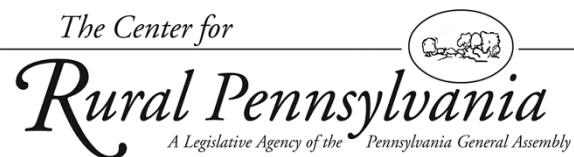


Exploring Disparities in School Sports Participation in Rural Pennsylvania

By: M. Blair Evans, Ph.D.

The Pennsylvania State University

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Key Findings and Considerations

This project examined trends in rural and urban Pennsylvania public school sports participation, alongside sociodemographic aspects of schools and communities that contribute to these trends.

The research found:

- In some cases, urban students experience increased sports opportunities compared to rural students – but these differences can be subtle and contingent on school size.
- For sports involvement in rural schools only, socioeconomic factors were perhaps the most consistent predictors of school sports involvement. These included the level of disadvantage within the district, such as employment, education, and income, and the percentage of students receiving free-or-reduced school lunches.
- Similarly, rural schools in districts facing socioeconomic disadvantage were also the least likely to integrate policies and practices that may strengthen sports programs, such as late bussing.
- Resources seemed critical for many practices that support sports involvement, such as late bussing. Oftentimes, however, the more powerful predictors of rural sports involvement were socioeconomic factors that were more general in nature.

Policy considerations are:

- Require reporting the total number of students involved in sports, regardless of the number of teams in which they participate, and school policies, such as pay-to-play policies, late bussing, and intramural program participation, to help with evaluations of the effectiveness of these practices in encouraging sports participation.

Executive Summary

School sports participation is one of the most prevalent extracurricular activities among students, with approximately 320,000 adolescents participating in high school sports across Pennsylvania (National Federation of State High School Associations, 2018). School sports holds value as a context where youth can meet physical activity recommendations while becoming engaged in their community and developing social skills. Rural schools may nevertheless face barriers to delivering the same breadth and quality of sports programs relative to urban schools. The purpose of this research was to explore sports involvement in rural schools across Pennsylvania through quantitative analyses of existing data regarding school-level sports involvement and through qualitative interviews with stakeholders.

Phase 1 – Quantitative analysis. Phase one involved data analysis of more than 500 high school buildings (47 percent rural), using online data reported by school administrators and collected by the Pennsylvania Department of Education (PDE). These data provided an opportunity to estimate the number of sports-involved students during each competitive season (fall, winter, spring) for each sex – and to estimate the average expenditures on sports at each school. Data were also gathered on school enrollment, socioeconomic disadvantage within the school district, and school-level policies related to sports. Years spanned the 2012-13 to 2017-18 seasons.

Phase 1 findings included:

- Rural location is conflated with school size. Rural schools were often smaller in size, making it challenging to directly compare sports involvement without taking a school's enrollment into account. All findings below were identified after accounting for enrollment within schools.
- Fall and spring sports involvement was lower for rural schools. A relatively higher number of male and female students from urban schools participated in the fall and spring, compared to male and female students from rural schools.
- Part of the influence of rural location depends on school size. School enrollment also moderated the impact of sports participation in an urban or rural school for boys (fall and spring) and girls

(spring). In all three cases, the relatively lower numbers of sports-involved students were in smaller rural schools. Larger rural schools demonstrated similar sports involvement to urban schools.

- Proportions of boys in sports were higher compared to girls in sports. The proportion of boys involved in fall sports was higher than girls – 27 percent more boys participated in fall sports than girls. Boys sports involvement also was just slightly more predominate in winter (4 percent more boys) and spring (3 percent more boys). There were only small differences in these patterns when comparing urban and rural schools.
- Schools policies may impact sports involvement. Using a review of school sports program websites, 13 percent of rural schools required “pay-to-play” fees for sports involvement, 10 percent reported that intramural programs were available, and 16 percent offered activity busses for transportation. These values are likely under-estimated, given that schools were not directly contacted.
- Socioeconomic factors predicted rural school sports involvement. The most consistent predictors of sports involvement in rural schools included the level of socioeconomic disadvantage within the school district, and the percentage of students receiving free-and-reduced-price lunches within schools. Boys’ and girls’ sports involvement was lower in schools that had higher socioeconomic disadvantage.

Phase 2 - Qualitative interviews. The qualitative component of this research included semi-structured interviews with athletic directors ($n = 11$) and coaches ($n = 17$) from 17 schools. Interviews focused on coaches’ and athletic directors’ experiences promoting sports participation, as well as any barriers they experienced. Data were analyzed by identifying common themes across all participants, or within subsets of participants. Coaches and athletic directors described common barriers within their rural schools, which included limited resources, barriers to transportation, and socioeconomic barriers for families. Coach and athletic director descriptions of their school sports environments revealed three “types” of rural school contexts based on school size, socioeconomic features of the region, and perceived

barriers. Each type seemed to entail a unique profile regarding barriers and opportunities for student sports participation. Athletic directors and coaches also discussed potential strategies to increase sports participation among rural school students, including creating a link to programs for younger students and generating excitement in the community.

Implications. These results help to recognize the experiences of rural Pennsylvania coaches and athletic administrators, while identifying policies or strategies to support sports participation.

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Introduction

Sports involvement is a critical developmental experience for many youth. To the extent that youth meet national physical activity recommendations and establish active behaviors across their lifespan, sports is an important public health resource (Hills, Dengel, & Lubans, 2015). Indeed, numerous international health organizations recognize that promoting youth physical activity is a primary strategy to respond to the global pandemic of inactivity that is a leading cause of chronic disease. Beyond physical health, social sports environments are also a place for youth to engage in their communities while developing confidence and social skills (Eime et al., 2017). Despite resulting in some negative outcomes, such as increased injury rates (Rosenthal, Foraker, Collins, & Comstock, 2014), school sports is a valuable resource for promoting physical activity and youth development at a national scale.

Unfortunately, sports participation is declining as only 39 percent of American youth are regularly involved in sports, and there are significant disparities in relation to sports involvement based on racial, socioeconomic, and community differences (Meier, Hartmann, & Larson, 2018). Thus, several organizations have arisen to identify practices that reshape sports systems with entangled goals of keeping youth in sports and improving access to the developmental experiences sports entails. This is most vividly depicted through the Aspen Institute report, *A Playbook to Get Every Kid in the Game*, that identified eight strategies to promote healthy and sustainable forms of sports (Aspen Institute Project Play, 2016).

These public health implications implore us to consider strategies to reduce barriers and ensure equal access to sports across communities. Researchers have yet to consider whether youth in rural American communities share the same sports opportunities as their urban counterparts. This project specifically examined the extent to which youth from rural Pennsylvania communities participate in school sports programs. Research identifying trends in sports participation is essential to motivate action, as well as to direct policymaking efforts toward the types of schools and school districts facing the greatest disparities. Notably, readily available data from the Pennsylvania Department of Education (PDE) provide an optimal way to study sports participation rates in rural and urban schools, and establish

the contribution of sociodemographic trends to any differences in rural and urban school sports involvement.

Throughout the remainder of this report, school sports participation is defined as the formal school sports teams and clubs that involve competing with other schools, as organized by state-level athletics association. This definition thus applies to what is typically recognized as interscholastic sports, and not to other less-formal types of sports and activity (i.e., intramural sports, physical education). Furthermore, the current research was focused on the high-school level of competition (Grades 9-12), as the sports that are managed by the Pennsylvania Interscholastic Athletics Association.

School Sports

School sports participation is a core feature in students' lives as one of the most prevalent out-of-school activities. In 2018, the National Federation of State High School Associations estimated that approximately 320,000 Pennsylvania youth participate in high school sports (National Federation of State High School Associations, 2018). As such, sports matter in students' lives. One of the most appealing aspects of school sports is that it is widely available, so it "levels the playing field" for otherwise disadvantaged youth. For instance, Marsh and Kleitman (2003) reported that the barriers to healthy development experienced by Australian youth from low socioeconomic backgrounds were mitigated for those who were involved in school sports. School sports may erase some developmental challenges that youth face when they grow up within communities with socioeconomic disadvantages.

An important observation about school sports, however, is that it can only promote equality when access is equal. This is not the case based on responses from the over half a million U.S. students who have participated in the "Monitoring the Future Survey" over the past 27 years (see the University of Michigan's Institute for Social Research; isr.umich.edu). This large national survey examines many aspects of adolescents' time use and reveals trends in school sports participation according to gender, social class, and ethnicity (Meier, Hartmann, & Larson, 2018). Although this survey reveals that gender

inequalities in sports are decreasing, gaps are increasing related to ethnicity and social class. For instance, youth report lower sports participation when their parents lack a college education, compared to their peers whose families are highly educated. The survey also identified a broader sports dropout trend; participation decreases as youth attain higher grade levels (Meier et al., 2018).

