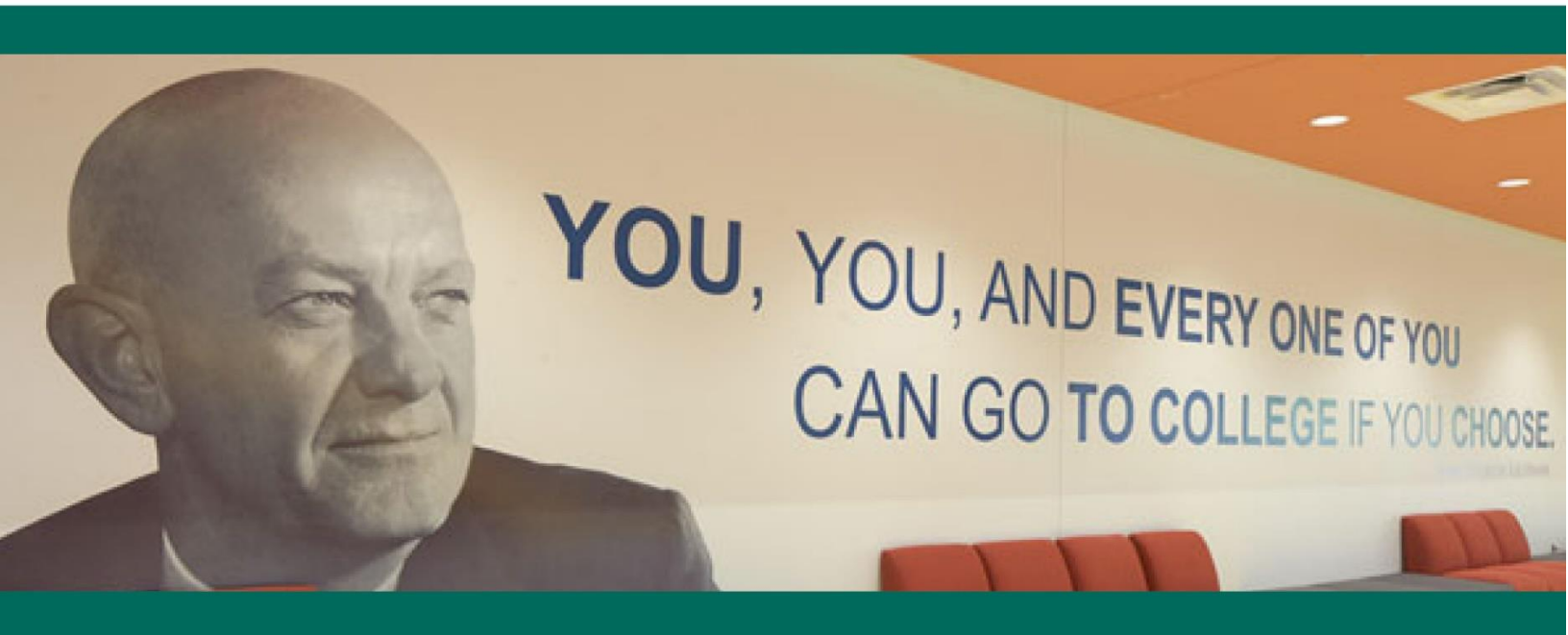


Ewing Marion Kauffman School Year 9 Impacts

November 2021



Matthew Johnson

Alicia Demers

Executive Summary

Ewing Marion Kauffman School

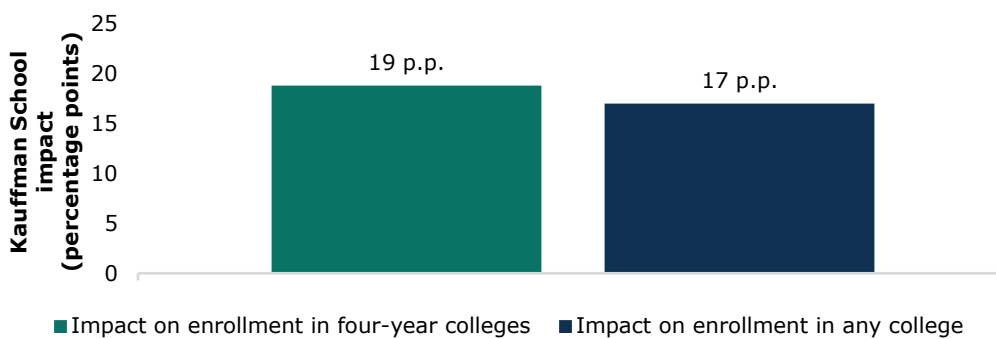
Year 9 Impacts



Key Findings

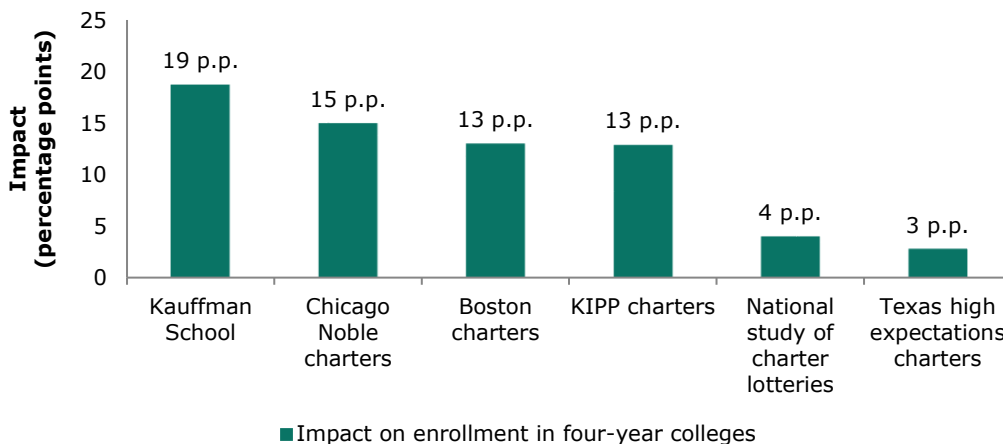
Substantial positive impacts on enrollment in four-year colleges. The Kauffman School has a positive and statistically significant impact on enrollment in four-year colleges, with Kauffman students 19 percentage points more likely to enroll in a four-year college than if they had attended another Kansas City public district or charter school (Figure ES.1). The magnitude of the Kauffman School’s impact on enrollment in four-year colleges is substantial; it is large enough to close the gap in rates of enrollment in four-year colleges for Black high school seniors in Missouri.

Figure ES.1. The Kauffman School has a substantial positive impact on enrollment in four-year colleges



Impact on enrollment in four-year colleges compares favorably to those found in studies of other high-performing charter schools. The Kauffman School’s impact on enrollment in four-year colleges is between 4 and 6 percentage points larger than the average effects observed for other successful charter schools such as those in Chicago, Boston, or the KIPP network (Figure ES.2; citations included in full report. Note that some *individual* schools in those studies may have achieved higher impacts than the Kauffman School).

Figure ES.2. The Kauffman School’s impact on enrollment in four-year colleges compares favorably to those found in studies of other high-performing charter schools



EVALUATION NOTES

The Kauffman School is a public, tuition-free charter school serving Kansas City students. In the 2019–20 school year, the school enrolled 1,186 students in grades 5 through 12. Most (88 percent) of the students were low income, and 89 percent were Black or Hispanic. This report discusses the impact of the Kauffman School on college enrollment, high school graduation, attendance, and suspensions.

DATA

Data are from the Missouri Department of Elementary and Secondary Education and the Kauffman School. The data include college enrollment and high school graduation outcomes, information on attendance and suspensions, demographic characteristics of the students, and scores on the Missouri Assessment Program (in the years before 2019–20, when testing was canceled due to the COVID-19 pandemic).

METHODS

To measure the impact of the Kauffman School on its students, we identified a group of students in other Kansas City district and charter schools who had similar demographic characteristics and achievement at the end of 4th grade. We compared outcomes for those students to the outcomes of Kauffman students in 5th grade through high school graduation and enrollment in college.

