Attachment to Place Among Teenage Students in School Districts With Four-Day School Weeks

By
Madeleine Cullen Smith

A THESIS

submitted to

Oregon State University

University Honors College

in partial fulfillment of
the requirements for the
degree of

Honors Baccalaureate of Arts in Economics
(Honors Scholar)

Presented May 8, 2020
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Rural communities face acute challenges in providing education. Attachment to place plays a significant role in rural communities but little research exists on how it influences policy. One policy response to financial, physical, and cultural factors in rural Oregon is the four-day school week (FDSW). Through health survey responses of Oregon teenagers, I estimate the impact of the four-day school week on various metrics for attachment to place by regressing these metrics onto a FDSW dummy. I find that students in the FDSW are more likely than students not in a FDSW to agree with the statement "If I had to move, I would miss the neighborhood I now live in." I also find that students in FDSWs are less likely to have changed schools three or more times, more likely to report that they volunteer in their local community, and report better mental health outcomes. I also include a qualitative analysis through an ethnographic interview with a university student who went to a FDSW school in Oregon. I conclude that attachment to place interacts with the FDSW policy choice and policy outcomes. I also make a case for the integration of qualitative analysis into quantitative study.

Key Words: attachment, rural, education

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Honors Baccalaureate of Arts in Economics project of Madeleine Cullen Smith presented on May 8, 2020

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I understand that my project will become part of the permanent collection of Oregon State University Honors College. My signature below authorizes release of my project to any reader upon request.

Madeleine Cullen Smith, Author

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1 Introduction

Policies centered on economic mobility in rural areas often struggle to address the complex challenges and the particular cultural context in these areas. Attachment to place appears to be an important cultural feature of many rural communities but is difficult to capture empirically. To frame it from an economic perspective, sense of place could be considered a type of social capital that generates returns for those who have it. A strong attachment to community in a given place can manifest through reliability of economic exchanges and community development. As manufacturing industries continue to decline in rural places and agriculture continues to become more automated in the United States, many who work in the field of economics have questioned the economic viability of rural communities. In the midst of a changing economic climate, a number of rural areas in Oregon and other western states have adopted a four-day school week policy. While various sources, particularly in geography studies, identify the importance of attachment to place in rural communities, very limited empirical work exists that addresses this subject. This paper will explore the interaction between attachment to place and the four-day school week. As far as I am aware, I am the first person to explore the question of attachment to place in rural Oregon in relation to the four-day school week.

Through survey responses of Oregon teenagers, I estimate the impact of the four-day school week (FDSW) on various metrics for attachment to place by regressing these metrics onto a dummy variable indicating whether or not a student goes to school in a FDSW. I find that students in the FDSW are 5.3 percentage points more likely than students not in a FDSW to agree with the statement "If I had to move, I would miss the neighborhood I now live in." I also find that students in FDSWs are about seven percentage points less likely to have changed schools three or more times in their lives compared to their five-day counterparts. Students in the FDSW are three percentage points more likely to report that they volunteer in their local community. Finally, students in the FDSW also report better mental health outcomes. I also include a qualitative analysis through an ethnographic interview with a university student who went to a FDSW school in Oregon. This analysis will come after the quantitative results and helps illuminate some concrete life experiences in a FDSW.

2 Background

2.1 The Four-Day School Week

The four-day school week (FDSW) policy is not an explicitly rural-targeted policy. Yet, there are a variety of reasons that it suits rural communities. Briefly, the history of the FDSW in Oregon began in 1983 with two yearlong trials of the FDSW in Southern Oregon. Following that, five districts in Eastern Oregon adopted the policy. The policy has expanded with two periods of intense adoption between 1997-2003 and 2009-2013. The latter of the two periods coincides with the aftermath of the Great Recession, when school districts suffered from a

lack of funds and budget deficits (Thompson 2019b).

The FDSW changes the school calendar in two main ways. First, it shortens the school week to four days of instruction. Almost always, a Friday is the day off, creating a three-day weekend every week. Second, rather than extending the school year, the schools lengthen the school day on the other four days of the week. This describes the typical structure of the FDSW in Oregon.

Based on the research of Thompson, et al. (2019a, 2020), the majority of districts that opt for a FDSW policy are small and rural. School districts usually report financial pressures as the main reason for the policy choice (2020). In Oregon, 68.6% of schools reported financial reasons as part of the rationale for the policy. Other factors include absences (13.7%), appointments (5.9%), and athletics (41.2%). Some rural-specific factors include commuting time (11.1%) and student/teacher retention (23.5%). Travel time also influences absences, athletics, and appointments. The place-specific justifications of the FDSW policy and the concentration of the FDSW in rural areas suggest that other socio-cultural factors may be an important influence in this policy.

The use of the fifth day off, usually a Friday, also varies. About half of the schools in Oregon close completely on Fridays. About 30% report hosting enrichment or remedial programs, and about 25% report teacher professional development. The FDSW adapts the school schedule in a relatively new way. Attachment to place in rural areas helps to frame the policy choice, perceptions, and outcomes of this policy.

2.2 Literature Review

In rural development, there are two primary approaches that raise a debate about how to effectively intervene in rural areas. Economist Roger Bolton (1991, 187) uses the phrase "Place prosperity vs people prosperity" to summarize the two approaches. The strategy of place prosperity focuses on infrastructure and capital in a particular place to encourage economic activity, while he describes people prosperity as "direct transfer payments to individuals or subsidies to encourage them to move out of declining regions" (187). Bolton also notes that this debate is most relevant in what he calls "declining" places, since prosperous rural communities are not the main concern of community development. The debate, then, has more to do with whether or not to invest in a declining place than investment in rural places in general. There are various studies citing evidence for the relative effectiveness of the two approaches. Important in this paper, Bolton describes sense of place as a form of social capital and argues that is an important factor in rural policy. He states that people invest in this social capital by choosing to live somewhere, perhaps paying for it in terms of lower income, and that people see returns to it in the community. Some examples of returns with economic implications would be security, stability, and productivity. While it is reasonable that sense of place factors into the economic activity of a given place, measuring the specific effect of sense of place remains a challenge.

With limited research thus far on the FDSW, and none centered on the idea of attachment to place, I begin with literature looking explicitly at attachment to place in rural areas to provide a foundation to analyze other research on rural education policy and the FDSW.

Literature describing the idea of attachment to place largely lies in qualitative research. Community values and social capital are difficult to measure quantitatively, and thus often do not factor into empirical analysis. Rudzitis (1993) utilizes geographical methods of population movement and growth to analyze the idea of attachment to place. By his assessment: "People migrate to, live in, or are tied to these rural areas because of the physical geography, the environment, and a way of life" (575). This could help to illuminate why a person may choose to live in a given place. Still, many economists currently use reasonable proxies for social capital. In a national study using administrative records, Chetty, et al. (2014) utilize proxies such as a social capital index and even the number of bowling alleys in an area to gauge the strength of the community. These measures could help to explain some of the decision-making process and reactions of rural communities with respect to the FDSW.

Measuring the value of sense of place poses a challenge, perhaps in the same way that it is challenging to describe the value of human life. Bolton (1992) provides an economic perspective on how to quantify the value of a place using a theoretical willingness-to-pay model. He calls sense of place a capital which people invest in and generate returns from. Sense of place, in the framework Bolton proposes, generates returns such as greater sense of community and the security of a familiar and predictable environment. Analyzing a range of sources and policies, Bolton suggests that people, including those living in non-rural areas, may be willing to pay more for policies to invest in rural places for three primary reasons: the option to go there, the intrinsic value of the place existing, and donor preferences. The willingness of people to pay for policies in rural areas is important in light of a policy debate over "place prosperity vs people prosperity." As many rural areas experience declining economic prospects, the policy response for how best to support people in those communities gives rise to the debate.

Partridge, et al. (2015) attempt to model and test the place versus people prosperity debate. They establish the model of spatial equilibrium that underlies the argument for people prosperity, which states that resources will move to their most efficient use. This model would suggest that place-based policy is inefficient by allocating resources to an inefficient place (Partridge et al., 2015). The authors then review empirical studies on place-based policy and find that spatial equilibrium relies on the assumption of a "high degree of mobility of resources," that may not always be realistic (1319). If attachment to place is important, policies investing in rural communities directly may have more impact by reaching the people who want to stay in the community. For people who do choose to live there or those who are born there, education plays a central role in the community and in an individual's economic outcomes. This underlying debate provides context for current rural-oriented policies such as the FDSW.