Although sociodemographic characteristics like sex or ethnicity influence access to sports, there is limited understanding of access to school sports across urban and rural communities in the U.S. The current research uses the Center for Rural Pennsylvania's definition of "rural" as follows: A county or school district is rural when the number of persons per square mile within the county or school district is less than 284; counties and school districts that have 284 persons or more per square mile are considered urban. Youth who live in rural Pennsylvania face a different reality from those living in urban centers in the commonwealth. Rural Pennsylvania schools face decreasing enrollments and often serve low-income communities (e.g., 37 percent of rural household incomes below \$35,000) with growing ethnic and racial diversity (The Center for Rural Pennsylvania, 2018; Pennsylvania Department of Education, 2017). These rates also mask substantial social and economic diversity across communities. For example, although some rural Pennsylvania county populations will grow by more than 10 percent by 2040, others will substantially decrease in population. These demographic trends place rural athletics programs in a precarious position. For example, recent popularized cases describe Pennsylvania school districts responding to funding and enrollment shortfalls by creating consolidated single-district teams that serve fewer athletes (Morrison & Ferry, 2018).

Research from international settings also provides reason to expect that youth from rural communities have fewer opportunities to access sports compared to urban youth. For example, large-scale studies in the Netherlands and Australia reveal that youth in rural communities are less likely to participate in sports because community sports programs are rarely nearby (Eime et al., 2015). As such, rural youth are unable to walk or bike and must be transported to attend programs. Dutch research has also revealed that being in a low-income family is an even bigger obstacle for youth in rural communities because they depend on resources that are scarce, like transportation from parents (Hoekman, Breedveld,

& Kraaykamp, 2017). Living in a rural community might produce barriers that are most evident for youth who belong to families with lower incomes. The limited access to community sports for rural youth generates a striking proposition: For rural youth who have few options for organized sports, school sports may represent a critical community resource.

Building from research in countries like Australia and the Netherlands, this research presents two important steps forward in examining school sports involvement in rural Pennsylvania. First, rural Pennsylvania patterns in sports involvement presumably involve a unique social context compared to other countries. Pennsylvania youth experience certain combinations of geographic, social, and economic forces on sports involvement that are likely unique from other places. Second, much of the existing research on rural sports involvement has focused on club environments outside of schools. Even at the international level, few studies compare urban and rural school sports involvement.

Role of State and Local Governments

Researchers and policy makers have been discussing the role of government in American school sports since the turn of the 20th century. Examples of ongoing issues include:

- (a) Distribution of funding in school budgets into sports compared to other activities.
- (b) Inequalities when athletics departments depend on private donations or fees paid by athletes, and policy around management of private funds.
- (c) Ensuring female participation.
- (d) Integrating competitive sports alongside intramural levels of competition. (Bocarro et al., 2014; Heinze & Zdroik, 2018; Schomberg, 1998)

Anecdotally, it is clear that policy changes have shaped what people now recognize as “school sports.” There is evidence that youth sports and physical activity involvement is influenced by policies through changes in a given school or community environment (e.g., improved school facilities), but also at the interpersonal level (e.g., relationships with coaches; Sallis et al., 2006). As such, policy at national,

state, and local levels shape youth opportunities to be active in schools. It may be especially important to examine school-level influences on sports involvement, because policies at the more “proximal,” or local, level of the school district or school building may have the biggest impact on a given student.

Research can also inform physical activity policy. As one example of how research has successfully informed policy, researchers observed physical activity behaviors in high schools in North Carolina to identify the types of sports programs that ensured students accumulated the greatest amount of activity (Kanters et al., 2012). Kanters and colleagues identified that physical activity levels were higher in schools that reported providing intramural sports and in schools that offered informal access to recreation facilities for students (i.e., ‘free time’ within gyms).

Identifying current trends in Pennsylvania school sports involvement is important for ensuring evidence-informed policy changes that promote equality. Although states have broad mandates around sports, it can be expected that key issues pertinent to statewide policy relates to funding allocation, competitive rules, shared facility use, transportation, and resources for community facilities.

Initiating an Agenda within Rural Pennsylvania Schools

If we recognize the value of school sports in the lives of youth, then it is critical to consider ways to ensure equal access to this essential public health resource. Considering evidence that youth in rural communities experience reduced access to sports, analysis of rural Pennsylvania school data will aid the state legislature when designing practices and policies that promote access to school sports. Research identifying trends in sports participation is essential to motivate action, as well as to direct policymaking efforts toward the school districts facing the greatest disparities.

Numerous important questions must be addressed to provide the foundation for any legislative action. Are there differences in sports involvement for rural and urban Pennsylvania schools? What factors relate to this disparity? Have these differences been consistent over time? Do males and females in rural schools experience similar social contexts around sports?

Readily available data from the Pennsylvania Department of Education (PDE) provides an optimal way to characterize school sports participation rates. Beyond contrasting trends between urban and rural schools, it is important to understand how sociodemographic trends (e.g., gender, grade-level, income) may strengthen or weaken school sports participation rates in a rural community, and examine the strategies used in schools to promote participation. If the current project is capable of identifying certain types of schools with differing participation rates, then policymakers may better understand whether there is a problem to be solved. Further, identifying schools demonstrating high (or low) sports involvement may help policymakers identify promising policies based on the current practices of high-involvement settings.

Goals and Objectives

It is important to understand patterns of school sports involvement for the nearly half-million students who attend rural Pennsylvania schools. Among the 500 public school districts in Pennsylvania, there are 3,287 public school buildings. The current research was conducted to reveal sports participation trends in rural Pennsylvania public schools, and to identify characteristics of rural schools/communities that influence school sports participation. The goals and objectives for this project include:

Goal 1: Contrast urban and rural public school sports participation, and identify school characteristics that moderate these differences.

Objective 1a. Contrast urban and rural school participation. The expectation was that sports participation would be relatively lower in rural public school buildings compared to urban school buildings.

Objective 1b. Examine how socio-demographic variables predict sports involvement in rural school buildings. It was expected that the trend toward lower participation in rural school buildings would be predicted by the socioeconomic disadvantage of a given school district within which a school building is housed.

Objective 1c. Examine how school-specific policies and practices predict sports involvement in rural schools. It was expected that sports participation in rural school buildings may be predicted by policies and practices, which could be identified on athletics department websites – specifically, (a) school-provided late busses for activities, (b) whether schools require students to pay to participate in sports, and (c) whether intramural programs or other noncompetitive sports opportunities were available.

Goal 2: Interview stakeholders to identify promising practices and challenges.

To understand the trends related to rural public school sports participation identified across the commonwealth, the research conducted qualitative interviews with coaches and administrators from selected school buildings with low – or high – sports participation.

Objective 2. Explore the experiences and strategies of stakeholders. It was anticipated that interviews may identify promising practices for promoting participation.

Please note that both school districts and school buildings are referenced throughout the methodology and results. Whereas school districts that house one or more school buildings often design and implement policies, the school building level was the focus because athletics programs are most commonly seen at the school-building level. Whereas school district is always written in full when that is the concept at hand, the term “schools” is occasionally used as a more informal or general term that refers to school buildings.

Methodology

The summary of this project and key results is divided into two Phases. Phase 1 introduces research that examined trends in school sports expenditures and participation. This phase focused on using publicly available data from PDE spanning the 2012-13 to 2017-18 school years, and targets Goal 1. Phase 2 introduces follow-up stakeholder interviews, with coaches and administrators who belonged to rural schools identified as relatively high or low in sports involvement. Phase 2 focuses on Goal 2. These

projects are introduced in sequence so that the results from Phase 1 can be used to interpret results of Phase 2.

Phase 1. Quantitative Exploration of Sports Participation

Recall the goal to examine how urban/rural location is associated with school sports participation and identify characteristics that impact this association. The core outcomes for this research included school building sports participation (percent of students participating). The quantitative approach involved integrating several sources of publicly available data, with data collected regarding school policies from public websites.

Data related to traditional public schools were selected for the current research. Excluded school buildings included brick-and-mortar charter schools, cyber charter schools, Intermediate Units, and private schools. Grade 9 through 12 data were also the focus of the current investigation – meaning that sports involvement was examined at the freshman, junior varsity, and varsity levels. These decisions were made to limit factors that could potentially confound or impact contrasts between urban and rural schools. The data used spanned the 2012-2013 to 2017-2018 school years.

The primary source of sports involvement information was drawn from databases hosted by PDE, with interscholastic athletic opportunities data self-reported by schools being the primary data source. All Pennsylvania schools are mandated to report sports involvement and expenditures, which are made publicly available. Three additional sources of data that were integrated alongside the data reported by PDE:

- PDE school enrollment and students receiving free or reduced-price lunches (i.e., additional databases that report this information).
- American Community Survey, 2014-2018 5-year averages (<https://www.census.gov/>), regarding socioeconomic circumstances in the school district to which a school building belongs.

- Manual search of public websites for athletic departments, schools, and school districts to evaluate policies.

Regarding the manual search, a student researcher searched and coded school websites for every rural school serving students from grades 9-12 (i.e., web pages; policy documents; forms) for evidence of: (a) requirements for students to pay the school to be involved in sports (i.e., pay-to-play), (b) access to intramural programs involving solely training or competition within the school, and (c) access to after-school transportation for students involved in activities (i.e., late busses).

