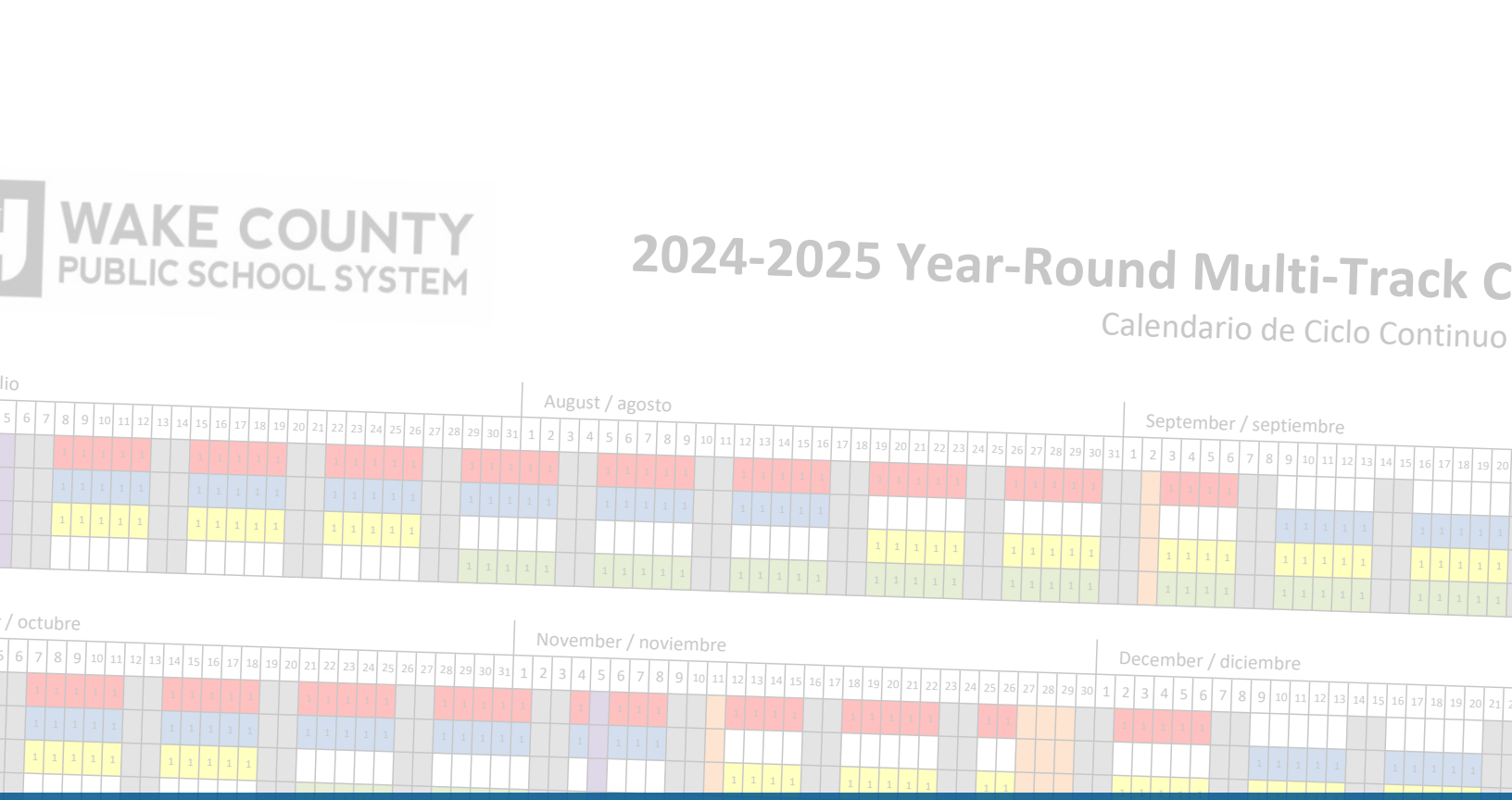


Multi-Track Year-Round Schools, Facility Utilization, and Student Achievement

February 2025

WAKE COUNTY PUBLIC SCHOOL SYSTEM
Data, Research, and Accountability
School Choice Planning and Assignment