Rural communities often face unique challenges with respect to education. In a working paper, Thompson researches the prevalence of the four-day school week as a policy in the US (2019a). This national study combines surveys of four-day school weeks with national financial and student level data to conduct regression analysis to look at cost-savings in FDSW districts. By extending the time on four days and cutting one day, bussing and other operational costs are alleviated, as well as the cost of the time spent traveling to

school. However, other costs arise in the four-day school week model, such as a decrease in instructional time and evidence of declining reading and math scores as Thompson (2019b) identifies and will be discussed further below. Introduced above, Bolton's willingness-to-pay model with respect to rural areas could be applied to explain why a community chooses to pay for the costs associated with a four-day school week in order to preserve the benefits they gain from their rural lifestyle. The outcomes related to the FDSW and other rural-focused policies with respect to attachment to place are further discussed below.

Studies on education suggest that place and community values impact student perceptions as well as their outcomes in the education system. Broomhall and Johnson (1994) conduct regression analysis on survey data from students in rural areas on their perceptions of education. They model human capital investment in terms of how much students value a high school diploma and a college degree. By regressing these values onto other student responses, they gauge which factors contribute to a student valuing education. They find that students who express less willingness to move or are more pessimistic on local employment opportunities value education less. This suggests that such students have a greater attachment to place. Those who do express willingness to leave the community see education as a means to do so, which would support the theory of spatial equilibrium presented above. Yet, the people who preferred living near family seemed to place less value on a high school diploma. For those students with lower inclination to move, the spatial equilibrium theory may not hold, and thus other place-based policies may be more applicable.

Opportunities for education within rural communities have provided greater possible attainment for students who do exhibit an attachment to where they live. Mykerezi et al. (2009) analyze the effect of expansion of community colleges as an option for students who otherwise would not have pursued higher education. They identify two possible effects: the democratization effect, which would allow students to earn a degree they would not pursue without the opportunity, and the diversion effect, which instead pulls students to a 2-year program who may have chosen a 4-year program instead. Using empirical methods with data on metropolitan and nonmetropolitan youth, they estimate the democratization and diversion effects for both urban and rural young adults. They find that the democratization effect is larger for both metropolitan and nonmetropolitan groups, which suggests that community colleges are offering greater access to students who perhaps would not have sought a 4-year degree. For students who are attached to where they live and do not have access to another higher education institution, this could be important. Mykerezi et al. also report that these colleges also have positive community impacts, suggesting that education has some degree of positive spillover effects for a community.

Bringing higher education access to rural areas may be important due to students underestimating themselves. Hoxby and Avery (2013) find that high-achieving students from lower-income backgrounds apply to less prestigious universities. They suggest that this is due to lower levels of encouragement or information to apply to more competitive schools. The authors identify the drivers of the disparity as poor talented students from areas in the "middle of nowhere." In contrast, disadvantaged students in urban areas have more encouragement to apply to more competitive schools. This further supports the idea that rural

schools a lack of resources that limit academic aspirations. In this context, the FDSW may serve a non-academic purpose. One perspective on these conditions will come through in the interview analysis later.

Other studies look at community consequences of a disruption such as school closure. Good (2017) combines quantitative and qualitative methods to investigate the effect of school closures in 2013 in Philadelphia. This study found that the school closures occurred in poorer areas that were predominantly African American. Community members expressed the ways in which this policy negatively impacted them in terms of perpetuating inequality and exclusivity. While this urban community may have significant differences from rural communities, it illustrates the relationship between school policy and sense of place. Good focuses particularly on the idea of the importance of physical places in a community, and how certain spaces appear favored over others in the policy. With the decline of rural communities in economic terms over the past few decades, the loss of financial resources may contribute to a similar disillusionment in rural communities. Place-based policy, and perhaps the four-day school week, may be a way for rural communities to reclaim the importance of the space they are attached to.

Individual disruptions in student education can also impact student outcomes. Perhaps rather than better serving the needs of the community, the FDSW contributes to disruption. Leckie (2009) conducted a study on different impacts on educational outcomes and found that neighborhoods and primary schools both help to explain student test scores in secondary school. To model this, Leckie uses a national British pupil database and interacts school and neighborhood effects to predict test score outcomes. This paper finds that the coefficients on the secondary school variable decrease when neighborhood, mobility, and primary school are included, meaning that these other factors are important in predicting student outcomes. This suggests that some intangible social capital associated with where one lives has an impact on educational achievement, which then can impact future economic mobility. In addition, while moving could facilitate a student gaining access to a better school, Leckie notes that "pupil mobility continues to have a strong negative association with progress" (553). This could be an argument against the narrative encouraging people to move out of rural areas for better economic opportunities. Structural changes of the four-day school week policy could similarly have implications on student outcomes as districts continue to switch to this schedule.

Thompson (2019b) conducts a study on the effects of the four-day school week on student test scores in the state of Oregon. In a working paper, he uses state test score data from 3rd and 8th graders and difference-in-differences analysis to identify the impact of a four-day school week on student achievement. His analysis finds that the four-day school week has significant negative impacts on student achievement in math and reading. The effects on math scores is stronger. Thompson explains that a likely explanation for these results is a decline in instructional time due to the loss of one school day a week. If a school is seen as a central place in the community, this could also be interpreted as a loss of community-building time. However, Thompson does not explore the subject of social capital in his paper. Still, one sees the impact of education policy that disproportionately features in

rural communities with concrete negative outcomes. Recalling Bolton's willingness-to-pay framework, the costs in terms of worsened achievement could reflect what the community pays for a particular lifestyle. Still, if these costs are unobserved by the community, they would instead be unintended.

Contrary to Thompson's findings in Oregon, Anderson and Walker (2015) find positive effects of the FDSW on 4th and 5th grade reading and math scores in Colorado. Using quasi-experimental evidence, they analyze the effect of a four-day school week on district proficiency rates with a panel difference-in-differences analysis. Their study differs from that of Thompson (2019b) because Thompson uses student-level data. Thompson offers a few explanations for the discrepancy with the heterogeneity in policy application. First, earlier school start times that often come with the FDSW may have a negative effect on student outcomes. Thompson suggests that Colorado may be more effective at avoiding early start times. Colorado also has introduced additional resources to students as school budgets pressures lightened, including programs for gifted students, disciplinary programs, and remedial programs (Dam 2006). The supplemental instructional time offered by these programs may help to compensate from the overall loss in instructional time. Oregon thus far has limited comparable programs, and this may be why student test scores are suffering (Thompson 2019b). Ward (2018) offers another explanation, arguing that the improvement observed by Anderson and Walker may be related to increased support from mothers who are no longer working in the labor force.

Ward (2018) looks at a potential economic disruption from the FDSW policy beyond test scores: parental labor supply. Studying four states with recent expansion of the FDSW policy: Oregon, Idaho, Colorado, and Oklahoma, Ward utilizes a difference-in-differences model to estimate causal effects of the FDSW on parental labor supply. He finds mothers with children between the ages of 5 and 13 primarily exit the labor force in response to the FDSW. This could represent the price that families are willing to pay to maintain their lifestyle in a rural area. However, it also reflects a culture in which mothers bear the burden of childcare and thus must make greater accommodations for such a policy shift. Ward also finds smaller effects on families moving away in response to the FDSW, further suggesting that families may be willing to make sacrifices for a certain way of life.

Fischer and Argyle (2018) investigate juvenile crime as another disruptive effect of the FDSW outside of student achievement. The authors look at Colorado and compare student attendance and juvenile crime between four- and five-day school weeks in a difference-in-differences analysis. They find large, significant increases in juvenile crime in areas with a FDSW. The increase is greatest with property crime, and they find the increase is especially great on Thursday and Friday, which supports the incapacitation effect theory. This theory states that school helps to keep students out of trouble, so to speak. Such an outcome reveals how a switch to the FDSW may shift the community experience. If communities opt for this policy in hopes of preserving a way of life, an increase in crime is an unintended consequence that may clash with the values the policy was meant to protect.