Variables

Sports involvement. “Athletic Opportunities” databases from PDE were available when conducting this study and spanned 6 years: 2012-2013 to 2017-2018. These datasets were housed at: www.education.pa.gov/TeachersAdministrators/InterscholasticAthleticOpportunity/. Sports involvement data were provided within each school by reporting the number of athletes belonging to each team, within each sex and grade level. Although, aggregated sports expenditures data were often reported regarding the expenditures for each team, expenditures were only consistently available as an overall expenditure within a school across sports.

The reporting of sports involvement also presented a challenge because schools reported the number of members on each team. Specifically, every given team within a school building was listed along with the number of boys and girls who belonged to that team. Because these data were not at an individual level, it was not possible to discern how many students were involved in two or more sports across the year. This limited the opportunity to discern the number of students participating across a school year. The data are thus an indicator of sports opportunities provided by a school, as opposed to the number of students involved in sports.

Further, sports involvement was primarily aggregated at the season-level. Had the involvement values been a sum of all students from every sports team at a given school, any student involved in more

than one sport team would have been double-counted. Instead, sports involvement numbers for a given school building were primarily aggregated and studied for each season – aggregated into fall sports teams, winter sports teams, and spring sports teams. Similarly, it was not possible to account for the tendency for some athletes to play at an “older” competitive level (i.e., Freshmen playing at Varsity level). As a result, analyses focused on considering the number of “sports-involved” student opportunities within each season (i.e., winter, spring, summer) and sex, while spanning grades 9-12.

It is important to note limitations that are inherent in the data. Whereas the approach to identify numbers of athletes within each season removed issues related to students playing in different sports each season, this does not control for the occasional case of athletes playing in two sports during the same season. Although this represents a limitation, the data meaningfully represent the number of “opportunities” to participate in sports – which is likely a critical target.

Using the data available, the research constructed six types of sports involvement variables along with one sports expenditure variable for each school building:

Number of sports-involved boys and girls per season. Classifying each sport within a given competitive season, sports involvement variables were created by summing the number of members on sports teams from the freshman, junior varsity, and varsity levels in each season. For each school, every year there was a “fall,” “winter,” and “spring” value for the number of students involved in sports from Grades 9-12. With 6 years each involving three seasons, each school had 18 values for boys sports involvement and 18 values for girls sports involvement.

Percent of sports-involved boys and girls per season. A relative value was calculated by dividing the number of students within each sex to the related enrollment for that sex. For each season and every year, values reflecting what percentage of boys or girls were involved in sports were calculated.

Proportion of male to female athletes per season. The percentage of boys involved in sports within the school compared to the percentage of female students involved, calculated as follows:

$$\text{Proportion} = (\text{boys sports involve.} / \text{boys enroll.}) - (\text{girls sports involve.} / \text{girls enroll.})$$

When this variable was positive for a given season, it indicated how many more (percentage) boys were involved in sports than girls relative to enrollment. When this value was negative, it indicated how many more girls participated in sports than boys relative to enrollment.

Number of sports teams per school year. Calculating this value simply included summing the total number of teams – across an entire school year – for which a given school reported that athletes participated.

Median annual expenditures. The median total expenditures reported by schools were calculated as a single value for each school building across competitive levels, sex, and seasons. This means the median was derived from the average of the third and fourth highest expenditure years (dropping the two highest and two lowest expenditure years). Thus, each school only had a single expenditure value. The median value was selected across 6 years because expenditures varied substantially within school buildings – presumably because some major projects related to facilities or other expenses may sway year-to-year expenditures within schools. Unfortunately, the computation did not control for inflation.

Enrollment. PDE databases were used to extract each school's yearly enrollment from Grades 9-12 for each sex. As such, each school building included six enrollment values for each sex – one for each school year.

Percent of students on free and reduced-price lunch program. Publicly available PDE databases were used to identify the percentage of students assigned to free/reduced price lunch programs within each school, during a given school year.

School District Disadvantage Index. As an indicator of the relative disadvantage within the community surrounding a school, community-level data were downloaded from Census data via the American Community Survey, 2014-2018 5-year averages (<https://www.census.gov/>). Neighborhood disadvantage refers to how people living within varying regions have access to different educational and economic resources. Recognizing that any given community differs in these resources in ways that confer a socioeconomic disadvantage for residents, the research created an index that included more sources of information that could signal socioeconomic disadvantage.

The index used data from the American Community Survey and included the percentage of people living in a school district that were: (a) over age 24 without a high school diploma, (b) unemployed, (c) below the poverty line, and (d) receiving public assistance (i.e., SNAP benefits). Data were drawn at the school district level. Although varying combinations of index items are published in past research – including items reflecting sex or race/ethnicity – Turney and Harknett (2010) selected and integrated these four variables in an index that has since been adopted by researchers.

Across school districts within the dataset, index values were recoded as z-scores, a standardized value that assigns every school district with a value revolving around the average value for all Pennsylvania school districts. Districts had an index value of around zero if they were near the average level of people without a high school diploma, and who were unemployed, below the poverty line, and receiving public assistance. School districts with a positive value had higher disadvantage than most districts in the sample (e.g., higher percentage unemployed).

School policies. Each school was identified using binary yes (1) or no (0) values to identify schools where (a) students pay to participate (i.e., pay-to-play), (b) intramural programs are available, and (c) after-school transportation is available (i.e., late bus).

Table 1. Key variables included in study, 2012-13 to 2017-18

VARIABLE LIST	Variable Type
<hr/>	
<p>SEASONAL VARIABLES <i>6 years of data; separate values for fall, winter, or spring sports involvement.</i></p> <p style="padding-left: 40px;">PDE sports opportunities data (Grades 9-12) Number of sports-involved boys, per season Number of sports-involved girls, per season</p> <p style="padding-left: 80px;">Proportion of male to female student athletes</p>	Dependent variable being predicted
<hr/>	
<p>YEARLY VARIABLES <i>Data summed within each year over the 6-year span.</i></p> <p style="padding-left: 40px;">PDE sports opportunities data (Grades 9-12) Number of boys' sports teams in school. Number of girls' sports teams in school.</p>	Dependent variable being predicted
<hr/>	
<p style="padding-left: 40px;">PDE public data Percent of students on free and reduced-price lunch program Total school male enrollment in grades 9-12 Total school female enrollment in grades 9-12</p>	Predictor variables
<hr/>	
<p>SUMMARY VARIABLES (single value encompassing all years)</p> <p style="padding-left: 40px;">PDE sports opportunities data Annual expenditures median (i.e., middle-most dollar value from all years)</p> <p style="padding-left: 40px;">Community features derived from American Community Survey (2017) School district disadvantage index Population Density of County (2017)</p> <p style="padding-left: 40px;">School policies gathered through website review Late busses for students involved in activities Intramural programming (i.e., noncompetitive sports) Pay-to-play policy (i.e., students must pay for sports)</p>	Predictor variables
<hr/>	

Data management

The first task related to data management involved restructuring the sports involvement datasets, and linking data derived from different sources. The original Excel datasets were structured with each school affiliated with 167 rows of data, and individual rows indicating the number of members on each possible team. For each year, these data were housed in four separate datasheets – equaling 24 Excel datasheets in total. Restructuring these data involved combining all sports opportunity data sheets into a single dataset. In this final dataset, each school's data were placed into six rows of data; one for every year.

The nature of the data collection and storage included several challenges. These included: (a) collecting data regarding how many members belonged to each team, rather than data directly reflecting the number of students involved in sports, (b) changes in school districts with time, such as schools combining (e.g., middle school and high school joining as a junior/high school during the time period), and (c) missing data, where schools did not report data during one or more year. The latter two challenges were reconciled by combining data for schools that merged across all years, and imputing missing data where two or fewer time points were missing while removing data for schools with three or more time points missing.

Another challenge involved inconsistent data reporting. As one key example, numerous schools reported all sports involvement at a single level, such that all participants were reported as belonging to a single team as opposed to separating athletes by grade level (e.g., a high school listing all sports participants as being at the varsity level). Although this approach to reporting was not an issue when evaluating the overall number of sports opportunities or teams, this was a barrier to conducting analyses focused on grade level. Most analyses were conducted by summing data from freshman through varsity sports involvement and focusing on Grades 9-12.

Analyses

For the primary analyses, regressions were conducted to examine differences in the number of sports-involved students across rural and urban schools. Regression analyses are useful to examine how a

collection of several variables predict a given outcome – termed a dependent variable. When a predictor in a regression model is significant, that means that the outcome variable (e.g., sports involvement) can partially be estimated using that individual predictor. Although regressions provide estimates for how *strong* that prediction is – termed a “beta” – the research presents the more general results on whether given predictors were significant.

Mixed models were necessary because data were clustered within schools. Mixed models are a type of regression where each specific data point is considered alongside five other data points from a school over time (Kenny, Kashy, & Cook, 2006). As such, the data in this report involved mixed models that account for the fact that numerous responses emerged within schools, and tend to be more powerful than regression approaches that consider each data point separately from others.

Addressing school size. Rural schools tended to be smaller than urban schools, so enrollment had to be integrated within models. The approach to do so in the current analyses involved including school enrollment from Grades 9-12 as an initial predictor in models before including other predictors. This step accounts for school size when estimating predictors of sports involvement and also makes it easier to interpret the results of the analyses.

