at [tyh70538@pennwest.edu](mailto:tyh70538@pennwest.edu) or 724-746-2940 X 9109. If you would like to speak with someone other than the researcher about this project, please contact Institutional Review Board, Pennsylvania Western University, 250 University Avenue, California, PA 15419 or [instreviewboard@calu.edu](mailto:instreviewboard@calu.edu). Canon-McMillan Superintendent and the School Board of Directors have approved this study. The PennWest University Review Board has also approved this study. Their approval is effective 08/14/2023 and expires 08/13/2024.

The survey is below or can be electronically access through this link: <https://forms.gle/MeJe3VkJh4tXRxiX9> .

I appreciate your willingness to participate in this research.

Sincerely,

Joni Mansmann

**Appendix B****Substitute Survey**Demographical Information

This section will collect some information about you as a survey participant

1. Gender (must select 1)
  - a. Male
  - b. Female
  - c. Non-Binary
  - d. Prefer not to respond
2. Age Range (must select 1)
  - a. Under 20
  - b. 20-30
  - c. 31-40
  - d. 41-50
  - e. Prefer not to respond
3. Type of Substitute (must select 1)
  - a. Certified
  - b. Emergency
  - c. Other
4. Highest Level of Education (must select 1)
  - a. High School Diploma
  - b. Some College
  - c. Associate's Degree
  - d. Bachelor's Degree
  - e. Master's Degree
  - f. Beyond Master's
  - g. Other: Please Specify:
5. Please indicate which year you were added to Canon-McMillan Substitute List (must select 1)
  - a. Before the 2019-2020 school year
  - b. 2019-2020 school year
  - c. 2020-2021 school year
  - d. 2021-2022 school year

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- e. 2022-2023 school year
- f. 2023-2024 school year
6. Years Worked as a Substitute at Canon-McMillan School District (select ALL that apply)
- a. 2019-2020
- b. 2020-2021
- c. 2021-2022
- d. 2022-2023
- e. 2023-2024
- f. Did not take any assignments at Canon-McMillan School District
7. Are you a Substitute at other School Districts? (must select 1)
- a. Yes
- b. No
- c. Prefer not to respond
8. If the answer to #6 is yes, please indicate where or, if you do not want to share, type "N/A " as a response:
- a.
- 

Substitute Satisfaction Section

This section will collect your level of satisfaction and feedback regarding selecting Canon-McMillan School District to teach.

Level of Importance "It is important to me..."	1 Extremely	2 Very Important	3 Moderately	4 Somewhat	5 Not At All
To select an assignment that is consistent day to day.					
To select an assignment that is longer than one day.					
To select an assignment based on location.					
To have the freedom to pick and choose varied assignments instead of consistent ones.					

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Level of Importance "It is important to me..."	1 Extremely	2 Very Important	3 Moderately	4 Somewhat	5 Not At All
To select an assignment at Canon McMillan School District because of available substitute resources					
To select an assignment at Canon McMillan School District based on the wage paid to substitute					
To select an assignment based on the administration and staff of a building					

Substitute Satisfaction Open Response Section

This section will collect and allow for your direct feedback regarding being a substitute at Canon-McMillan School District.

9. I plan to continue to take assignments as a Substitute at Canon-McMillan School District.

- b. No
- c. Undecided

10. If your answer to #9 was No or Undecided, please indicate why or type "N/A " if yes or not willing to share:

a.

---



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11. I would accept a permanent teaching position at Canon-McMillan School District if one were available.

- c. No
- d. Undecided

12. If your answer to #11 was No or Undecided, please indicate why or type "N/A " if yes or not willing to share:

e.

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13. Is the fact that Canon-McMillan School District offers in-house building substitutes why you substitute teach at Canon-McMillan?

## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

- g. No
- h. Undecided

14. What is the #1 reason you have or will select Canon-McMillan as a district to substitute teach? (You must respond even if you write "none")

a.

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15. Please list one area for Canon-McMillan to improve upon so that more substitutes select Canon-McMillan for an assignment. (You must respond even if you write "nothing")

a.

---

## Appendix C

## IRB Approval Letter – Pennsylvania Western University



Institutional Review Board  
250 University Avenue  
California, PA 15419  
[instreviewboard@calu.edu](mailto:instreviewboard@calu.edu)  
Melissa Sovak, Ph.D.

Dear Joni Mansmann,

Please consider this email as official notification that your proposal titled "An Analysis of Teacher Shortages and the Use of Daily Substitutes" (Proposal #PW23-009) has been approved by the Pennsylvania Western University Institutional Review Board as submitted.

The effective date of approval is 08/14/2023 and the expiration date is 08/13/2024. These dates must appear on the consent form.

Please note that Federal Policy requires that you notify the IRB promptly regarding any of the following:

- (1) Any additions or changes in procedures you might wish for your study (additions or changes must be approved by the IRB before they are implemented)
- (2) Any events that affect the safety or well-being of subjects
- (3) Any modifications of your study or other responses that are necessitated by any events reported in (2).
- (4) To continue your research beyond the approval expiration date of 08/13/2024, you must file additional information to be considered for continuing review. Please contact [instreviewboard@calu.edu](mailto:instreviewboard@calu.edu)

Please notify the Board when data collection is complete.  
Regards,

Melissa Sovak, PhD.  
Chair, Institutional Review Board



## TEACHER SHORTAGES AND THE USE OF DAILY SUBSTITUTES

## Appendix D

## Canon-McMillan Letter of Support

Michael W. Daniels, M.S.  
Superintendent of Schools

Scott W. Chambers, M.Ed.  
Deputy Superintendent



CANON-MCMILLAN

SCHOOL DISTRICT

EST. 1954

July 3, 2023

ADMINISTRATIVE OFFICE  
200 Big Mac  
Boulevard  
Canonsburg, PA  
15317  
Phone: 724-746-2940  
Fax: 724-746-9184

Ms. Joni Mansmann  
4067 Bentwood Drive  
Canonsburg, Pa 15317

Dear Ms. Mansmann,

I am pleased to write this letter in support of your doctoral capstone project entitled, "An Analysis of Teacher Shortages and the Use of Daily Substitutes." The proposed research appears to set out to address a critical issue we are experiencing and the results it will yield can be of significant value for the Canon-McMillan School District. CanonMcMillan, like other school districts in the Commonwealth, is experiencing teacher shortages for open positions as well as short-term and long-term substitutes. Your research will assist the Canon-McMillan School District in making future decisions regarding this issue. Specifically, I look forward to seeing the analyses performed through the course of your research and how it pertains to not only attracting applicants to respond to open positions in our school district but to retain them as well.

I have reviewed the project proposal and understand the following related to district participation:

- Permission is granted to use Canon-McMillan's name and likeness in your research.
- Permission is granted to use historical and live absentee data from our district software, Frontline Education Absence Management.
- It is understood that teacher participation will be solicited on a voluntary basis and will involve the completion of a survey, from which the substitute teacher can withdraw at any time (this item will require Board of School Director approval and may require IRB approval before proceeding).
- It is understood that data collection samples will be kept confidential and secure via electronic files.
- It is understood that the potential risks with the data collection process are minimal as the absence data can be retrieved at summary levels and will not include individual names.

The Deputy Superintendent's Administrative Assistant, who is charged with maintaining the substitute teacher database, can assist by distributing the Google surveys on your behalf. This will minimize the potential for anyone's false perception that you are in a teacher supervisory position.

Please accept this letter as my formal consent and support of the district's participation in your proposed research project.

Sincerely,

Michael Daniels, M.S.