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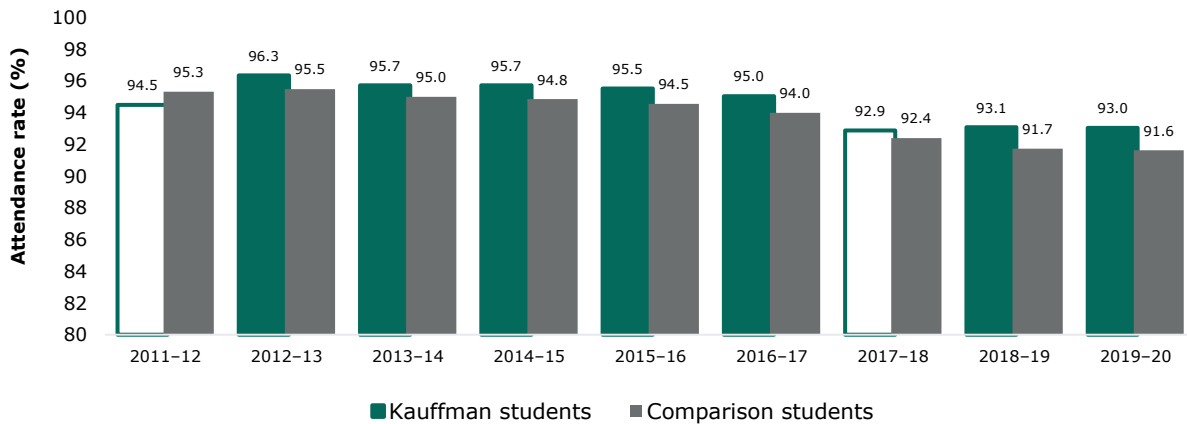


Mathematica

Eighty percent of Kauffman School graduates enrolled in a four-year college. One of the goals stated in the Kauffman School’s charter is that at least 75 percent of graduating seniors attend a four-year college. The Kauffman School achieved this goal for its first two cohorts of students, with 80 percent of graduating seniors enrolling in a four-year college.

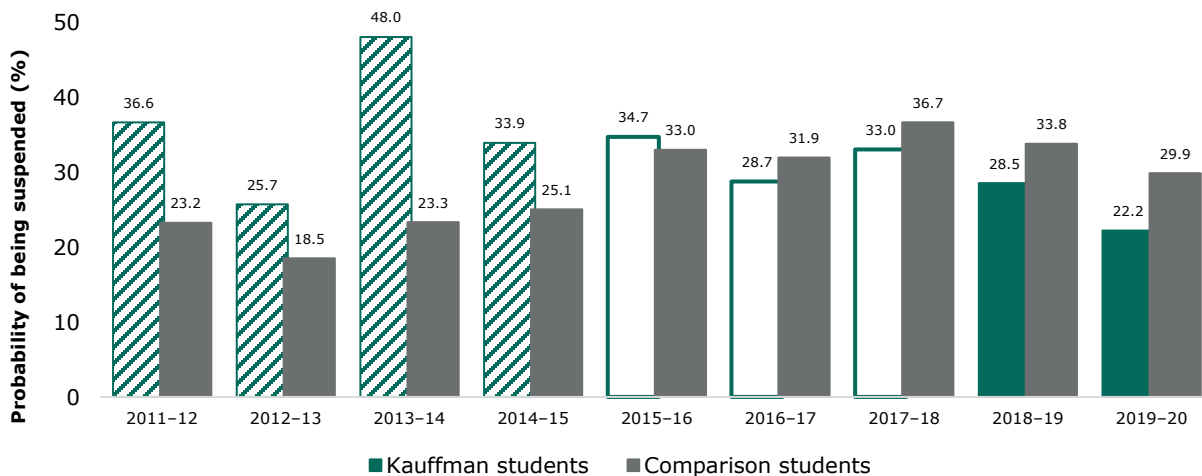
Positive impact on attendance. During the 2019–20 school year, the average attendance rate of Kauffman students was 93 percent, which was significantly higher than the attendance rate of comparison students, at 92 percent (Figure ES.3; note: solid green bars indicate a positive and significant impact). This impact during 2019–20 is similar to the impact in prior years.

Figure ES.3. The Kauffman School had a significant positive impact on student attendance during 2019–20



Reduced suspensions. The 2019–20 school year marked the second consecutive year that Kauffman students were suspended at significantly lower rates than comparison students. During 2019–20, 22 percent of Kauffman students received one or more suspensions, which was significantly lower than the 30 percent suspension rate for comparison students (Figure ES.4; note: solid green bars indicate a significant impact in reducing suspensions; dashed green bars indicate significantly higher suspension rates). The impacts over the last two years differ from prior years, when the Kauffman School had either similar or significantly higher suspension rates than comparison students.

Figure ES.4. Kauffman students had lower overall suspension rates than comparison students during 2019–20



Impacts on student achievement could not be measured in 2019–20. Due to the COVID-19 pandemic, the Missouri Assessment Program was canceled in spring 2020. Although test scores are not evaluated in this report, previous reports showed that the Kauffman School had substantial positive impacts on student achievement in prior years (Johnson and Thal 2020).