An alternative was to calculate the number of sports-involved students divided by total enrollment. Calculating involvement as a percentage of enrollment was, however, not effective because the role of school size was not “linear.” Very small schools face challenges hosting any sports programs at all. Meanwhile, small-to-medium-sized schools had the greatest proportion of students involved, and then medium-to-large schools tended to again have lower proportions of athletes because there are so many students. To give an example, increasing in school size from 200-300 students likely has a bigger impact on sports involvement than an increase in size from 900-1,000.

Initial models examined the extent to which being either an urban or a rural school predicted school sports involvement. This encompassed separate models for each season as well – fall, winter, spring – totaling three models for each sex.

The research included the same models in a follow-up analysis, but also estimated whether enrollment moderated the association between rural/urban school location and sports involvement. By using the same model as before but adding in an interaction predictor that is a combination of both sports involvement and enrollment, the analyses examined whether the effect of being a rural or urban school was different for large, compared to small, school buildings.

Finally, six additional models were conducted to predict the number of sports-involved boys and girls during each season, but using only rural schools. Within this subsample of only rural schools, sports opportunities entered into regressions as dependent variables. However, the predictors included school policy and the sociodemographic composition of the school and school district. These models identified predictors of whether students in a given school building were more (or less) likely to participate in sports compared to other rural school buildings.

Results

Among the total of 952 public high schools in Pennsylvania, 505 were integrated within the final research sample. These schools were those that (a) completed four or more athletic opportunity disclosure surveys, and (b) included students from Grades 9-12. Among these schools, 356 were classified as serving only students from Grades 9-12, whereas 149 were junior-senior high schools serving the Grades 7 or 8 and up. There were 267 urban schools (53 percent), and 238 rural schools in the final sample (47 percent).

To provide an example of the distribution of involvement, consider just the data gathered during the 2017-2018 school year. Spanning the entire sample of schools, the mean overall enrollment (Grades 9-12) was 416 male students. There was a standard deviation of 299.32 students within schools, reflecting the wide range of school sizes across the commonwealth. On average, males within these schools experienced 371 opportunities to participate in sports over the course of a year (i.e., the number of boys counted across all sports teams) – and schools provided 16.11 boys teams. Girls' mean enrollment was

392 students from Grades 9-12, and schools provided girls with an average of 240 sports opportunities, with 16.20 teams per school. Overall, the mean percentage of students on free and reduced price lunch in 2017-2018 was 39.89 percent.

Table 2 summarizes the results of models comparing involvement in urban and rural schools, and these patterns are further described in Figure 1. Notably, relatively higher proportions of male students participate in sports when they belong to smaller schools. Also, rural schools tend to be smaller (i.e., enrollment of 0-500 males).

Nevertheless, the primary observation is that a relatively higher number of urban male and female students participated in the fall and spring for both boys and girls, compared to rural schools. Also, this effect occurs after accounting for school size. This pattern is evident visually in Figure 1, if the reader focuses on the region from enrollment from 500 to 1,000 students. Among these schools with similar size, the ‘red’ rural dots still tend to be lower on sports involvement compared to the ‘blue’ urban dots.

Regarding boys’ enrollment, 68 percent of schools ranged from 0-500 boys enrolled, 27 percent of schools ranged from 500-1,000, 4 percent of schools ranged from 1,000-1,500, and 1 percent of schools ranged from 1,500-2,000.

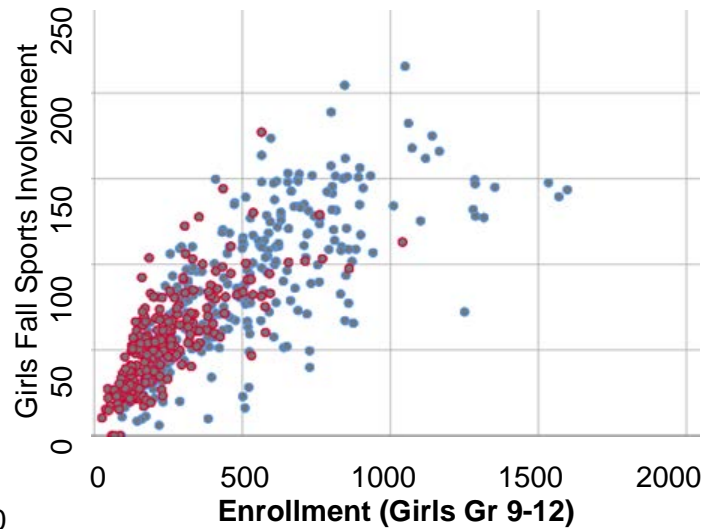
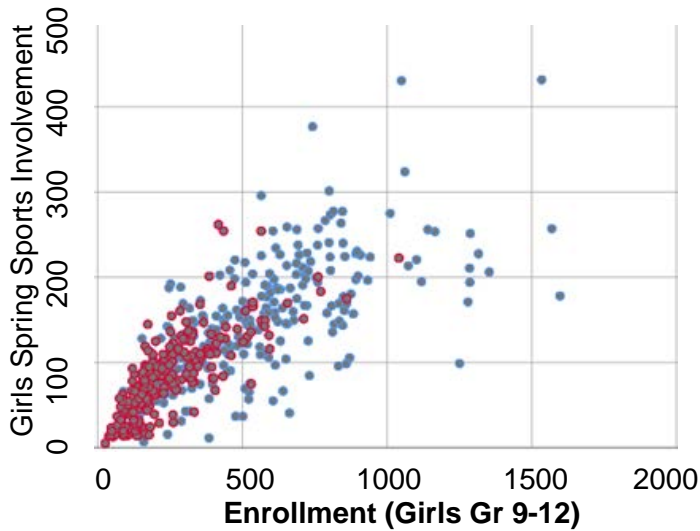
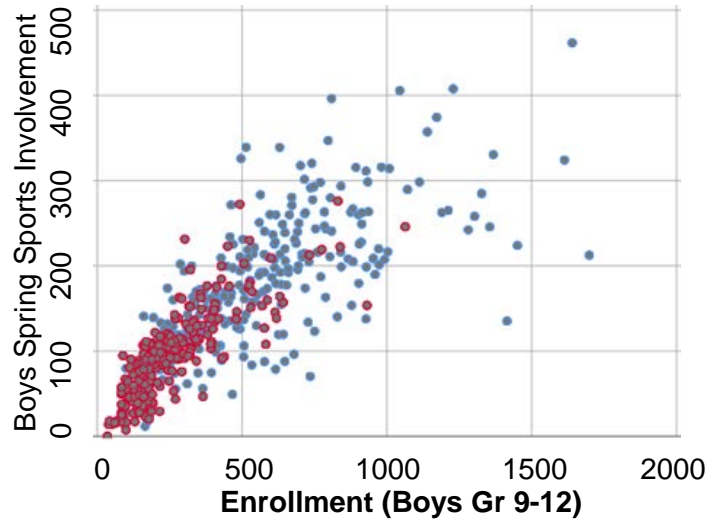
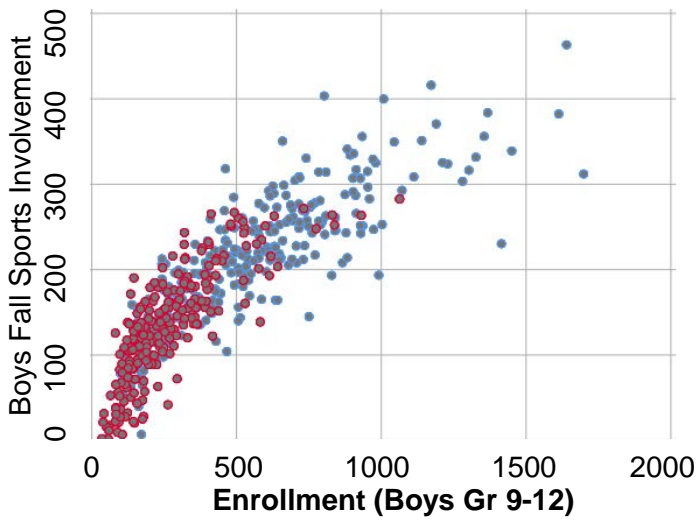
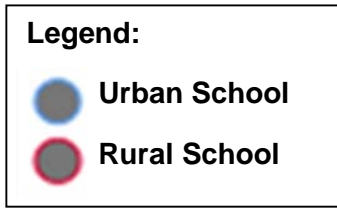
Regarding girls’ enrollment, 70 percent of schools ranged from 0-500 girls enrolled, 25 percent schools ranged from 500-1,000, 4 percent of schools ranged from 1,000-1,500, and 1 percent of schools ranged from 1,500-2,000.

<i>Table 2. Comparing urban/rural sports involvement across school size.</i>						
Predictors of sports involvement						
	Boys			Girls		
	Fall	Winter	Spring	Fall	Winter	Spring
Enrollment	+	+	+	+	+	+
Rural School	-	<i>ns</i>	-	-	<i>ns</i>	-

Note. +/- indicates the direction of the significant association. *ns* means the predictor was not significant.
 Negative values indicate that rural school buildings had less sports involvement than urban settings in 4/5 cases.