Chetty et al. (2014), who identify metrics for social capital, also analyze student outcomes in a large longitudinal study of economic outcomes across the US. The study analyzes

intergenerational economic mobility using empirical methods. The authors find that for low-income children, those from rural places had greater economic mobility than those from urban places (1595). They note, however, that 44.6% of children who grew up in rural areas live in cities by age 30. This could support the policy approach centered on increasing opportunities for people to move out of rural areas in order to achieve prosperity, supporting the findings from the work of Partridge et al. (2015) on spatial equilibrium where barriers to move are not great. As referenced before, students who value education more often have more willingness to move (Broomhall and Johnson 1994). The intergenerational study also found that events and circumstances in a person's teenage years played a key role in determining differences in mobility, which they say could be due to factors such as "quality of school or social structure," as well as perceived local job opportunities (1602). Thompson's findings on the achievement outcomes from the disruption of the FDSW schedule could support such explanations. The importance of social capital and community again seems to help explain economic opportunity.

The range of literature highlighted in this review reflects the complexity of the question on the significance of sense of place in rural education policy. Different articles hit on three different aspects of the question: evidence of the influence of social and community factors in education and economic outcomes, analyses of particular education policies and the FDSW in rural areas, and the definition and significance of sense of place for rural communities. Larger, long-term empirical studies, such as those conducted by Chetty et al. (2014) and Leckie (2009), both have the credibility of rigorous research methods with large datasets over time. Leckie (2009) find evidence that a child's environment in early education has an influence on later achievement outcomes by tracking student throughout their primary and secondary education. Looking across a longer period, Chetty et al. (2014) find evidence that social capital, measured in community engagement and social networks, does have implications on individual economic outcomes. The review of literature in the paper by Partridge et al. (2015) pulls from many sources to make a thorough analysis of spatial equilibrium, and when it may not hold. Other papers that specifically relate to the question in this review have credibility for their proximity to the issue. Bolton (1992) speaks directly about sense of place in rural communities and rural policy. Thompson (2019a, 2019b), Anderson and Walker (2015), Fischer and Argyle (2018) and Ward (2018) all look directly at the FDSW through various lenses. These papers help directly address the question of rural education policy within the context of attachment to place.

The weight of the literature supports the argument that attachment to place influences the effectiveness of education policy and outcomes for rural communities. Rural areas face specific challenges that can help explain greater attachment to place in those areas (Bolton 1992 and Rudzitis 1993). Attachment to place can influence how students view education and their choices to engage with educational opportunities outside of their community (Broomhall and Johnson 1994). The environment in which children grow up influences their later educational and economic outcomes (Leckie 2009 and Chetty et al. 2014). Sense of place fits into that environment as a social capital. The specific challenges and conditions in rural areas may necessitate specific, place-based policy (Partridge et al. 2015 and Bolton

1992). Policies to specifically administer education in rural communities studied by Thompson (2019a and 2019b), Anderson and Walker (2015), Fischer and Argyle (2018) and Ward (2018) and Mykerezi et al. (2009) show how education policy plays out in rural areas. Thompson (2019a) gives evidence that these rural areas may choose a particular education policy given an attachment to place. While Anderson and Walker find positive effects on student achievement, the other FDSW studies find unintended consequences of the policy that could impact the community as a whole. So, while there is no clear consensus on the best way to measure and apply the factor of attachment to place, it does play an important role in the design and outcomes of rural education policy.

As established by Bolton (1992), sense of place represents a social capital with important policy implications. The preferences of a community influence the choice of members to live there and the policies that the community will enact. Broomhall and Johnson (1994) find that preference for staying in one's community predicts student values on education that differ from the values of those who are willing to move. This suggests the educational needs of students who do not wish to move may require more specific policy targeted at their community. The theory of spatial equilibrium would generally suggest that people will move to the most economically beneficial opportunities (Partridge et al. 2015). Still, Partridge et al. acknowledge that place-based policy may be the most cost-effective option when physical mobility is low. This gives further evidence that attachment to place in rural communities may necessitate more place-based policies. Some policies, such as four-day school weeks (Thompson 2019a, 2019b and Anderson and Walker 2015) and community colleges (Mykerezi et al. 2009) both exemplify ways that education policy can address the needs of a rural community. Given the real-world consequences of the education conditions for students as exemplified in the work of Chetty et al. (2014) and Leckie (2009), the environment, stability, and social capital available in a community are important factors in education policy decisions for any community. The four-day school week policy does disrupt the community through crime and maternal labor supply (Fischer and Argyle 2018 and Ward 2018). As social capitals emerge in more research relating to education policy, they can help to explain some of the policy choices and outcomes in rural areas surrounding the four-day school week. Based on the above evidence and the way the FDSW accommodates the rural lifestyle, I would expect the FDSW to lead to greater attachment to place.

3 Data

3.1 Data Set

I utilized data from previous work on FDSW research in Oregon to run my analysis. My dataset combines a FDSW database with data collected by the Oregon Health Authority in the Oregon Healthy Teens (OHT) survey. I previously helped to compile a comprehensive dataset of FDSW use in Oregon via reviews of the Oregon Department of Education, Oregon School Boards Association, and Oregon Health Authority websites. We verified which schools had a FDSW and when the policy was implemented with a phone and email survey. From

this verification process, we created a dummy variable indicating whether the school used a FDSW in a given year between 2007-2015.

For past analyses, we combined this dummy variable with the OHT survey responses to see the relationship between the FDSW and various outcomes. The Oregon Health Authority administers this survey once every two years to collect self-reported information on demographics and health behaviors of students in 8th and 11th grade in Oregon. My dataset includes responses to the 2007, 2009, 2011, 2013, and 2015 OHT surveys. Across the five years, 47 FDSW schools in Oregon are represented and make up 4.51% of responses. For comparison, as of the 2018-19 school year Oregon has 137 schools on a FDSW out of 1251 public schools (Thompson, et al. 2020). This means about 11% of schools in Oregon are on a FDSW. This does not reflect student population, however, and FDSW schools are much smaller than non-FDSW schools on average since they are primarily in rural areas. Thus, I would expect the percentage of Oregon students in a FDSW to be less than 11%. So, broadly, the data set represents the real population fairly well, since the observations represent the student-level rather than the school-level. There are 104,108 total respondents in the data set. For different regressions, the total sample may be smaller due to incomplete responses on certain questions. The sample sizes are listed with each table. From this data, I have looked into variables that proxy for attachment to place and social bonds (see Data Codebook in Appendix, Part 9.4, for a full list of survey questions included); I also utilized demographic variables, such as region where the school is located and student race/ethnicity. For confidentiality reasons, school names are not identified in the data set and this limits some of the options for sensitivity analyses. Differences between survey design across years were resolved by dropping unrepeated questions and unifying variable names. A dummy variable was generated a variable to account for survey year and compiled the datasets from different years into one dataset.

3.2 Summary Statistics

Tables 1 and 2 in the Appendix display summary statistics for four- and five-day school districts. Table 1 shows student characteristics and Table 2 shows the mean responses to the attachment proxies. The tables also include a comparison between four- and five-day schools restricted only to rural regions in Oregon. For reasons stated above, most FDSW schools are in rural regions, which can be seen based on enrollment numbers listed in Table 1. There may be many reasons that all five-day districts are not a good comparison to all four-day districts. Most five-day schools are in less remote places with much larger populations and better funding. By comparing schools within the rural regions, I am able to remove some potential confounding factors. Following a set of demographic variables, I include various proxies that I have selected for attachment to place.

A few demographic features shown in Table 1 illuminate the student population in the data. Since the survey is only administered to 8th and 11th grade students, the mean age of around 15 represents the age between these grades. Over the whole sample, approximately 56% of observations are in 8th grade. The proportion of white students is about five percentage points higher in four-day schools. There is no major difference in food insecurity, as

reported by respondents regarding the past year, between four- and five-day schools. However, in the rural-only selection, about 17% of students in a FDSW reported an instance of food insecurity compared to 19% of rural students not in a FDSW.