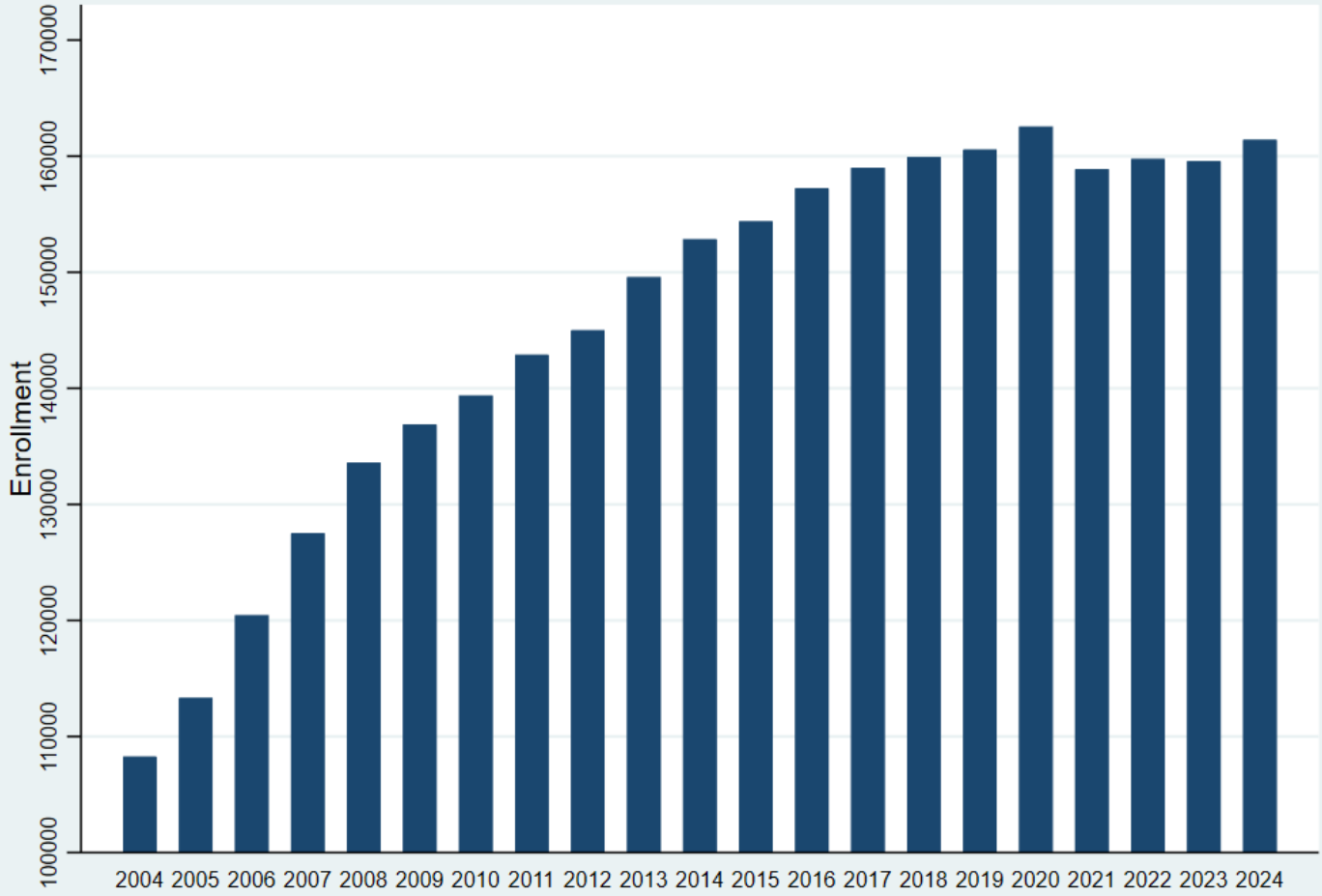
ELON UNIVERSITY | MARTHA AND SPENCER LOVE School of Business

From academic years 2003-04 through 2008-09, enrollment in WCPSS grew by more than 26%, from 108,970 to 137,607 students. Such unprecedented enrollment growth presented challenges for the Wake County Public School System (WCPSS). Enrollment outpaced new school construction and led to overcrowding.

In addition to constructing mobile classrooms, the district began to operate overcrowded schools on the multi-track year-round (MTYR) calendar. Unlike the traditional calendar in which students have a summer break, schools on the MTYR calendar operate throughout the calendar year including the summer months. How is this possible? Every student at a MTYR school is assigned to one of four tracks. Each track takes turns "tracked out" or on break. Therefore, students on three tracks attend school at any given time during the academic year while students on the other track are tracked out. Thus, a MTYR school effectively increases its capacity (the number of students a school can serve) by 25% compared to the same school operating on a traditional calendar. The MTYR calendar is a clever way to address overcrowding when the construction of new school buildings is infeasible (e.g., costly and time-intensive) and facility space is fixed.

As shown in Figure 1, enrollment in WCPSS continued to climb during the next decade and peaked at nearly 162,000 students in the 2019-20 academic year. Enrollment followed national trends and fell following the COVID-19 pandemic but appears to be rebounding as evidenced by the enrollment growth of about 1,600 students between 2022-23 and 2023-24.