Figure 1. Comparing urban and rural school sports involvement, as a function of school enrollment.

These figures illustrate how even within “bands” of similar enrollment, rural school sports involvement was still lower for certain seasons.



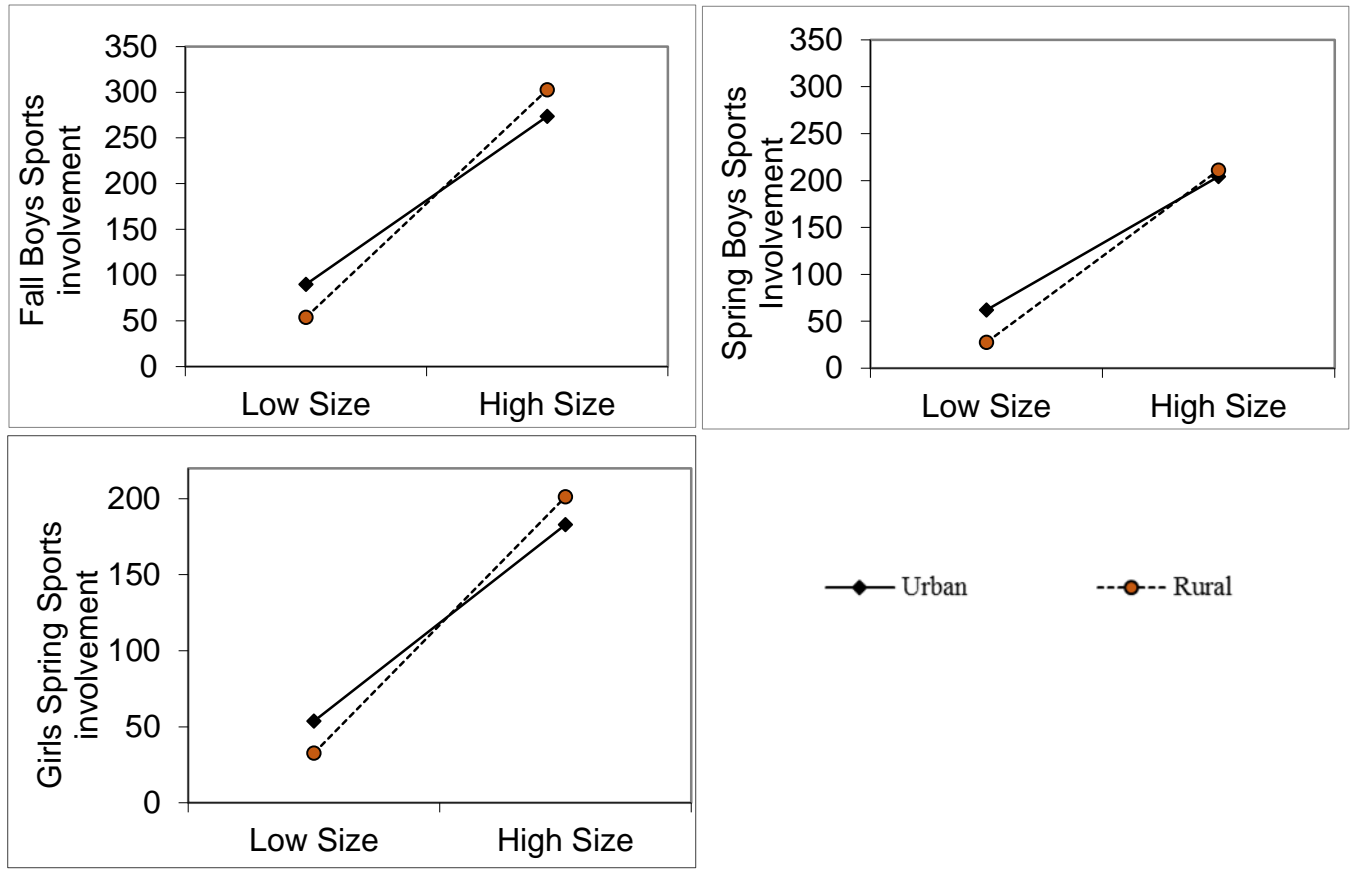


Figure 2. Examining the role of rural school location in high and low school size scenarios.

Furthermore, there were three cases where enrollment of students within an entire school moderated the impact of being in an urban or rural school for boys (fall and spring) and girls (spring). Figure 2 illustrates these moderations. These figures help interpret how school size impacts the likelihood of rural or urban students being involved in sports by comparing “low” and “high” size schools. “Low” size schools were one standard deviation below the average school size – 124 male students and 116 female students enrolled in the school. “High” size schools were one standard deviation above the mean – 716 boys and 676 girls, or a school size of 1,392.

These moderations revealed that being in a rural school is especially a barrier to sports involvement in small schools in three cases: For boys in fall sports, and for both sexes in spring sports. To interpret these models using boys’ spring sports involvement as an example, high size schools would be

predicted to have about 210 male athletes involved in sports regardless of whether the school was urban or rural. For smaller schools, however, sports involvement tended to be lower in rural schools than urban schools. Small urban schools would still be predicted to have about 62 boys involved in sports whereas rural schools would only be expected to have about 28 boys involved. *As such, the relatively lower level of sports involvement for rural schools in the fall (boys) and spring (boys and girls) could exist primarily for smaller rural schools.*

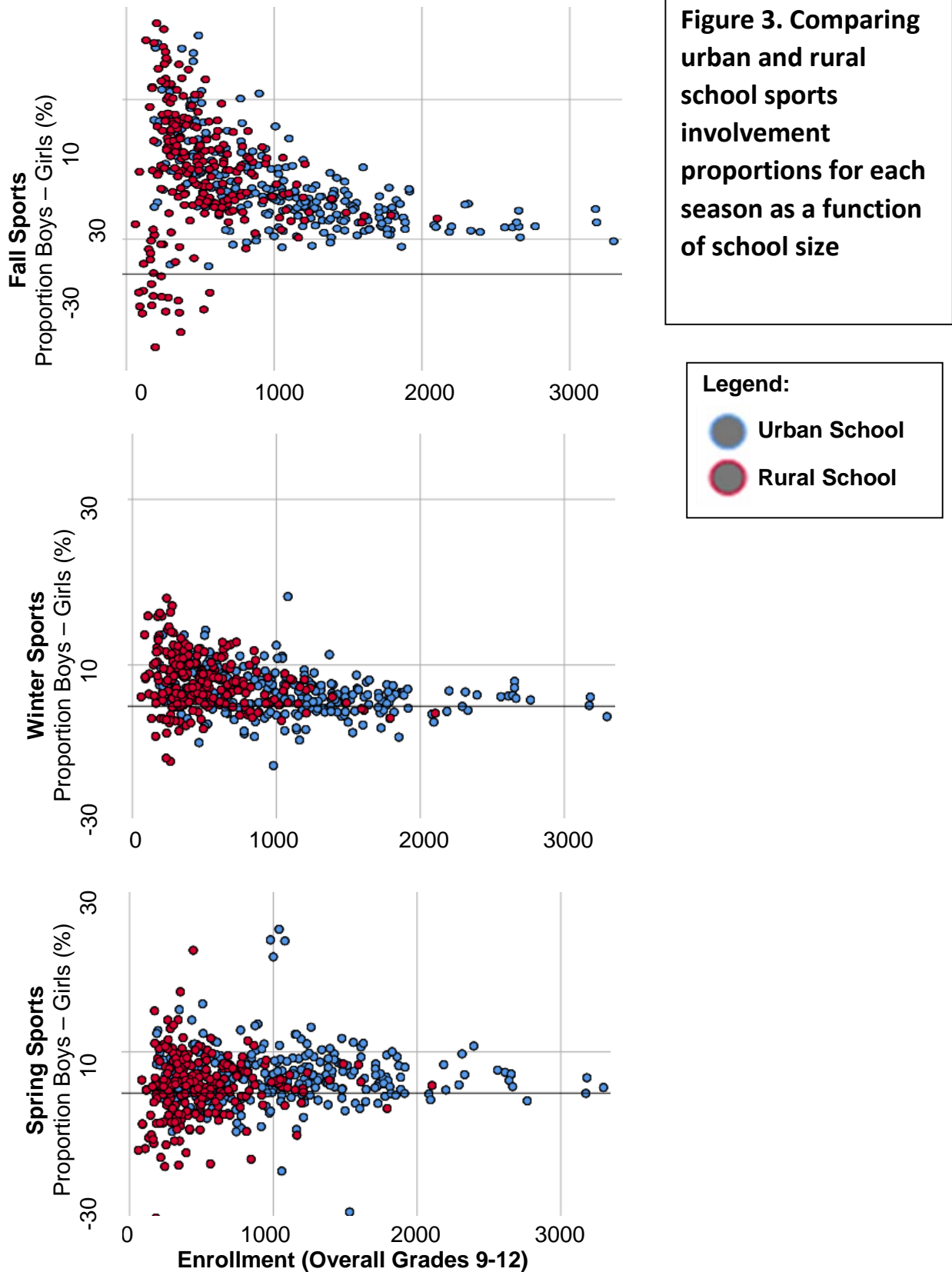
A related question was whether urban or rural schools tend to “prioritize” sports involvement for one sex over another. Across the whole sample, the proportion of boys involved in fall sports was substantially higher than females – 27 percent more boys participated in fall sports compared to girls. This could potentially be explained by the large number of boys involved in football. Boys sports involvement was just slightly more predominate in winter (4 percent more boys in sports) and spring (3 percent more boys in sports).