As for the selected proxies for attachment to place and social bonds shown in Table 2, some notable differences emerge. The proxies are split by which years they represent. The first set include questions that were only asked in 2007, and the second include questions from all five years. A separate table of demographics of the 2007-only sample is included in the Appendix. The student characteristics for 2007 are generally similar to the all-year sample, with no notable differences.

The first interesting observation about the proxies is an apparent discrepancy between the responses to two similar statements. The first statement: "I'd like to get out of my neighborhood," suggests a negative association with a respondent's neighborhood. About 27.2% of students in a FDSW agreed with this statement, compared to 24.6% of students in a five-day school. The very next statement asks students if they agree with the statement: "I would miss the neighborhood I now live in" if they had to move. In this case, 68% of students in a FDSW agreed, compared with 66% of those not in a FDSW. This second difference is much smaller, but still raises questions when compared with the previous question. Evidently, more students in FDSWs want to get out of their neighborhood and yet more students in FDSWs would miss their neighborhood as well. The other 2007-only question asks about how much students changed schools, and perhaps unsurprisingly, students in rural areas change schools less frequently.

The remainder of the questions refer to questions from all five years. A question regarding student safety asked students to report how many times they did not to school in the past month at least once due to safety concerns, and it appears that slightly fewer students in a FDSW reported any instances of this. Students from FDSW also reported volunteering more, with 76% of students in FDSW compared to 74% in five-day districts. The other notable difference refers to mental and emotional health. Only 13.7% of four-day students reported a mental health or emotional need that was not met in the past 12 months compared to 15.8% of 5-day students. This difference holds even when look only at rural schools.

4 Methods and Model

While the summary statistics offer some information on the population in my data set, comparing students in different school schedules exclusively with means could lead to incorrect conclusions. The means demonstrate that differences exist between four- and five-day school weeks, but do not show that the FDSW itself is causing those differences. To get closer to identifying the extent to which the FDSW itself influences attachment to place, I will use regression analysis to control for potential confounding factors. I estimate several variations of the following regression specification:

$$Y = \alpha + \beta(FDSW_{st}) + \gamma(X_{ist}) + \lambda_t + \theta_s + \epsilon_{st} \tag{1}$$

For all regressions, the dependent variable Y is the response to a given survey question related to attachment to place. All of the dependent variables have been made into dummy variables. The variable $FDSW_{st}$ is a dummy variable that measures whether school, s, has a $FDSW_{st}$ in a given year, t. The coefficient of interest is β, and this will measure the percentage point difference predicted on the dependent variable if a student is from a FDSW. X_{ist} is a vector of control variables, including race, sex, age, region, and grade. For the all-year regression, I include a survey year fixed effect in λ_t. I also estimate the all-year regression with a school level fixed effect, represented in θ_s. An idiosyncratic error term clustered at the school level is represented in ϵ_{st}.

I run two analyses with different subsets of the data. I use regression analyses to control for multiple factors that may also influence the variables of interest. The first set of analysis features questions only included in the 2007 survey, so my analysis on these questions rely solely on a cross-section from that year. I do not include λ_t or θ_s in this estimation. It is not possible to control for year since it only includes data from one year and I cannot control for school because of perfect collinearity with the FDSW designation. The remainder of the variables of interest are included in all five years of the survey, so this analysis depends on a pooled cross-section analysis. For the 2007-only analysis, the dependent variables in this analysis fall into two categories: neighborhoods and mobility. The first group contains three variables that measure students' agreement with different statements regarding their neighborhoods. One states the student wants to get out of their neighborhood, one states the student likes their neighborhoods, the last states the student would miss their neighborhoods if they had to move. For each of these variables, a 1 represents "very much true/pretty much true" and 0 represents "a little true/not at all true." The other variables ask how many times students have moved schools, the first in the past 12 months and the other in their entire lives. The former asks if they have moved at all, and the latter variable is counted only if the student responded with 3 or more times. These measures include natural transitions: from elementary to middle school, for example.

For the all-year analysis, I use a similar specification as for the 2007-only analysis, with the addition of a survey year fixed effects represented in λ_t. The same interpretation to the variables applies, aside from the inclusion of the fixed effects and different dependent variables. This second set of dependent variables is also grouped into two broad categories. The first grouping I call "community proxies," or variables that may shed light on the strength of bonds within the community. One asks how many days in the past 30 days did the student not go to school for safety concerns at school or to/from school. I count this as a yes for one or more days. Another asks if a student has at least one adult at school that cares about them. The last variable in this grouping asks if students volunteer to help in their community. The second grouping focuses more on student mental health and sense of agency. The first two ask if students agree with the following statements: "I can do most things if I try" and "I can work out my problems." The third question asks about the student's general mental and emotional health, which I categorized into "excellent/very good/good" for and "fair/poor." The last variable asks if the student has an emotional or mental health needs that were not met in the past year. A full data dictionary can be found

in the Codebook in the Appendix. I run this all-year regression again with the school level fixed effect, represented in θ_s to further control for school-level differences.

To test the sensitivity of the baseline specification, I also conduct these analyses using a subset of the data that only includes the rural regions in Oregon. Since a majority of the FDSW districts in Oregon are in the rural regions, using all schools with a five-day week as the counterfactual group may not be appropriate in this context. The restricted sample still has the five-day week rural schools as the counterfactual group, but this sample restriction will help to eliminate some of the natural differences observed between rural and urban school districts, particularly in terms of culture. Other types of sensitivity analyses are difficult to conduct due to limitations of the data set. The region identifier used in my analysis is very general, but lack of information on the districts or individual schools holds back other sample restrictions. With more information about the districts, one could better compare districts that are similar in many respects but differ on the FDSW. Clearly, different districts and schools have characteristics, such as their budgets, that could play into student attachment to place as identified by the proxies. I fail to capture many of these characteristics in my model. The opportunity for an event study is limited by the fact that not enough of the schools that switched to a FDSW in the time period are included in the data set to draw meaningful conclusions from the change.

5 Results

The results tables can be found in the Appendix, section 9.2. The table titled Results of 2007-only Responses shows results from the cross-section analysis on the questions asked in 2007. Panel A displays the neighborhood-related questions, and Panel B looks at mobility. I find that students in the FDSW are 5.3 percentage points more likely to agree with the statement: "If I had to move, I would miss the neighborhood I now live in" than those not in a FDSW. This coefficient is statistically significant at the 1% level. When I restrict the sample to only rural regions, this effect stays significant and even becomes slightly larger, at 5.8 percentage points. This supports the hypothesis that students in the FDSW may be more attached to where they live. The driver of this association is not clear from the analysis. The FDSW districts may already have this culture before adopting the policy, but the FDSW could arguably also influence or contribute to this culture. I will discuss this more below. The other neighborhood variables do not have any significant results.

Panel B shows that students in the FDSW are 6.9 percentage points less likely to have changed schools three or more times in their lives, an effect that is statistically significant at the 1% level. It does make sense students are changing schools less in rural areas, since many rural areas only have one school at each level, and some may even combine elementary and middle school, for example. Yet, this difference stays significant when restricted to only rural areas, suggesting even in rural areas, students are changing schools less often in FDSW districts. I find no observable difference in school changes in the past 12 months between four- and five- day school weeks.

The Results of All-year Responses table shows the results from the pooled cross-section

analysis, including data from 2007, 2009, 2011, 2013, and 2015. Panel A shows the results for the community proxy variables. Within that panel, one sees that in the rural-only sample, students from FDSW districts are about one percentage point less likely to say that they did not go to school for one or more days in the past 30 days due to safety concerns to/from school or at school. This effect disappears in the full sample, suggesting that in rural areas, students feel safer in FDSW districts than non-FDSW districts. However, the difference here is extremely small. I also find that students in FDSW districts are about three percentage points more likely to report that they volunteer in their community, an effect which strengthens to almost four percentage points when restricted to the rural region sample. So, students in the FDSW schools appear to be somewhat more engaged in their local community. I do not find any statistically significant difference in students reporting a caring adult at their school.