Figure 1. WCPSS Enrollment 2004 - 2024

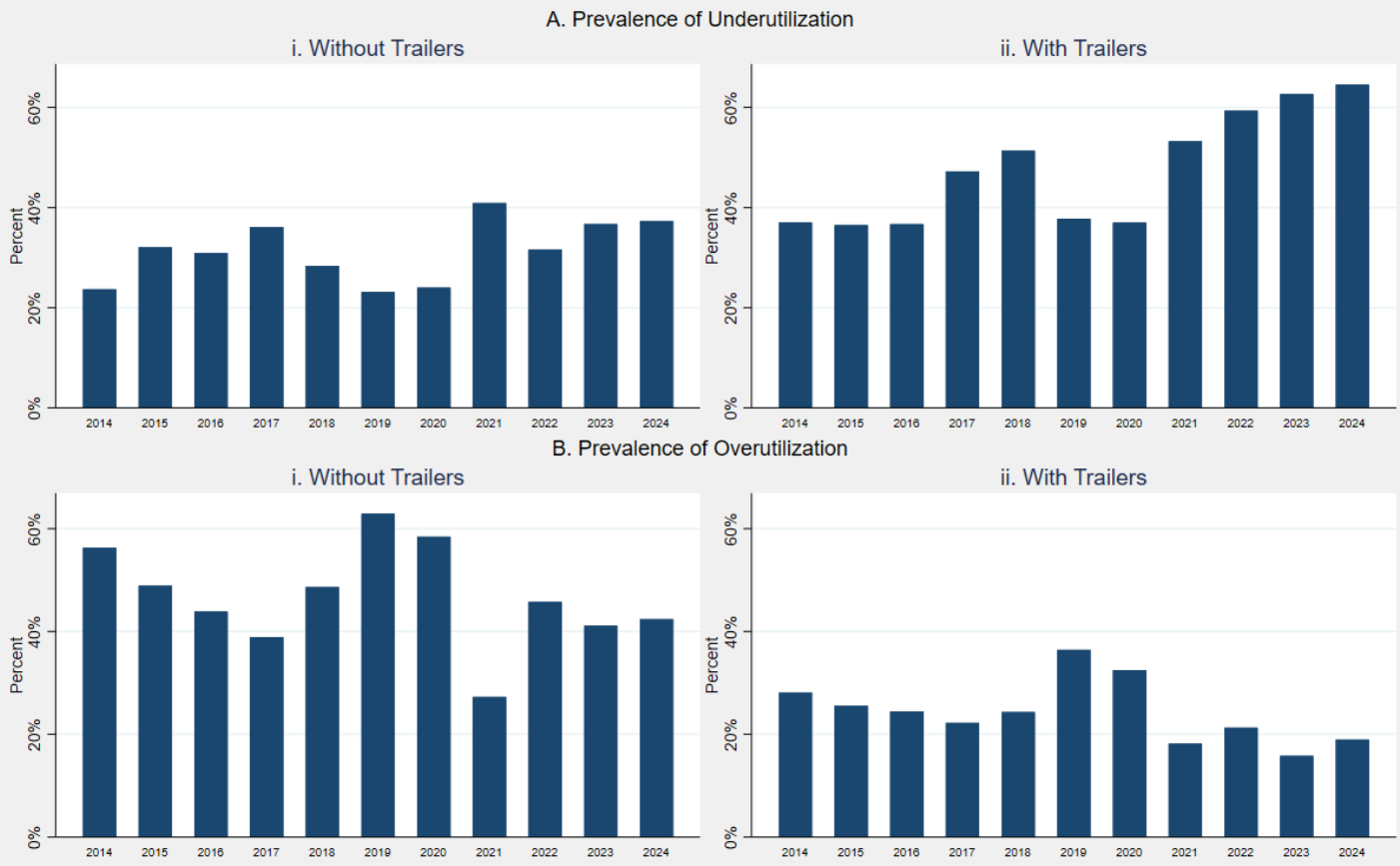


Although overall district enrollment has stabilized, enrollment patterns across schools have been uneven in recent years. Some schools have experienced overutilization, where enrollment exceeds capacity, while others face underutilization, with capacity exceeding enrollment. For this study, a school is considered overutilized if it operates at 105% or more of its capacity and underutilized if it operates at less than 95% of its capacity.

Figure 2 shows the prevalence of underutilization (Panel A) and overutilization (Panel B) at all WCPSS elementary and middle schools over the last decade. Panels A(i) and B(i) account for only permanent facility space (a building's capacity minus mobile classrooms or "trailers") while panels A(ii) and B(ii) account for the additional capacity created by mobile classrooms located on school property.

The district experienced declining enrollment during the COVID-19 pandemic, which led to an increase in underutilized schools. Based on permanent facility space, nearly 40% of middle and elementary schools operated at less than 95% capacity (Panel A[i]). These numbers increased to more than 60% when mobile classrooms were included (Panel A[ii]). Conversely, nearly 20% of elementary and middle schools operated at more than 105% capacity when mobile classrooms were included (Panel B[ii]). These percentages increased significantly when only permanent facility space was considered and excluded mobile classrooms (Panel B[i]).