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I. BACKGROUND ABOUT THE KAUFFMAN SCHOOL

The Kauffman School enrolled its first class of 5th-graders in fall 2011. Each year, the Kauffman School added a grade, and it is now serving a fully enrolled middle school and high school. In the 2019–20 school year, the Kauffman School enrolled 1,186 students in grades 5 through 12; 88 percent of the students were low income, and 89 percent were Black or Hispanic. See Appendix A for additional background about the Kauffman School.

During March 2020, the Kauffman School switched to virtual instruction due to the COVID-19 pandemic, as did all schools in Missouri. Because attendance and suspension data were not tracked during the fourth quarter of 2019–20, the results in this report are based on the first three quarters of that year. No impacts on academic achievement for 2019–20 are included in this report because the Missouri Assessment Program tests were canceled in spring 2020.

THE HALLMARKS OF THE KAUFFMAN SCHOOL INCLUDE THE FOLLOWING:

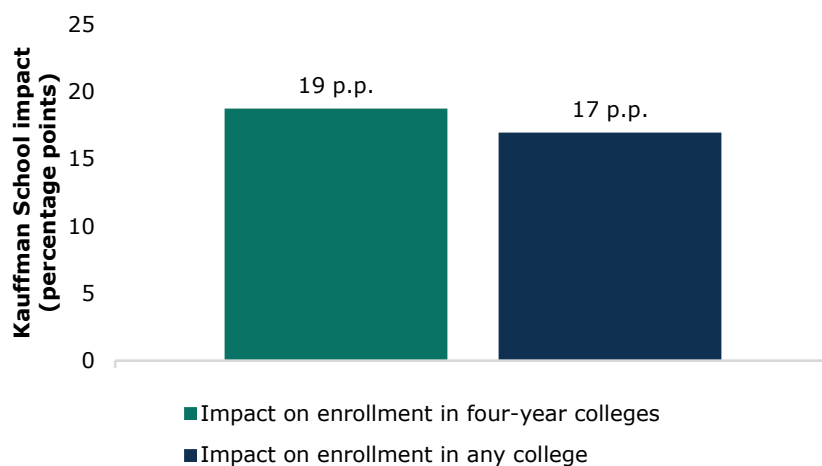
- 1. Ambitious academic goals.** The Kauffman School expects its students to excel academically and achieve at least 1.25 years of growth in mathematics, science, and reading each year.
- 2. High attendance and character expectations.** The Kauffman School has high goals for student attendance (95 percent average daily attendance) and character (good citizenship, full observance of school policies and procedures).
- 3. Extended school year.** Kauffman students receive approximately one and a half more weeks of schooling each year than do students in traditional public schools in Kansas City.
- 4. Increased mathematics and reading instructional time.** Each day, Kauffman students take a double period of mathematics and two to three periods of English language arts (ELA).
- 5. Intensive data-driven decision making.** With its strong emphasis on results, the Kauffman School uses a large assessment portfolio to help teachers and administrators make data-driven decisions about how best to adapt instruction to meet students' needs.
- 6. Extensive professional development for teachers.** Teachers at the Kauffman School participate in (1) a multiweek professional development program focused on curriculum, instruction, and school culture each summer preceding the start of the school year; (2) observations and feedback from administrators several times per week; (3) weekly individual coaching sessions; and (4) group-based professional development sessions every Friday afternoon, focused on various topics related to curriculum, instruction, and assessment (Gentile et al. 2014).
- 7. Well-established cultural norms.** School administrators noted that "the Kauffman School takes an intentional approach to establishing a culture of shared values that affirm student identity, develop conscious citizens, and maintain high expectations, all in pursuit of its mission: Creating College Graduates" (personal communication, April 12, 2017). The Kauffman School makes continual efforts to communicate explicitly—to all school staff, students, and families—the school's values, expectations, and norms.

II. THE KAUFFMAN SCHOOL HAS A POSITIVE IMPACT ON RATES OF ENROLLMENT IN FOUR-YEAR COLLEGES

A. Impact on college enrollment

The Kauffman School has a substantial positive impact on enrollment in four-year colleges. Students from the first two cohorts who enrolled in the Kauffman School in 5th grade were 19 percentage points more likely to enroll in a four-year college within six months of their expected high school graduation date than if they had enrolled in another Kansas City school (Figure II.1). The impact of the Kauffman School on the chance of enrolling in any college (two-year or four-year) was 17 percentage points.