Results relating to mental health and sense of agency are presented in Panel B. Here I only find significant results relating to mental health questions. Among the rural regions, students in the FDSW are 1.4 percentage points more likely to say that their general emotional and mental health "Excellent," "very good," or "good" (relative to "fair" or "poor") than students in five-day school weeks. Students in a FDSW in rural regions report slightly better general mental health than non-FDSW students in rural regions, which may be linked to reduced pressure from school only four days a week. This relates to some of the findings from the ethnographic interview that I will discuss later. In addition, students in the FDSW were 1.4 percentage points less likely to report that they experienced a time where their emotional or mental health needs were not met at 5% significance. Restricting to the rural-only sample, the difference predicted by the FDSW strengthens in magnitude to -1.7 percentage points and becomes statistically significant at the 1% level. This suggests that students in FDSW districts have more support with respect to their mental health needs.

To address some of the questions of selection into the FDSW that could be driving some of the differences, I also run an analysis that contains school-level fixed effects to control for the individual school characteristics over time. This can help establish a stronger case for a causal relationship between the policy and the survey responses, as it controls for school-level factors that do not change over time. Over a relatively short period of time, culture arguably would not change much. The results from the fixed effects analysis are shown in the table: Results of All-year Responses, with school fixed effect. Here I find that students in FDSW schools are seven percentage points less likely to agree with the statement "I can work out my problems" when restricted to the rural regions only. This would support the explanation that students in FDSW schools have less access to resources with only four days a week. Since nearly 70% of FDSW districts in Oregon report financial reasons as part of the rationale for the schedule, it is not difficult to imagine these schools have fewer resources even when in session (Thompson, et al. 2020). Interestingly, this result is only statistically significant when restricted to rural regions, suggesting that the rural districts that opt for a FDSW diverge from other rural districts in terms of empowering students.

6 Qualitative Analysis

> "Students of the human sciences, like other culture voyeurs, tend to reach their worst conclusions when the humans they study are out of the room" (Lindahl 2012, 140).

6.1 Methods

As part of an interdisciplinary approach, I included a formal interview with a student who went to a FDSW school in Oregon in my analysis. For this interview, I drew from my experience in ethnography in anthropology courses. After obtaining Institutional Review Board (IRB) approval, I used flyers as outreach and ultimately interviewed one student. I had one student respond and due to limitations of the scope of the research, did not pursue more interviewees. The interview took place in-person on campus for 40 minutes in February 2020. I recorded the audio of the interview, transcribed it, and then deleted the audio recording for privacy purposes per the IRB agreement. In the transcript, the student is referred to as Student A, although in the analysis I assign them a name. All identifying details are removed from the analysis. The purpose of this interview is to add a more personal understanding to the nature of the FDSW and how a community reacts dynamically to such a policy. Naturally, one interview cannot function as a broad diagnosis of the FDSW, rather, it gives us a window into the world behind one data point. The questions I asked emerged from the literature review and my previous experience with the FDSW project. The questions asked include:

1. What is your name and age, and what do you study at OSU?
2. What school district(s) did you go to for your primary and secondary education?
3. Which school districts were four-day school week (FDSW) districts?
4. What were the logistics of your FDSW schedule? (start/end times, which day did you have off)
5. Do you know why your district participated in this schedule?
6. What were the benefits to you in this system?
7. Did you experience any challenges with the FDSW?
8. Did your community experience any benefits or challenges associated with the FDSW?
9. Did your FDSW influence your attachment to where you lived? How so?
10. Do you think that the FDSW reflected or supported the values in your community?

6.2 Theoretical Framework

Here I introduce a few anthropological foundations to frame my ethnographic interview analysis. This section is not intended to be an equal counterpart to the quantitative analysis given its scale. Instead, the narrative element can serve as a living example for how the FDSW impacts student experience. Ethnographic work on a larger scale would engage more than one individual but would still have the goal of deepening understanding of local experiences. I use an anthropological approach to help add nuance to my understanding of the FDSW and attachment to place. Through it, I will make the case that such work can complement quantitative analysis.

I first heard a more complicated story surrounding the FDSW while collecting primary data for another project concerning the FDSW. I would call school districts and talk with secretaries and administrators about the history and function of the FDSW in a range of communities. Many of them described local community preferences and constraints their communities faced. The narrow scope of the questions I asked in those circumstances held me back from a qualitative analysis of those conversations, but they revealed the heterogeneity just beneath the surface of the broad category of FDSW schools. Thus, rather than starting with a theory, as one does in deductive analysis, my study took an inductive approach, beginning with what I observed. In those initial phone conversations, the people I talked to often defended the FDSW system, saying that people enjoyed the lifestyle and it worked for the community. I interpreted some of this defense to be warning me that as someone from an urban upbringing studying at a large university, I would not necessarily understand why the community was attached to the FDSW. As some of the previous research on FDSWs illuminated what we perceived to be negative effects of the FDSW, I began to wonder "What benefits that the community gains from the FDSW might we be missing?" I will also add that early in my work on the FDSW project, I directed a 20-minute documentary called "Unabandoned" about small towns in Eastern Oregon. It was an independent project I produced with four other students through Orange Media Network at Oregon State University. Through the process of visiting small towns and interviewing local people there, I came to appreciate the attachment to place felt by many people in those communities. These combined influences compelled me to explore the connection between attachment to place and the FDSW.

A key concept that grounds modern ethnography is the categorization of perspectives to etic and emic. The terms derive from the terms phonetic and phonemic in linguistics. Erikson and Murphy state that "the etic represents the perspective of the investigator, and the emic represents the perspective of the investigated" (2017, 630). The etic perspective relies on theory, rules, and formal training. That is what I bring to the study, along with my advisors. The emic perspective represents how people experience and think about their lives, unconstrained by a certain theory or model. I am trying to get at the emic side in this interview. While it cannot replace a more macro-level view, it opens up other questions that are hard to ask in the survey data I had access to.

The writing of Marcus and Fischer provide a concept that helps to explain the usefulness of a narrow, deeper analysis. They describe uncertainty about macro analysis, criticizing

all-encompassing theories about humankind or given societies. Instead they suggest the jeweler's-eye view of the world, a micro-view that takes into account the history and context of a given place (2017, 482). This does not replace or represent a larger view, but simply allows for greater diversity of experiences. I see my interview as taking a single jeweler's-eye view into one life, bringing someone who experienced what I am trying to understand into the room. Finally, I want to acknowledge that ethnography is storytelling, and as I choose which parts of the interview to include, I construct a narrative that makes sense to describe how anthropologists understand culture (2017, 322). The intent of thick description is to go beyond a simple documentation of an occurrence and seek to describe the meaning of it from the perspective of those engaged in it. I do my best to represent the views of my interviewee honestly and transparently. However, as Geertz says, "what we call our data are really our own constructions of other peoples' constructions of what they and their compatriots are up to" (323). I will note here that in my quantitative study I construct a story in the same way, choosing data that makes sense to me, and explaining it based on my own understanding.

I will discuss these tensions and how I see both qualitative and quantitative study working together in future work below.

6.3 Interview Analysis

In my interview, I seek to explore the qualitative experience of attachment to place. I interviewed a student at Oregon State University who went to a FDSW school in Oregon for their final three high school years. For confidentiality, I will call the student Kara and the town Highton. I will provide a bit of context for the town, and then highlight three themes of the interview. First, I will explore Kara's reflections about attachment and the value of community in Highton. Then I will discuss the academic benefit that Kara felt in that system. Finally, I will look at the features of a small town that perhaps may influence some of these experiences more than the FDSW itself, and perhaps influence the FDSW itself. A few key insights came out of this interview. Kara emphasized the importance of the network of support that she had in her hometown. It also became clear that Kara saw differential access to resources between her school and what she saw among students from other schools. The lack of financial resources in the town impacted the school experience and the way students used the day off. Yet, Kara felt that the adults in her school and town were invested in her education and success.