Figure 2. Facility Utilization in WCPSS Elementary and Middle Schools



Notes. Under-utilization defined as enrollment/capacity <=95%. Over-utilization is defined as enrollment/capacity >=105%.
Panel Ai and Bi only consider permanent facility capacity.
Panels Aii and Bii consider the additional capacity with trailers.
Sample does not include schools that serve multiple school level (e.g. K-8 or 6-10).

The previously reported trends present ongoing challenges for student assignment in WCPSS, raising questions about facility utilization and costs associated with the MTYR calendar. Student outcomes are also increasingly relevant, particularly in understanding how student achievement may vary by calendar type. As such, the use of the MTYR calendar warrants close examination. This study examines the use of the MTYR calendar in WCPSS and addresses the following questions:

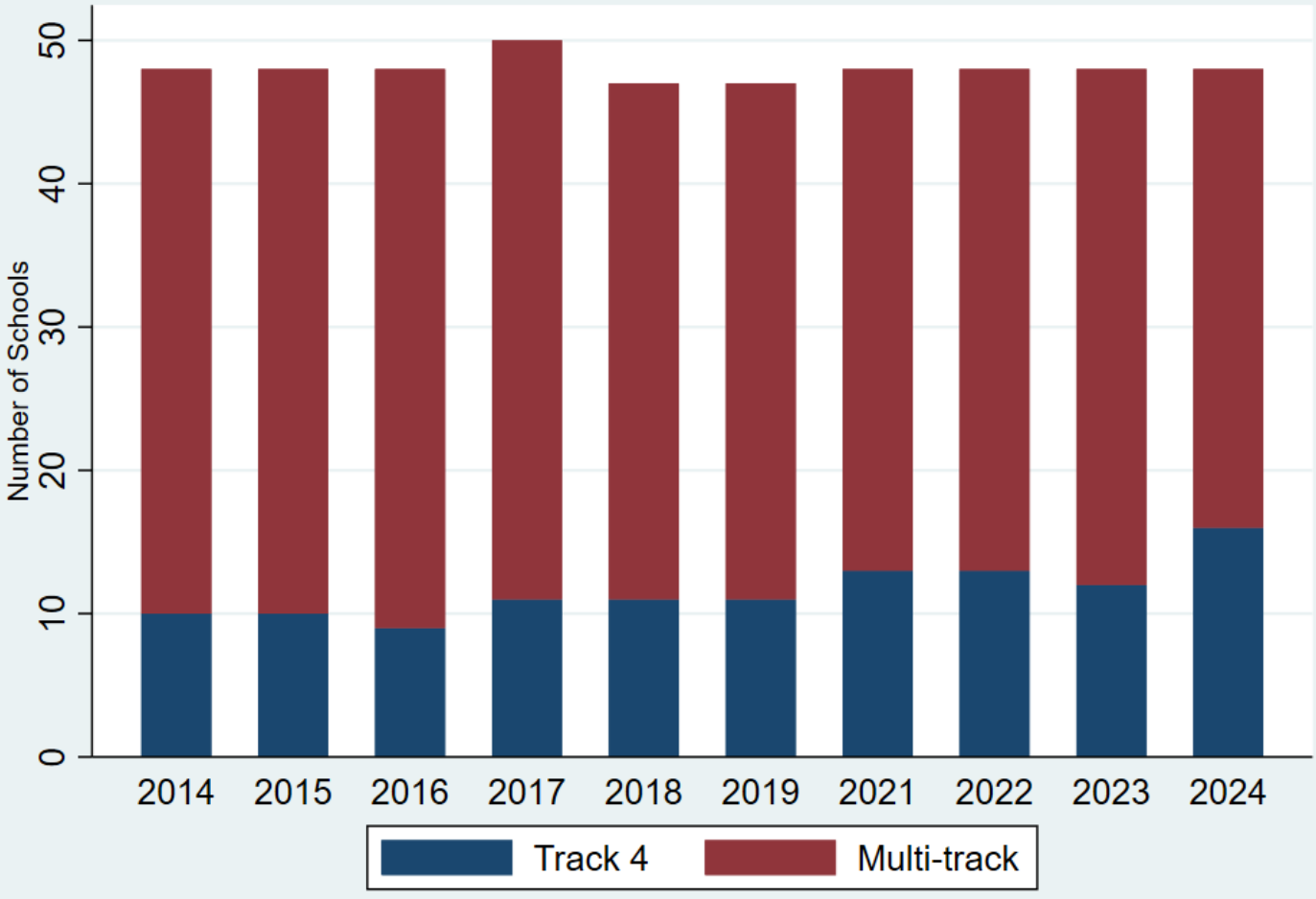
1. What is the history and current state of MTYR calendar use in WCPSS?
2. What are the relevant crowding and cost considerations?
3. To what extent, if at all, does the MTYR calendar affect student achievement?