There were relatively small differences in these numbers when comparing urban and rural schools (see Table 3). However, there were several cases where the proportion of males in sports was significantly higher in rural schools, even after accounting for school enrollment. The tendency for relatively more boys participating in sports was slightly stronger in rural schools during the fall and winter seasons. Meanwhile, the tendency for higher proportions of boys participating in sports was relatively higher in urban schools during the spring. It should be noted that, in all cases, these urban-rural differences were relatively small in magnitude.

Figure 3 illustrates these trends, where most rural and urban schools tended to demonstrate slightly more predominate boys’ involvement. Note that the vertical axes reflect the percentage of boys involved in sports, minus the percentage of girls involved in sports. Zero is marked by the dark black horizontal line for each figure – with more dots being above that line (i.e., higher proportions of boys involved in sports) than below the line in all cases. Interestingly, for small schools, there is a wide range

	Fall	Winter	Spring
<i>Urban</i>	25%	3%	4%
<i>Rural</i>	29%	6%	1%

from offering substantially more sports opportunities to male students to offering more sports opportunities to female students.



Year	Boys Mean Involvement			Girls Mean Involvement		
	Fall	Winter	Spring	Fall	Winter	Spring
2012	140.04	52.15	96.73	55.49	34.75	84.86
2013	134.15	51.64	95.85	55.07	34.64	86.00
2014	133.88	50.91	94.13	55.99	35.33	84.85
2015	134.84	51.04	97.05	56.00	35.20	81.76
2016	127.55	49.10	95.99	55.13	34.26	82.79
2017	123.06	48.97	94.56	53.96	33.60	81.73

Predictors of sports involvement within rural schools

Moving from comparisons between urban and rural schools, the next step involved examining pattern *within* rural schools. Table 4 presents patterns in involvement over time. At an observational level, trends were not identified over time within rural schools as a whole – meaning that there doesn’t appear to be increasing or decreasing involvement within rural schools as a whole.

Among rural schools, website evaluations identified that 13 percent of schools required “pay-to-play,” which means that there was evidence on their websites or sports policy documents that athletes paid a sports fee to participate. Predominately, this entailed a single flat fee to participate in sports during the school year. Similarly, using this website review, the research found that 10 percent reported intramural programs, and 16 percent offered activity busses.

These policies tended to be more – or less – likely in different types of schools. For instance:

- (a) Pay-to-play schools tended to have fewer students on free-and-reduced-price lunches (36 percent) compared to non-pay-to-play schools (43 percent);
- (b) Pay-to-play schools tended to belong to districts with lower economic social disadvantage compared to schools without pay-to-play;
- (c) Schools with intramural programs were less likely to have students involved in lunch programs; and
- (d) Schools with intramural programs were less likely to be in a district reflecting economic disadvantage.

Were these programs any more likely in larger rural schools? Pay-to-play programs did not differ according to school size. However, schools with bussing programs tended to be larger (Mean = 696 students) compared to schools without bussing (Mean = 470). A similar pattern was evident for intramurals – schools with intramural programs were larger (Mean = 688 students) compared to those without intramurals (Mean = 484).

These policies were also significant predictors of sports involvement when included within regression models. Rural schools with pay-to-play programs reported higher sports participation in winter for boys as well as girls. Schools with intramural programs reported higher winter girls school sports involvement. Finally, schools with bussing also tended to have higher girls' involvement in fall and winter sports.

Table 5. Predicting number of sports-involved boys and girls in rural schools.						
Significant predictors	Boys			Girls		
	Fall	Winter	Spring	Fall	Winter	Spring
Late bussing					+	
Aggregated Disadvantage			-	-		-
Low Income Enrollment	-	-				-
Median ann. expenditures	+		+			

Note. +/- indicates the direction of the significant association. These predictors were assessed after controlling-for school enrollment.
 Non-significant predictors: Population Density, Pay to Play, Intramural

Nevertheless, it is critical to note that many of these associations were no longer significant when the regression models also included predictors reflecting socioeconomic aspects of schools and school districts (Table 5). The likely explanation for the relatively weaker associations after including socioeconomic predictors is that policies likely vary as a result of the economic conditions within communities – pay-to-play, late bussing, and intramurals may all be policies predominately delivered in higher-resource settings.

Within the final regressions including all predictors of school sports involvement, there was only one remaining significant school policy predictor: Schools with bussing reported that more girls were involved in winter sports. Meanwhile, numerous significant associations were identified with socioeconomic predictors. In every model, with the exception of girls’ winter sports involvement, the number of boys or girls participating in sports was negatively associated with either school district disadvantage or by the percentage of students with free-or-reduced-price lunches. That is, sports participation rates were lower in rural schools with more students/districts that involved socioeconomic disadvantage. As one example of magnitude regarding these associations, every 1 percent increase in the percent of students with free-or-reduced-priced lunches meant there were .71 fewer male athletes involved in fall sports.

Finally, analyses explored the number of teams in rural schools. Schools with late bussing were likely to have at least one more boys' sports team offered compared to those without late bussing. Similarly, schools reported fewer boys' and girls' teams when they were within districts with high aggregated disadvantage.

Phase 2: Qualitative Exploration

Whereas archival data delivered insights regarding sports involvement across the commonwealth, the results raised more new questions than what were answered. It was critical to explore potential insights regarding what these patterns in involvement look like at the "ground level." On one hand, this involved exploring whether coaches and administrators viewed these patterns as something "real" in their daily experience. On the other hand, this involved identifying potential explanations.

Phase 2 involved a multiple case study analysis of school district settings (Stake, 2005). The goal was to gather responses from multiple coaches and administrators in school districts to gain diverse perspectives, and these cases were considered alongside additional data (e.g., athletics policy documents, athletic department website). Prior to conducting the interviews, the researcher received institutional ethical approval.

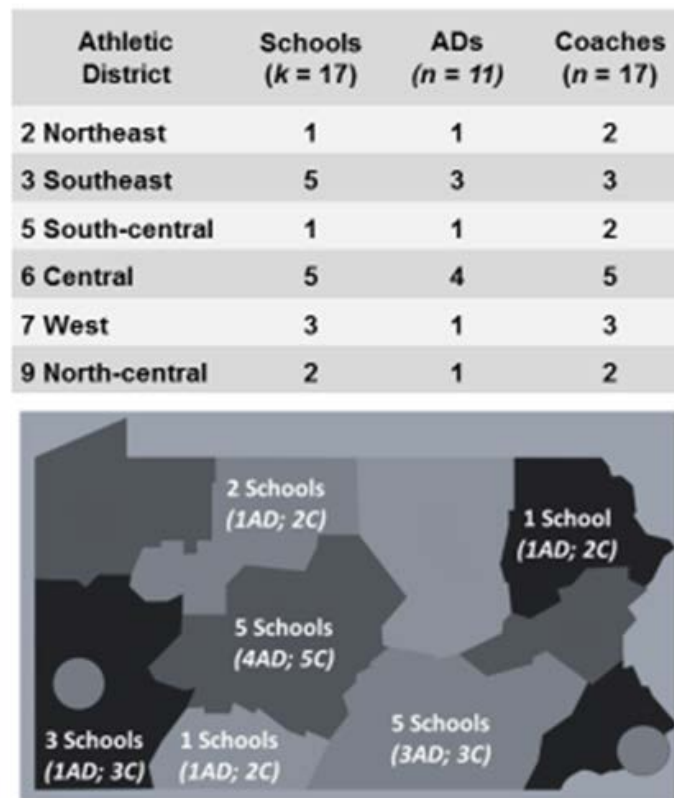
Participants and recruitment

An initial step in recruitment was to identify schools that were eligible using the quantitative dataset and, in turn, invite participants within each school. Participants were initially recruited from rural schools and school districts reflecting sports that were, on average, at least one standard deviation above (or below) the average proportion of students involved in sports. The proportion of students involved in sports was calculated relative to enrollment, and then schools were targeted if their proportions were higher (or lower) than at least 80 percent of the sample of rural schools.

Participants were only recruited from high schools or junior/senior high schools, with the initial step to invite athletic directors to participate, with all athletic director interviews conducted first. In turn,

athletic directors were invited to pass along details about the research to coaches within (and beyond) their schools. The distribution of participants is described in Figure 4 in relation to Pennsylvania Interscholastic Athletics Association athletic districts. Participants included 11 athletic directors (18 percent female) and 17 coaches (29 percent female) – with the predominate recruitment from schools within athletic districts 3 (southeast) and 6 (central). Whereas the majority of participants were from southern or central athletic districts, recruitment efforts sought participants from all districts.

Figure 4. List and distribution of interview participants.