The town of Highton has less than 5,000 inhabitants. All of the schools in the town are on a FDSW, Kara went to schools in other towns that had a five-day schedule until her sophomore year of high school. Already, this conflicts with one of the theories that students have a lack of school choice in small, rural towns. However, it does mean that Kara could compare a four- and five-day schedule in a K-12 context. For additional context, Kara highly valued sports and filled her after-school time and weekends with athletic activities. These factors all contribute to her particular experience of the FDSW. In quotations, I have removed some filler words such as "like" for clarity. In the interview questions, I sought Kara's perception of how attachment played into the culture of her community. I then wanted to see how this attachment interacted with the FDSW. When I first asked Kara

about attachment to the town, she responded saying: "I think that Highton is kind of unique about that aspect, just because it is like there's only two thousand people in Highton and pretty much everyone is related and your family doesn't really leave. It's very family-oriented, very community, I mean, like the whole community goes to events." Throughout the interview, Kara referenced the closeness of the community. She importantly notes that she believes this makes her town unique, and so this culture may not be felt in all other small towns.

This sense of community was closely tied to the school. In a small community, between families, alumni, and staff, nearly everyone in the community had a tie to the school. On top of that, Kara said that "basically every teacher that I had at Highton high school has been there forever and grew up in Highton." This not only speaks to the community now but reflects a long-term culture in the town where people come back after going to university. When I asked how the FDSW contributed to this sense of community, she explained how the day off on Friday gave people freedom to go to sporting events on Friday without a full workday that day. I responded:

> M: "But that would mostly just be people who are connected to the school district."
> K: "Yeah, which is a lot of people."

Here, I saw my own assumption influencing my interpretation of the significance of a day off for people connected to the school. For Kara, this impacted a relatively large proportion of the community compared to my perspective of a public school in a large metropolitan area. She talked about how the stands were packed for football games and parents without school-age children anymore would still come to support. She felt deeply connected to the community through these well-attended sporting events.

Kara also felt that the FDSW provided academic benefits. In Highton, the day off on Friday is not completely a day off. Kara described how the school was open for a half day on Fridays with optional attendance. Teachers were available for students to ask questions or make up things they missed. Again, this is not a feature of all FDSW districts, but was one of the main reasons that Kara gave for the benefit of the FDSW. She described it as a lower-pressure way to ask questions that may be harder to ask in class: "it didn't have the stressors and pressures that– you know, like a regular school." The one-on-one attention allowed Kara to get the help she needed and stay up to date on her classes with her busy after-school schedule.

Another characteristic of her schedule was a non-block schedule that repeated every day. In the interview I reflected how I was on a block schedule in high school, and thus had some classes only two days a week. One of the critiques of the FDSW is the lack of repetition and loss of instruction time. When students have a three-day weekend, some progress may be lost. In addition, Thompson (2019b) finds that there are overall fewer hours of instruction time in the FDSW per year, meaning the longer days on the other four days are not making up for the absence of school on Friday. Despite the overall loss in instructional time, the argument for repetition is less clear due to variation in scheduling approaches.

Kara also described the opportunity for students to work on Fridays. She stated that most places closed on Sundays, and so the day off allowed students to earn more money than they would after school or only on the weekends. Even this related to Kara's idea of connection in the community when she says that students working allowed them to "contribute... in the community." This of course conflicts with the benefits of school resources on Fridays. Students in this town could choose between working and seeking extra help at school within the FDSW. Kara acknowledged that people in her town expressed concern that students would get into trouble on Fridays off. These fears appear to be supported by the findings of Fischer and Argyle (2018) who found an increase in property crime in FDSW districts. However, her impression was that most students were involved in something at the school that helped keep them accountable on Friday. There were even classes that facilitated an internship for students to work at local businesses. Some of the benefit of working, however, also related to the fact that students helped with family income since, as Kara said: "in Highton there's not a lot of high money jobs (laughs)."

Now we come to the selection issue of the FDSW question. Does the FDSW lead to certain community characteristics such as attachment and academic outcomes? Or do the conditions in a small town lead the town to select into the FDSW? Kara identified traits of the town relevant to attachment and tied the sense of community to the school. She also mentioned constraints of the small town itself. She spoke of the limitations in her school that she felt would not be resolved by a five-day week. When she first came to college, she said that she felt unsure about her preparedness because "obviously with the small school district you have to cater to students that are lower rather than the higher-level students." She did not have the option to take any math class at a higher level than pre-calculus, which she took as a sophomore. At an engineering summer camp she met sophomores who were taking calculus. She reflected on that realization, saying: "it was just like we didn't even have calculus so it was like– it's– I think it's kind of hard to say that I missed out on instruction because the four-day school week and not just because like of the limited resources." This reveals the challenges facing many communities in Oregon that opt for a FDSW for lack of resources. It also highlights the divide felt between students coming from low-income rural areas and students coming from large wealthy metropolitan areas– although, low-income students from metropolitan areas often also suffer from a lack of resources. This kind of feeling of unpreparedness could help to explain the findings of Hoxby and Avery that low-income, high-achieving students do not apply to selective schools. Clearly, the towns that choose a FDSW often deal with many limitations besides the number of days they are open.

The story I construct of Kara here must be interpreted with the jeweler's-eye. While I connect Kara's experience to larger themes I observed in my research, her experience does not speak for most or even necessarily any other experiences of students in FDSWs. Kara had a relatively privileged experience in her town. She did not need to work on Fridays and so she could benefit from individual attention from her teachers which helped her to succeed in class. She had the opportunity to play many sports and go to an engineering camp. It is likely that while she ultimately found success in college, other students in her district may not have experienced the same returns to their education.

A final excerpt from the interview summarizes some of my analysis:

> M: Do you feel like the four-day school week schedule influenced your attachment to Highton in your high school years?
> K: Yes... because, kind of like I mentioned before... I don't know if it's necessarily because of just how Highton is, who lives in Highton you know–
> M: Right.
> K: People come back and people care about their– the place because that's where they're from, you know.

7 Discussion

My empirical and qualitative results both identify attachment to place as a relevant feature of FDSW districts. Students in the FDSW appear to show greater attachment to their community through a variety of metrics. A causal relationship is much harder to identify. Do FDSW districts already carry these cultural values before opting into this policy? Or does the FDSW contribute to and influence attachment to place? I propose that both of these functions are operating to some extent and can be explained by my results.

The existing culture of the town appears to influence selection into the FDSW. I call these place-based factors. Combined with financial pressures, districts with certain community characteristics choose the FDSW policy. The results showing that students in the FDSW would miss their neighborhood more if they had to leave suggest that there are stronger community bonds there. While the FDSW may allow students connect more in their neighborhood on their day off, it seems that this would have roots in deeper community values. The other result that supports this theory is the higher rates of volunteering reported in FDSW districts. Since this result is even stronger when the sample is restricted to rural-only, it appears to be something that really distinguishes four- and five-day school weeks in rural areas. This further suggests that rural communities that choose a FDSW have existing place-based preferences. These place-based factors may then compel districts to choose a FDSW for potential community benefits. Knowing that athletic events are important in the decision for Oregon schools to opt for a FDSW (Thompson, et al. 2020), it seems that the FDSW helps to allow students and community members to participate in athletic events. Other opportunities for students to participate in the community, such as volunteering, are made more possible with this schedule. The 2007-only results also show that students in the FDSW are about seven percentage points less likely to have changed schools three or more times in their lives, a result which holds for the rural samples. This may have more to do with the size of the FDSW district, where multiple levels of school may be combined into one building. Still, these effects collectively show a town culture that is more interconnected, suggesting greater bonds and likely attachment.

On the other side, there are features of the FDSW that influence student experience and could then influence attachment to place. I call these policy-driven factors. The FDSW gives students a longer weekend, reduces their in-class time, and sometimes provides extra opportunities on Fridays in the form of remedial help, athletic activities, or work. The

main results that support this theory are in student-reported mental health. Students in the FDSW reported more positively about their general emotional and mental health and reported fewer moments when their emotional or mental health needs were not met. Both of these results hold up in the rural-only sample, which suggests that, despite similar challenges faced across rural Oregon, the FDSW provides a tangibly better mental health environment for students. This could allow students to be more open and willing to connect with those around them, strengthening community bonds. The interview also supports this view, as Kara referenced lower stress and pressure as important benefits of the FDSW schedule. These factors allowed Kara to participate more readily in sports and connect with her teachers in one-on-one supplemental time on Friday. Still, this feature of the FDSW is not universal. As mentioned above, the FDSW could also facilitate more volunteering, thus allowing for increased community activity. The FDSW appears to increase community connection here.