The year-round (YR) calendar has been implemented in schools in the United States since the late 1960s and early 1970s. WCPSS first introduced YR calendars around 1990 and by the 2006-07 academic year the number of YR schools increased to 20. In the 2007-08 academic year, all newly built schools opened on the MTYR calendar and 22 traditional schools were converted to the MTYR calendar. These changes increased the number of YR schools to 46.

WCPSS uses a balanced YR calendar, where instructional days are distributed throughout the academic year, including summer months, unlike traditional schools that have a long summer break. The most common schedule for this calendar is the 45-15 model: students attend school for nine weeks (45 days) followed by a three-week (15-day) break, known as the "track-out" period. Schools can implement the YR calendar as either a single-track or MTYR system. In a single-track YR school, all students follow the same 45-15 schedule referred to as the "Track 4" schedule. Currently, WCPSS operates schools on both the 45-15 MTYR and single-track YR calendars.

Figure 3 illustrates MTYR and Track 4 calendars in WCPSS over the last decade. YR calendar use in WCPSS has remained fairly constant, though use declined somewhat after 2016-17. The majority of YR calendars in the district operate on the MTYR calendar. During 2023-24, two-thirds (32) of YR schools operated on a MTYR calendar, and 16 schools operated on a single-track YR calendar. Currently, YR calendars are used in 11 middle and 39 elementary schools, representing roughly 25% of all WCPSS schools.