Interviews

Interviews were conducted by phone. The average interview length was 32 minutes, and ranged from 18 to 53 minutes. An example interview guide is provided in the appendix, and was designed to elicit participants' stories about their experiences as coaches and/or administrators. Participants were asked to describe notable experiences in school sports administration and were probed to describe challenges they face as well as practices they employ to increase participation. Furthermore, participants were asked about how they felt their school fit alongside the term "rural" and about what being rural meant to them.

Qualitative analyses included thematic analysis. After transcribing interviews and uploading them into electronic software (NVIVO), members of the research team reviewed interview transcripts. At

first, key phrases or comments from interviews were tagged with an open and descriptive code. The research team then sought to identify key themes that emerged across both coaches and administrators.

Results

Coaches and athletic administrators described the characteristics of rural school sports that shape what students are likely to experience. These characteristics ranged from geographic or economic aspects of the communities surrounding schools, to the facilities and policies within schools in particular.

Nevertheless, each participant differed regarding exactly which component of their “rural” environment impacted sports involvement, and whether it did so in positive or negative ways. Coaches’ and administrators’ descriptions tended to focus on a few components of their community and school when describing the forces shaping student sports involvement: (a) density of people surrounding the school and proximity to population centers, (b) the size of the school, and (c) socioeconomic demands on families in their communities and lack of resources. Indeed, coach and administrator descriptions of what made their community rural tended to fit three profiles:

- Low enrollment schools within communities facing socioeconomic challenges, in a large county that tended to be distant from urban areas.
- Low enrollment schools within communities facing socioeconomic challenges, that were also within smaller counties or regions that were in reasonable proximity to larger centers.
- Average or above-average school size within communities featuring families that tend to have less socioeconomic disadvantage – often in relative proximity to larger population centers.

An important note, then, is that participants acknowledged the diversity of school contexts represented across the commonwealth. The results below identify key themes – although not every school fit within these themes equally. Results are structured to first introduce key themes identified from across interviews. Subsequently, the attention is directed toward contrasting coach and administrator perspectives, and contrasting perspectives across different “types” or school contexts. All quotes are designated as stemming from an administrator (AD) or coach (C).

Key themes

Resources. When describing their community context, coaches and administrators reflected on resources in many forms – from financial resources, to facilities, the size of coaching staff, and access to volunteers. Some respondents specifically reflected on how their community context and migration away from their community impacted the financial resources available to compete:

“In a community like ours, where our population is pretty stagnant, we're not growing, we don't have a lot of businesses. So there's not a lot of business taxes coming in to the schools. Yeah, our budgets get pretty tight.” (AD)

Of course, the resources available to programs were largely shaped by those budgeted within their institution, but programs faced other pressures when seeking resources from families or communities. Given the relatively small size of businesses, administrators were hesitant to rely too heavily on the community for financial support because they felt that they were continually relying on a small base of support. Similarly, the socioeconomic status of families limited the potential to request that families support student sports involvement:

“But I know there's some other school districts farther west where parents have to pay for their uniforms that school will not pay for it. So that becomes daunting on the families. And now they have to fundraise and they have to, you know, do a lot of more work as a family to try to get money in with some of our families already are struggling.” (AD)

For most rural coaches, comparisons were nevertheless difficult to escape:

“We're fine here in [our institution] financially. But I think what you see as you know, that [large urban schools] are putting in multiple turf fields, and they have like, you know, division one type of baseball fields. Some of these really great facilities, which is awesome. And you have rural schools who are basically trying to catch up. And we are big enough that we play some of them. So you have kids that go play away games, and they're like, “wow, you should have seen their field”.” (C)

Several schools did not experience these pressures to the same extent. Indeed, several larger rural schools located in proximity to larger population centers reported access to numerous resources unavailable to many other rural schools.

Socioeconomic considerations. Access to resources was closely aligned with the socioeconomic conditions within communities. Coaches and administrators from communities facing economic challenges described widespread links to social participation generally – and the need for resources to ensure participation:

“What impact does poverty have on kids’ participation? Athletics, music, art, it doesn’t matter. In school or out of school that, you know, whether it be grants to help out with like a participation bus or, you know, whatever it might be that for some schools, that might be a way to increase their participation.” (AD)

One of the key messages related to this involved the observation that the socioeconomic pressures were not necessarily an exclusively rural phenomenon.

Coaches and administrators also observed that their students who belonged to families that were financially stable still often experienced added responsibilities based on their rural location. Other responsibilities that students engaged in included working part-time jobs, working on family farms, and caring for family members:

“So, there’s a couple things I don’t know if this is specific to rural or not, maybe becoming more of a more of a widespread problem. But you know, I, I do know, some students struggle to be able to participate in sports, because they are working legitimately like working to maybe pay their own bills, but maybe also supporting some of the family functions.” (C)

Transportation and isolation. Many administrators and coaches also described the physical distance within their communities that separated athletes from schools, and from one another. Coaches and administrators shared that, if they could not accommodate these issues, then they often could not support programs.

For instance, one coach described the challenge of balancing limited resources alongside the challenge of trying to schedule training conveniently:

“We have limited space for our practices. We have one wrestling room here, and the junior high team has to practice after the varsity team. So they have to go home and they come back at 5:30. Well, that reduces numbers, because parents don't want to bring their kids back.” (AD)

Coaches often felt pressure to schedule practices directly after school, for example. These challenges extended to fostering a group environment as well:

“Team camaraderie is tough, because these kids don't see each other outside of school and outside of sports; a lot of them are living far away. Unless those kids drive, they're not getting to each other. We don't have a central, you know, shopping district or someplace where you know, everybody's going to go hang out.” (C)

These issues of distance emerged when finding ways to transport students safely (e.g., carpooling; activity bussing; coordinating with parents), when scheduling training and competition sessions, and when recruiting athletes. Activity busses were used by several schools to ensure transportation:

“We have an activity bus that runs in the early evening, for any kids that have to stay after school for practice or for clubs or anything. To be able to get them home. I mean, obviously, we wouldn't want transportation to be a reason for somebody not to be involved, because they can't get a ride. So we do run an activity bus.” (AD)

Other schools did not have access to resources for providing bussing, so worked to schedule sessions and coordinate athletes to ensure practice could be attended.

“We've rotated practices a little bit to try and get closer to some people. I practice here at the high school, but if I have a Saturday practice, I practice at the middle school. It is about 10 miles

away from here and is closer to some student's houses. You know that's a strategy, try to move stuff around and help some families out a little bit or whatever else. You know I use [an online application] to send messages and I have my practice schedule out at least two weeks in advance to help people try to plan. (C)

Community integration. Coaches and administrators often relied on the people surrounding their school to build their program and saw their connections with the community to be a strength. This sentiment was exemplified when participants reflected on how many members of the community were connected to their school as alumni. There was even a close sense of community within the schools:

"I remember seeing a couple of the lunch ladies [at the game]... And you know, I don't know if I've ever seen them at a game before. They know the kids that were playing because you know, you have 30 some freshmen, 30 some sophomores. Like, you know all the students, even if you're a janitor, especially if you're a teacher. You know all the students." (AD)

The community thus shaped the direction of programs. Recognizing the value of booster programs to provide tangible and financial support, coaches and administrators worked to connect the community with their programs because they had relatively few businesses and contributors within their community – that relationship was important. Several coaches explained the support for their sports in particular, while coaches from sports that were not traditional in their region struggled to ensure they could offer teams.

Focusing on building sports involvement, administrators and coaches both relied heavily upon promoting their programs with younger children and ensuring a pathway from elementary or club programs into the high school setting. Coaches explained that children would be more likely to maintain sports participation if they were familiar with the program and the coaching staff:

"We try to come up with ways to expose kids to sports. As soon as they get here in seventh grade, and even our elementary, trying to expose them to new things to see if it's something that they can get interested in. I don't know if every school around here does that. You know, I think the earlier you can expose the kids and stuff, the better chance you have to get your hopes in them and get them into something that they're interested in." (AD)

“And I think the biggest thing was our elementary program really took off. And now we're starting to see the results of kids that wrestled elementary and they're in there we're keeping them out, and they're moving into junior high, they're having success. So hopefully that'll have a domino effect into the varsity level.” (C)

One strategy to support this included fostering mentorship, as older athletes are looked up to in the community:

“My best player this year actually came up to me and said: “Would it be okay if I came to your middle school practices?” I was like “Yeah” because they idolized her. She wants to be a college basketball player. She wants, potentially, to coach one day.” (C)

Multi-sports athletes. Coaches relied heavily on strategies to ensure that athletes who were interested in sports had as many opportunities to be involved. This was motivated by numerous aspects, but included the simple demand of integrating students within several programs to simply ensure that teams could be maintained and be competitive:

“Because at a rural school you don't need... You don't need the large numbers. But you just need enough numbers.” (C; emphasis added)

This quote resembles quantitative findings, where some of the lower levels of sports involvement were concentrated in small rural schools in particular.