Interestingly, another policy-driven factor tells a less hopeful story. Students in the FDSW reported that they are seven percentage points less likely to agree with the statement "I can work out my problems" when restricted to the rural regions only. This reveals a level of self-doubt that is almost certainly tied to the student experience at school. In most FDSW districts, students do not have resources available on Fridays. As Thompson (2019b) found, students in FDSW districts have lower levels of achievement in state exams, and these students may feel limited or hopeless by their apparent lack of academic skill in this metric. However, this result could also count as a place-based factor, because districts that switch to a FDSW are already suffering from financial hardship in the case of most Oregon. FDSW districts. As Kara said: "I think it's kind of hard to like say that like I missed out on instruction because the four-day school week and not just because like of the limited resources." In the case of the survey question regarding students' confidence in their ability to work out their own problems, there appear to be place-based factors in the decision to be in a FDSW as well as policy-driven consequences of the FDSW itself. This could also increase attachment to place in its own way, however, by discouraging students from seeking opportunities outside of town, due to a lack of confidence.

I argue that there is a policy-culture feedback here, where the culture of the town influences the policy choice, and the policy itself influences the culture.

These results and this project face many limitations that restrict and conclusions that I draw. The greatest limitation lies in the cloudiness around selection into a FDSW. The conditions of rural communities may have a greater influence than the policy. In the case of my results for safety, my results lose significance when restricted to a rural-only sample. While the results I focus on appear to hold in rural areas, I cannot confidently say that the FDSW alone drives these results. Other factors about the towns, regions, and schools may be more important underlying forces. The fact that schools were not identified in the data set weakens my opportunity to control for school-level effects and characteristics. I also did not have enough schools in my data set that switched to a FDSW during my time period to compare those schools before and after they changed. Further data resolving these issues would strengthen a future study. The qualitative element of my project is extremely limited in scope. A single interview cannot represent hundreds of experiences. In a future project, I

would like to expand this side of the project to a broader sample to identify greater themes.

8 Conclusion

My research finds that attachment to place among teenagers is an important feature in communities with a FDSW. There is evidence that this characteristic influences districts to choose a FDSW. The FDSW, in turn, alters the student experience in town and thus can influence the culture. While attachment to place is difficult to measure, a range of proxies all add different angles that can begin to paint a picture of how attachment to place manifests. These kinds of proxies can be expanded upon in future surveys, and new ones could be included to get closer to the phenomenon itself.

I speak broadly about attachment to place in this paper, but the scope of my results only applies to teenagers in 8th and 11th grade, when surveyed. Yet, these students respond as they become young adults and consider where to apply to college, or whether to apply to college at all. Looking back to the work of Mykerezi et al. (2009), Broomhall and Johnson (1994), and Hoxby and Avery (2013) regarding higher education, the opportunities for students in rural areas are quite limited. Attachment to place may be another factor that impacts these decisions. That not only leads to certain outcomes for those students, but for their respective communities. The FDSW is one education policy that interacts with student experience and attachment to place. When governments consider other education policies to address the needs of rural areas, attachment to place ought to be taken into account.

Finally, it was important to me to include both quantitative and qualitative methods in my project. While the scope the quantitative section is more limited than I would choose in the future, I find great value in direct contact with the story behind my research. A later project would include a wider set of interviews and potential focus groups to further explore the significance of the FDSW in relation to community culture. The closer look into the lived experience of people in the situation illuminates conditions that may be difficult to explain simply from a data set. While there is a serious risk to misrepresent a population by a few select interviews, simply imposing my etic perspective onto a dataset could fail in the same way. Thus, I seek to encourage thoughtful interdisciplinary work to study and understand populations with respect. Different approaches offer different types of understanding and taken together help to complicate assumptions of broad groups of people.

9 Appendix

The appendix contains tables that appear in the following order: Summary Statistics, Results Tables, Summary Statistics for 2007, and the Data Codebook.

9.1 Summary Statistics Tables

9.2 Regression Results

9.2.1 Results of 2007-only Responses

9.2.2 Results of All-year Responses

9.2.3 Results of All-year Responses, with school fixed effect

9.3 Summary Statistics: Student Characteristics in 2007

9.4 Data Codebook

Table 1: **Summary Statistics: Student Characteristics**[a]

	Full Sample	Four-Day Only	Five-Day Only	Rural Four-Day	Rural Five-Day
Age, years	15.01	15.26	15.0	15.2	14.8
	(1.6)	(1.6)	(1.6)	(1.6)	(1.5)
Fraction of Female Students	0.504	0.490	0.505	0.491	0.502
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)
Fraction of AI/AN Students[b]	0.094	0.094	0.094	0.095	0.127
	(0.292)	(0.292)	(0.292)	(0.293)	(0.332)
Fraction of Asian Students	0.067	0.021	0.070	0.022	0.033
	(0.251)	(0.145)	(0.255)	(0.148)	(0.178)
Fraction of Black Students	0.049	0.021	0.051	0.019	0.034
	(0.217)	(0.144)	(0.220)	(0.136)	(0.182)
Fraction of White Students	0.857	0.911	0.854	0.909	0.874
	(0.350)	(0.285)	(0.353)	(0.287)	(0.331)
Fraction of Pacific Islander Students[c]	0.032	0.019	0.033	0.018	0.029
	(0.176)	(0.137)	(0.177)	(0.135)	(0.168)
Fraction of Hispanic Students	0.202	0.145	0.205	0.155	0.189
	(0.402)	(0.353)	(0.404)	(0.362)	(0.391)
Fraction of Food Insecure Students[d]	0.173	0.176	0.172	0.171	0.190
	(0.378)	(0.381)	(0.378)	(0.376)	(0.392)
Observations[e]	104,108	4,700	99,408	3,900	22,891
Fraction of students in 8th grade	0.556	0.483	0.560	0.495	0.616

[a]Note: Standard deviations in parentheses.

[b]American Indian or Alaska Native

[c]includes Native Hawaiian

[d]self-report, data from 2007 not available

[e]Depending on the question, for each column number of observations ranged from 91,860-104,108, 4,392-4,700, 87,468-99,408, 3,627-3,900, and 20,592-22,891 (in order of columns).

Table 2: **Summay Statistics: Attachment Proxy Responses**[a]

	Full Sample	Four-Day	Five-Day	Rural Four-Day	Rural Five-Day
2007-only, self-report[b]					
Fraction of Students that strongly agree with					
I'd like to get out of my neighborhood	0.247	0.272	0.246	0.281	0.271
	(0.431)	(0.445)	(0.430)	(0.450)	(0.444)
If I had to move, I would miss the neighborhood I now live in	0.660	0.680	0.659	0.672	0.619
	(0.474)	(0.467)	(0.474)	(0.470)	(0.486)
I like my neighborhood	0.752	0.743	0.752	0.730	0.720
	(0.432)	(0.437)	(0.432)	(0.444)	(0.449)
Fraction of students that report					
Having changed schools in the past 12 months	0.246	0.233	0.247	0.225	0.265
	(0.431)	(0.423)	(0.431)	(0.418)	(0.441)
Having changed schools 3 or more times in their lives	0.461	0.419	0.464	0.421	0.467
	(0.499)	(0.494)	(0.499)	(0.494)	(0.499)
All years, self-report[c]					
Fraction of students that report					
Missing school 1 or more times for safety concerns in past month	0.056	0.049	0.057	0.046	0.061
	(0.230)	(0.215)	(0.231)	(0.210)	(0.239)
At least one adult at school cares about them	0.744	0.761	0.744	0.763	0.750
	(0.437)	(0.426)	(0.437)	(0.425)	(0.433)
Volunteering to help others in community	0.485	0.532	0.482	0.537	0.480
	(0.500)	(0.499)	(0.500)	(0.499)	(0.500)
That they can do most things if they try	0.909	0.915	0.909	0.915	0.913
	(0.287)	(0.279)	(0.287)	(0.279)	(0.281)
That they can work out their problems	0.835	0.835	0.835	0.840	0.836
	(0.371)	(0.371)	(0.371)	(0.367)	(0.371)
General mental/emotional health is good or better	0.825	0.831	0.825	0.838	0.828
	(0.380)	(0.375)	(0.380)	(0.378)	(0.378)
Mental/emotional health needs not met in past 12 mo.	0.157	0.137	0.158	0.130	0.150
	(0.364)	(0.344)	(0.364)	(0.337)	(0.357)

[a]Note: Standard deviations in parentheses.