Figure 3. YRS Calendar Use in WCPSS over the last Decade

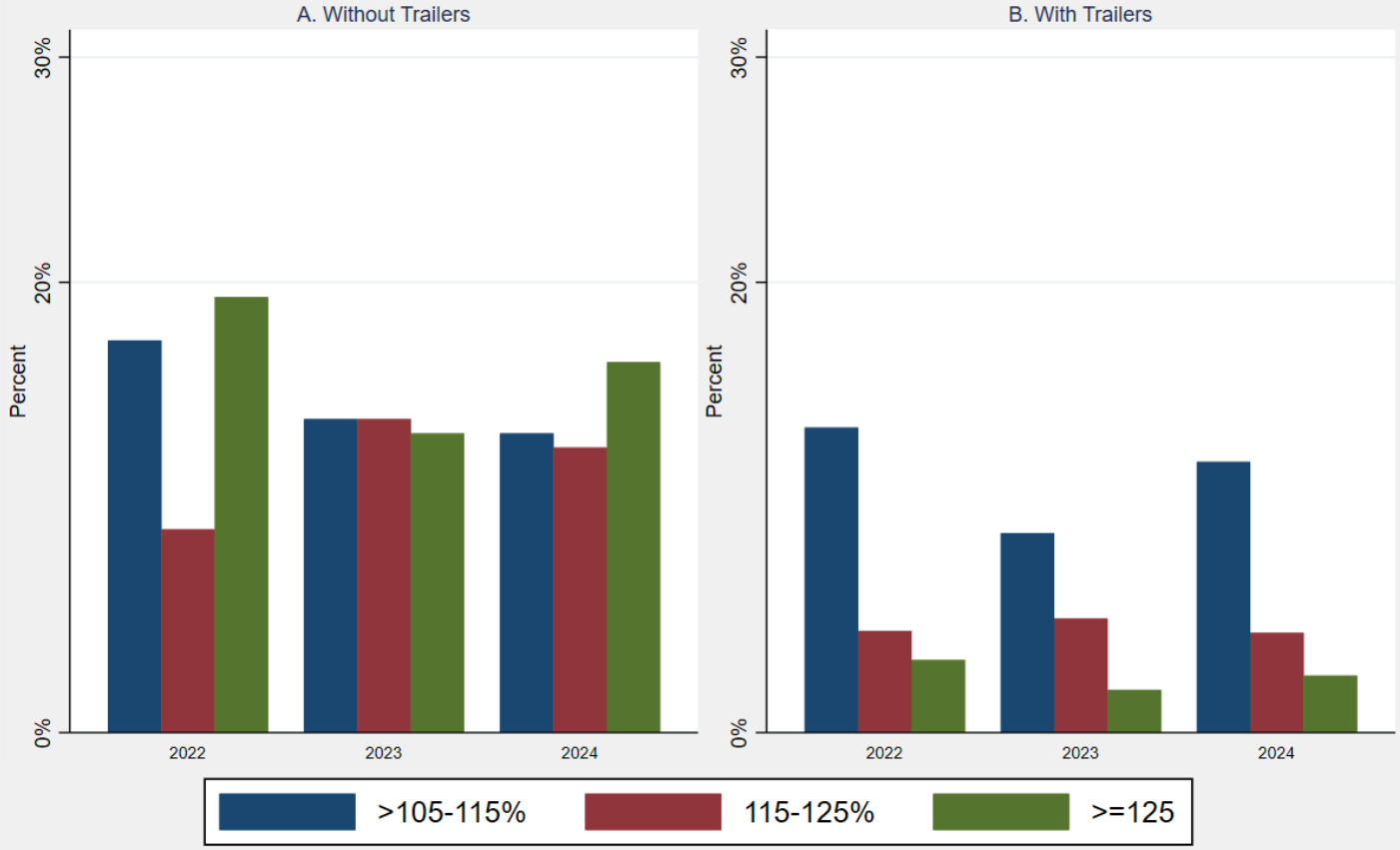


The 25% additional capacity created by the MTYR calendar offers an alternative to new school construction. Recognizing its benefits, school districts across the United States, including WCPSS, have adopted the MTYR calendar as a solution to overcrowding, which can have significant negative effects on students and teachers including larger class sizes, increased teacher burnout, and substandard facility conditions. It can also hinder student achievement. One study in WCPSS found that severe overcrowding negatively affected students' reading scores (McMullen and Rouse, 2012a).

However, the MTYR calendar also incurs several additional costs, including administrative planning, air conditioning, utility expenses, and maintenance (CDE, 2024). Prior studies have found that while the MTYR calendar becomes cost-effective once a building reaches 115% capacity, it becomes financially burdensome if the school is underutilized (Cooper et al., 2003).

Notably, several WCPSS schools that are currently underutilized operate on the MTYR calendar. Figure 4 illustrates the frequency of underutilization in MTYR schools in the last three academic years. During the 2023-24 school year, nearly 40% of MTYR schools operated at less than 95% capacity, even without considering mobile classrooms (Panel A). Furthermore, 8% of schools functioned below 75% capacity. These percentages increase considerably when accounting for the additional capacity provided by mobile classrooms (Panel B).

Figure 4. Prevalance of Overutilization in WCPSS Elementary and Middle Schools 2022-2024



Notes. Percent crowding calculated from average daily membership divided by school capacity.
Panel A only considers permanent facility capacity.
Panel B considers the additional capacity with trailers.
Sample does not include schools that serve multiple school level (e.g. K-8 or 6-10).

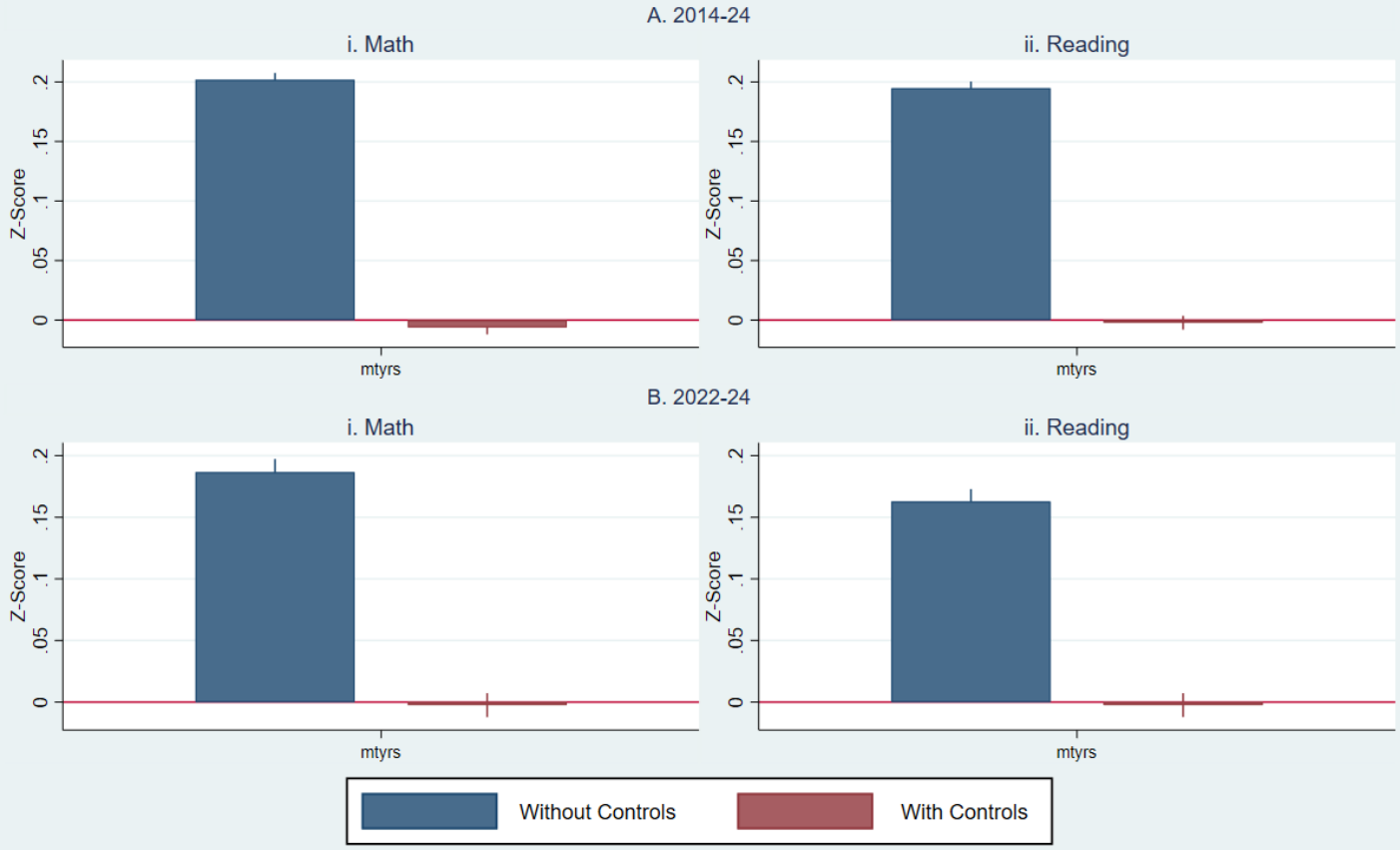
In recent years, the YR calendar has gained traction in districts across the United States in part because policymakers believe it buffers against learning loss. What many fail to acknowledge, however, is that the majority of YR calendars – including those in WCPSS – do not extend the academic year. Extending the academic year creates more instructional time and could reduce learning loss. Rather, YR calendars redistribute the 175-180 instructional days across the academic year. Thus, a calendar with 175-180 instructional days should have the same impact on student achievement regardless of whether these days are distributed in the YR or traditional calendars.