Coaches reflected on how this may exist in other urban settings, but is a particular pressure in rural settings. This was partly because students had fewer other opportunities for sports – there were fewer club programs for athletes to train and compete in a single sport year-round. Also, however, coaches in smaller rural schools had to work hard to access the number of students required to support their teams. This was conveyed by a wrestling coach:

“One thing I've tried to do is make sure that I am communicating with other coaches, you know coaches in the fall sports - in the spring sports. I often try to share what my expectations are of the athletes to help make sure that the athletes are getting the same message.” (C)

Similarly, an administrator explained the need for supporting multi-sports athletes across seasons and, occasionally, within a single season:

“We love them. It's common. It's, it's a popular thing. And to be honest, it's a necessary thing. Your multi-sports athletes are usually your stronger athletes. And a lot of our programs are dependent on them. Our coaches have to be supportive of that aspect.” (AD)

Conclusions

This project examined trends in urban and rural school sports participation, alongside sociodemographic aspects of schools and communities that contribute to these trends. Perhaps the most critical insight focused on broad comparisons of urban and rural school sports involvement. Fall and spring sports involvement was lower for rural schools, whereby more male and female students from urban schools participated in the fall and spring. School enrollment moderated the impact of being involved in sports in an urban or rural school for boys (fall and spring) and girls (spring). Being in a rural school was mainly a barrier to sports involvement in small schools, while sports involvement in larger rural schools resembled the involvement of urban schools. These analyses reveal that there are cases where urban students experience increased sports opportunities compared to rural students – but these differences can be subtle and contingent on school size.

Further insights were gained through analyses that examined only rural schools to examine predictors of sports involvement. Socioeconomic factors were perhaps the most consistent predictors of rural school sports involvement. These predictors included the level of disadvantage within the school district (e.g., employment, education, income), and the percentage of students receiving free-or-reduced-price lunches. Sports involvement was lower in schools and communities facing these disadvantages. Similarly, schools in districts facing socioeconomic disadvantage were also the least likely to integrate policies and practices that may strengthen sports programs (e.g., late bussing).

Interviews expanded upon this finding, and highlighted the spectrum of ways that resources and the community context shape sports involvement. Indeed, although several rural administrators and coaches reflected positively on resources available to them, others highlighted challenges, like the financial resources derived from the tax base, and their concerns about over-burdening a small pool of local organizations and boosters. Coaches and administrators also reflected on the power of smaller communities surrounding rural schools as an asset. Fostering connections with youth and adults across the community was seen as a critical path to ensure that rural sports programs flourished.

Policy Implications

This research strengthens knowledge of school or community characteristics that have a powerful role in influencing rural sports participation, and may help identify targets for future policies. The proposed research has the clearest implications for state and local policies. Indeed, state policies have historically made sporadic but significant resolutions related to school sports. As a key example, the proposed research would not be possible without the act that mandated the reporting of data related to school sports opportunities (Act 82 of 2012 added Article XVI-C to the Public School Code of 1949; 24 P.S. § 16-1601-C). Several other states also provide examples of how shifts in school sports policy are brought about. As examples, bills debated by states in the past several years focus on changing rules to prevent injuries (Maryland Bill 552), ensuring athlete and parent access to concussion guidelines (Idaho Statute 33-1625), and promoting public reporting of girls' sports participation (California Senate Bill 1349, Chapter 258).

Policy insights from the current research are:

- (a) It was rare that findings applied to all rural schools and all seasons. In particular, the current findings highlighted concerns related to rural schools that were also smaller in size or located in communities facing socioeconomic disadvantage. Any policy must consider ways of targeting schools that can most benefit.

- (b) Resources seemed critical for many of the practices to support sports involvement, and coaches and administrators reflected positively on such programs (e.g., late bussing). Nevertheless, often the more powerful predictors of rural involvement were socioeconomic factors that were more general in nature.

Beyond the state legislature, this work is relevant for stakeholders in school sports who make decisions about funding distribution, competitive rules, and norms that have a bearing on sports in rural communities. For example, the Pennsylvania Interscholastic Athletic Association (PIAA) is the governing body for competitive school sports and is responsible for outlining and regulating rules and guidelines. This organization routinely pursues ways to equalize competition across regions and would value this research. One qualitative insight from this study was directly relevant for the PIAA competitive policies. One rural wrestling coach described his struggles to construct an entire team that included students within all weight classes, while also struggling with situations where he had two or more interested and strong athletes competing for a position in another weight class. He argued that rural schools may benefit from increased individual meets where he could support numerous athletes from similar weight classes to develop skills and provide more opportunities for sports involvement.

PDE oversees decision-making and policies related to all Pennsylvania school districts and is responsible for managing data regarding sports opportunities. This research may also inform these efforts by producing evidence-informed recommendations for tracking sports involvement and creating policies to address it. In particular, the most notable point of feedback includes how data are reported. Key improvements that could be integrated within school-level reporting forms could involve:

- (a) The number of students involved in sports at all, regardless of the number of teams in which they participate. This recommendation is in response to the challenge of comparing urban and rural school sports teams, when qualitative data suggest that rural schools may be supportive of multi-sports athletes. Data collection approaches must find a path to reporting the total number of students involved in sports (i.e., how many of their students participated in one or more school sports?).

(b) Reporting on school policies would provide more valid data compared to this research approach of evaluating school websites. Providing opportunities to report pay-to-play policies, late busses, intramural program participation, and other aspects could hold potential to evaluate the effectiveness of these practices.

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Appendix: Interview Guide for Coaches and Administrators
INTERVIEW GUIDE (ONE-ON-ONE INTERVIEW)

EXPLORING DISPARITIES IN SCHOOL SPORTS PARTICIPATION IN RURAL PENNSYLVANIA

Stakeholder Interviews to Understand Conditions in Rural Schools

Principal Investigator: Dr. M. Blair Evans; 814-865-1601; MBE13@PSU.EDU

Thank you for the opportunity to introduce our project. I would like to start by indicating that the goals of this first interview are to:

- Understand your personal trajectory and involvement within School sports.
- Understand what an ideal rural school looks like with respect to sports participation.
- Hear about your experiences promoting sports participation and understand key barriers or facilitators
- Discuss policies or practices to support participation in school sports.

Before we begin, I would like to remind you of the consent document. I would like to ask you to ensure that you have read the document fully.

[Remind participant of consent form and review key points; ensure that they understand it]

I also remind you that there are no right or wrong answers in this discussion and that you can choose to skip any questions – and feel free to ask for clarification. I also remind you that this interview will be recorded – do I have your consent for this interview to begin and for it to be recorded? Great.

Introductory questions.

Starting broadly, I would love to hear about your experiences.

1. I'd like to hear your 'story' related to school sports. To begin with, I am hoping to hear about your sports involvement – if your life were a story about sports involvement, what would it look like?
2. Now, I was hoping you could describe your own school/athletics organization and the roles you hold, or have held.
 - a. What do you see as the key responsibilities within your position.
 - b. Can you tell me about how your organization is structured, with regard to the number of staff, number of students, and the types of programs/sports opportunities that you offer?
 - c. Have you held similar responsibilities in other school locations?

RURAL SETTINGS

Now I would like to direct us toward discussing sports participation in rural schools. As I previously mentioned, I am ultimately hoping to learn more about sports participation in rural schools.

3. Can you tell me what it means to be a 'rural' school, as you perceive it?
 - a. In what ways do you believe belonging to a 'rural' setting impacts sports programs?
 - b. How are students' opportunities for participation hurt or benefitted in rural schools?
 - c. How may motives to participate in sports differ based on where a school is located?

4. If you could imagine an ideal rural school setting, what would the sports participation opportunities look like? In other words, what types of sports, and sports programs, would you see as hallmarks of an ideal environment?
 - a. What types of staff roles would be critical to make this happen?
 - b. What about transportation to and from sports – how would that be optimized?
 - c. What about the perceived values and norms around how students and staff view sports?
 - d. Can you bring to mind any schools or settings that are ideal demonstrations of this?

5. On the other hand, imagine a rural school that represents the poorest environment for sports participation for youth – what would this look like?
 - a. Imagining this spectrum from optimal to less than optimal, how would you describe your own school context?
 - b. What are chief barriers that you see, limiting involvement for students in your school.
 - c. Do these barriers face all students, or do they face students from certain subgroups?

EXPERIENCES PROMOTING INVOLVEMENT

Building from our discussion so far, we are especially interested in findings ways to support rural school sports participation.

6. Please describe any strategies that you have seen or that you have used to draw youth into sports involvement within schools, if you can.

[Prompt the participant to examine: whether these strategies were informal or were formally promoted within the organization; who the strategies were directed toward; whether the strategy we supported by others like administrators or community members]
7. Can you think of any strategies that you have seen in schools, school boards, or school districts enact to promote sports involvement?
8. Can you think of any policies or strategies that you have seen in schools, school boards, or school districts were likely to decrease sports involvement in rural settings in particular?

CLOSING QUESTIONS

9. What kinds of things do you feel are important for policy makers in the department of education, or in the Pennsylvania legislature to know about, related to the status of school sports in rural settings?
10. Can you think of any potential/promising strategies, that we have not yet discussed, to encourage youth to participate in sports, when they live in rural settings.
11. Are there any elements of related to rural school sports participation that we have not yet covered in our interview? Is there anything touched upon that we should discuss more?

To conclude, I would like to thank you for your time and patience today.

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