[b]Depending on the question, for each column number of observations ranged from 19,364-19,827 1,076-1,106, 18,260-18,730, 905-931, and 4,476-4,573 (in order of columns).

[c]Depending on the question, for each column number of observations ranged from 99,318-102,795, 4,548-4,660, 94,770-98,135, 3,775-3,871, and 22,017-22,667 (in order of columns).

Table 3: **Results of 2007-only Responses**[a]

Panel A: Place-Based Proxies						
	Want to leave neighborhood		Would miss my neighborhood		Like my neighborhood	
Four-day	0.012	0.014	0.053***	0.058**	0.015	0.011
	(0.018)	(0.022)	(0.019)	(0.022)	(0.018)	(0.022)
Sample Used	All schools	Rural Only	All schools	Rural Only	All schools	Rural Only
Observations	17,330	4,712	17,267	4,704	17,372	4,740
R-squared	0.011	0.014	0.012	0.012	0.010	0.011
Panel B: Mobility						
	School change, past year		School change, 3+ times in life			
Four-day	0.010	-0.005	-0.069***	-0.071***		
	(0.020)	(0.021)	(0.019)	(0.024)		
Sample Used	All schools	Rural Only	All schools	Rural Only		
Observations	17,362	4,697	17,623	4,784		
R-squared	0.022	0.021	0.029	0.026		

[a]Notes: Each panel of the table presents results from a separate regression containing the specified dependent variable. Each specification includes controls of race, sex, age, region, and grade. Robust standard errors, clustered at the school level, are in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4: **Results of All-year Responses**[a]

Panel A: Community Proxies								
	1+ days safety concerns[b]		At least one caring adult at school		Volunteer in community			
Four-day	-0.005	-0.009*	0.003	0.003	0.029**	0.037**		
	(0.005)	(0.005)	(0.012)	(0.014)	(0.013)	(0.015)		
Sample Used	All schools	Rural Only	All schools	Rural Only	All schools	Rural Only		
Observations	87,020	23,076	86,313	22,910	86,312	22,907		
R-squared	0.011	0.011	0.007	0.008	0.016	0.014		
Panel B: Student Mental Health and Agency								
	Can do most things if I try		Can work out my problems		Emotional/mental health		Emotional/mental health needs not met[c]	
Four-day	0.001	0.001	-0.004	0.001	0.010	0.014**	-0.014**	-0.017***
	(0.004)	(0.005)	(0.008)	(0.010)	(0.006)	(0.006)	(0.006)	(0.005)
Sample Used	All schools	Rural Only	All schools	Rural Only	All schools	Rural Only	All schools	Rural Only
Observations	86,554	22,945	86,426	22,919	89,043	23,508	88,511	23,363
R-squared	0.008	0.007	0.021	0.019	0.032	0.028	0.031	0.027

[a]Notes: Each panel of the table presents results from a separate regression containing the specified dependent variable. These results include a survey year fixed effect. Each specification includes controls of race, sex, age, region, and grade. Robust standard errors, clustered at the school level, are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

[b]in the past 30 days

[c]in the past 12 months

Table 5: **Results of All-year Responses, with school fixed effect**[a]

Panel A: Community Proxies								
	1+ Days Safety Concerns[b]		At least one caring adult at school		Volunteer in community			
Four-day	0.002	-0.014	0.032	0.019	0.008	-0.034		
	(0.015)	(0.012)	(0.021)	(0.022)	-0.023	(0.031)		
Sample Used	All schools	Rural Only	All schools	Rural Only	All schools	Rural Only		
Observations	87,020	23,076	86,313	22,910	86,312	22,907		
R-squared	0.018	0.020	0.018	0.021	0.032	0.028		
Panel B: Student Mental Health and Agency								
	I can do most things if I try		I can work out my problems		General emotional/mental health		Emotional/mental health needs not met[c]	
Four-day	0.015	-0.004	-0.021	-0.070***	-0.001	0.006	0.013	0.005
	(0.016)	(0.011)	(0.025)	(0.020)	(0.013)	(0.019)	(0.015)	(0.013)
Sample Used	All schools	Rural Only	All schools	Rural Only	All schools	Rural Only	All schools	Rural Only
Observations	86,554	22,945	86,426	22,919	89,043	23,508	88,511	23,363
R-squared	0.013	0.013	0.029	0.028	0.040	0.036	0.037	0.033

[a]Notes: Each panel of the table presents results from a separate regression containing the specified dependent variable. These results include a survey year fixed effect. Each specification includes controls of race, sex, age, region, and grade. Robust standard errors, clustered at the school level, are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

[b]in the past 30 days

[c]in the past 12 months

Table 6: **Summary Statistics: Student Characteristics in 2007**[a]

	Full Sample	Four-Day Only	Five-Day Only	Rural Four-Day	Rural Five-Day
Age, years	14.97	15.22	14.95	15.21	14.87
	(1.56)	(1.55)	(1.56)	(1.57)	(1.54)
Fraction of Female Students	0.513	0.497	0.514	0.501	0.507
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)
Fraction of AI/AN Students[b]	0.095	0.083	0.095	0.089	0.135
	(0.293)	(0.275)	(0.294)	(0.285)	(0.342)
Fraction of Asian Students	0.056	0.021	0.058	0.023	0.026
	(0.230)	(0.144)	(0.234)	(0.148)	(0.158)
Fraction of Black Students	0.043	0.019	0.044	0.018	0.025
	(0.202)	(0.135)	(0.205)	(0.134)	(0.155)
Fraction of White Students	0.850	0.908	0.846	0.902	0.854
	(0.357)	(0.290)	(0.361)	(0.297)	(0.354)
Fraction of Pacific Islander Students[c]	0.028	0.018	0.028	0.017	0.022
	(0.164)	(0.132)	(0.166)	(0.130)	(0.148)
Fraction of Hispanic Students	0.168	0.138	0.169	0.151	0.192
	(0.374)	(0.345)	(0.375)	(0.389)	(0.394)
Observations[d]	24,795	1,254	23,541	1,052	5,558
Fraction of students in 8th grade	0.572	0.498	0.576	0.499	0.612

[a]Note: Standard deviations in parentheses.

[b]American Indian or Alaska Native

[c]includes Native Hawaiian

[d]Depending on the question, for each column number of observations ranged from 21,984-24,795, 1,127-1,254, 20,857-23,541, 932-1,052, and 4,863-5,558 (in order of columns).

Table 7: **Data Codebook**

Question	Responses	Value Label
2007-only Questions		
I'd like to get out of my neighborhood	1	Very much true/pretty much true
	0	A little true, not all true
If I had to move, I would miss the neighborhood I now live in	1	Very much true/pretty much true
	0	A little true, not all true
I like my neighborhood	1	Very much true/pretty much true
	0	A little true, not all true
Have you changed schools (including from elementary to middle or middle to high) in the past 12 months?	1	Yes
	0	No
How many times have you changed schools (including from elementary to middle or middle to high) since kindergarten?	1	3-4, 5-6, 7+
	0	Never, 1-2
All-year Questions		
During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school?	1	1+ days
	0	Never
There is at least one teacher or other adult at my school who really cares about me.	1	Very much true/pretty much true
	0	A little true, not all true
I volunteer to help others in my community	1	Very much true/pretty much true
	0	A little true, not all true
I can do most things if I try	1	Very much true/pretty much true
	0	A little true, not all true
I can work out my problems	1	Very much true/pretty much true
	0	A little true, not all true
Would you say your general emotional and mental health is	1	Excellent, very good, good
	0	fair, poor
In the past 12 months, did you have any emotional or mental health care needs that were not met? (Count any situation where you thought you should see a counselor, social worker, or other mental health professional.)	1	Yes
	0	No

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