Research and data must guide this analysis. To understand the relationship between calendar type (i.e., traditional vs. MTYR calendar) and student achievement, we draw on prior studies and conduct quantitative analyses using WCPSS data. Professor Katy Rouse, the project team's faculty research partner, previously conducted a rigorous analysis of the large-scale 2007-08 calendar conversions in WCPSS. This study used student-level data to compare test scores for the same students attending the same schools under different calendars. The study found that **MTYR schools had no discernible impact – positive or negative – on average student achievement or average achievement for any racial subgroup** (McMullen and Rouse, 2012b). A follow-up study suggested the MTYR calendar could offset some of the negative effects of crowding on achievement when used in severely crowded schools (McMullen and Rouse, 2012a).

... On average, student achievement among students attending MTYR calendar schools is not significantly different from student achievement among students attending traditional calendar schools.

In partnership with two WCPSS offices – School Choice, Planning, and Assignment, as well as Data, Research and Accountability – Professor Rouse examined the impact of the MTYR calendar on student achievement. Her findings were consistent with those previously reported (see previous studies). Panel A of Figure 5 compares math and reading scores for WCPSS students enrolled in MTYR schools to those in traditional schools over the last decade. At first glance, it appears that average achievement is higher in MTYR calendar schools ("Without Controls"; blue bars). In Panel A(i), for example, the blue bar implies that over the academic years 2013-14 through 2023-24, students in MTYR schools scored 0.2 standard deviations higher in math. While that gap suggests that student achievement in MTYR schools is higher than in traditional schools, this can be explained by differences in school and student characteristics. Once these differences are accounted for ("With Controls"; red bars), the test score difference in math and reading (Panel A[ii]) essentially disappears. The results are the same when examining the effects of the MTYR calendar during the last three academic years (Panel B). **In other words, on average, student achievement among students attending MTYR calendar schools is not significantly different from student achievement among students attending traditional calendar schools.**

Figure 5. Correlations between MTYRS and Student Achievement



Notes. All models account for year and grade level. Models with controls include school demographics, %free and reduced price lunch, %Limited English Proficiency and Title 1 status, and student-level demographics. All sample includes students in elementary and middle schools that operate on a traditional, MTYRS, or Track 4 calendar. The 2014-24 sample does not include data for 2019-20 or 2020-21 due to COVID-19. Estimates reflect the effect of MTYRS relative to a traditional calendar.

Discussion

Current facility utilization in WCPSS suggests that continued use of the MTYR calendar is needed to minimize crowding in some schools. The MTYR calendar can help minimize the potential negative effects of overcrowding, and it is cost-effective at or above 115% of its capacity (Cooper et al., 2003). However, one consideration is using the MTYR calendar in underutilized schools. The MTYR calendar is costly at underutilized schools, and the previous results suggest that a calendar change – from MTYR to a traditional calendar – should not affect student achievement.

While school calendars can be an achievement-neutral means for any district to address uneven enrollments in schools, district leaders should also consider the potential disruption these changes might have for families. For example, research suggests that childcare can be more challenging for MTYR calendar families (Graves, 2013). Efforts to minimize these challenges would help ease the transition. For example, district partnerships with local providers might increase the accessibility of affordable childcare during track-out periods.

Recommendations

Based on the above findings, the project team presents the following recommendations:

1. Consider converting underutilized MTYR schools to the traditional or Track 4 calendar.

2. Continue using MTYR calendars in areas of WCPSS that are experiencing overcrowding and overutilization.

3. Work with local childcare providers to provide affordable and accessible childcare for families with students attending MTYR schools.

Faculty Research Partner Biography

Katy Rouse is a professor of economics at Elon University. Her work on MTYR school calendars has been featured in a wide range of media outlets including *The Wall Street Journal*, WUNC North Carolina Public Radio, and *The Cincinnati Enquirer*. Most recently, she was among national experts included in a segment on year-round school calendars for NPR's Marketplace.

A Note About Research-Practice Partnerships

This project was completed through a research-practice partnership involving the WCPSS Office of School Choice, Planning, and Assignment; the WCPSS Data, Research, and Accountability Department; and Elon University. A research-practice partnership is a collaboration between researchers (e.g., university faculty) and practitioners (e.g., district central services personnel). Members of a partnership come together with their priorities and identify shared goals and address a problem of practice through engagement in a long-term, mutually beneficial relationship that results in the production of original research. The research allows practitioners to make data-driven, evidence-based decisions.

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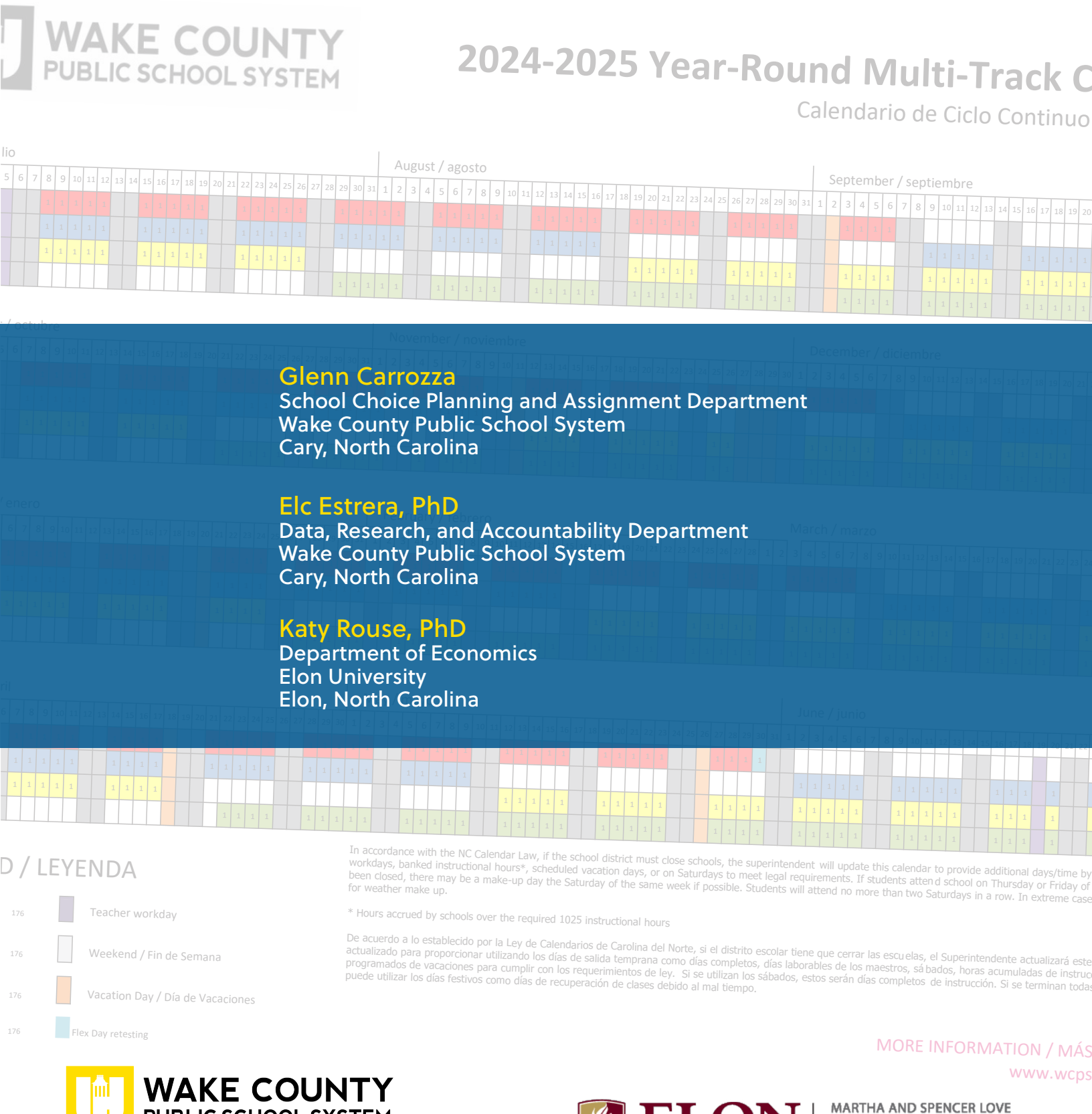

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