Figure II.1 The Kauffman School has a substantial positive impact on enrollment in four-year colleges



Notes: The impacts on enrollment in four-year colleges and enrollment in any college are significant at the 0.01 level.

The magnitude of the impact on enrollment in four-year colleges is substantial. The gap in rates of enrollment in four-year colleges in Missouri for Black high school seniors is 12 percentage points, meaning that the Kauffman School's impact is large enough to close this gap.¹

DATA

Data are from the Missouri Department of Elementary and Secondary Education and the Kauffman School. College enrollment data are from the six-month graduate follow-up file that all Missouri districts are required to submit to the state. See Appendix B.2 for additional details.

METHODS

To measure the impact of the Kauffman School on high school graduation and college enrollment, we identified a group of students in other Kansas City district and charter schools who had similar demographic characteristics and achievement at the end of 4th grade. We compared the high school graduation and college enrollment outcomes of these two groups of students eight years later, after they were expected to graduate from high school. Any student who was enrolled for at least part of his or her 5th-grade year in the Kauffman School is classified as a Kauffman student, even if the student subsequently left the Kauffman School. See Appendix C for more details.

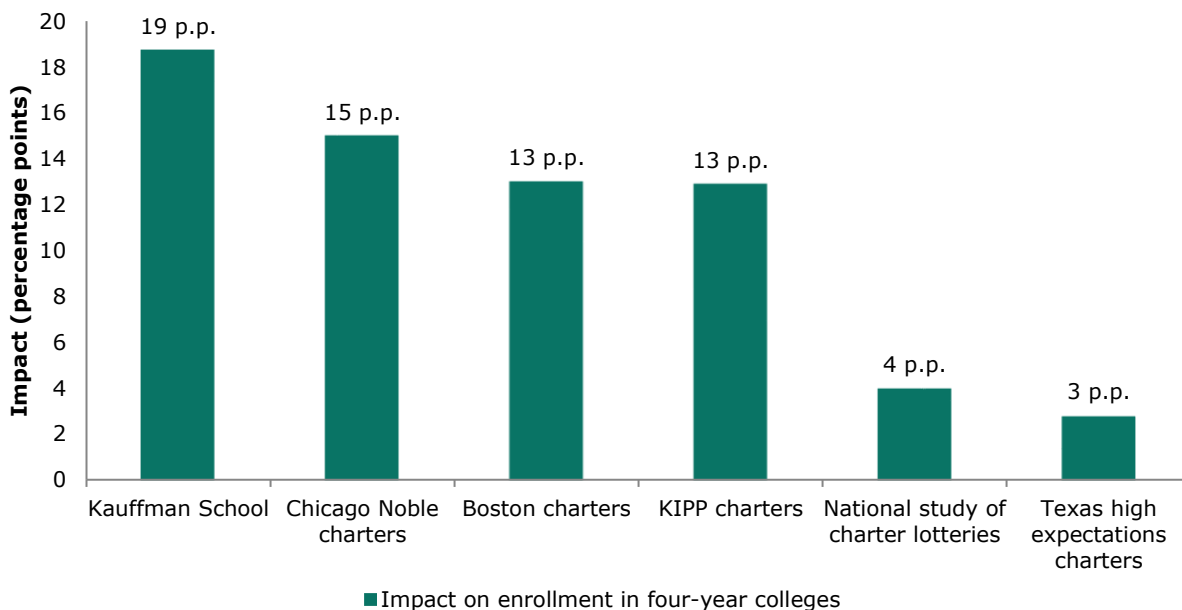
This section presents average impacts across the first two cohorts of Kauffman students. See Appendix E for impacts reported separately by cohort.

¹ We calculated the gap in enrollment in four-year colleges for Black students in Missouri as the difference in the rate of enrollment in four-year colleges among 12th-grade students in 2020 between Black students and other (non-Black and non-Hispanic) students. The data we receive from the Missouri Department of Elementary and Secondary Education only contain three race/ethnicity categories: Black, Hispanic, and other. This practice limits the amount of data that needs to be redacted to adhere to the department's data security policies (see Appendix B.2).

The Kauffman School is outperforming other charter schools in Kansas City. In our main results, the comparison group for Kauffman students consists of similar students in district and charter schools in Kansas City. Analyses comparing the Kauffman School to these two groups of schools separately show impacts on enrollment in four-year colleges that are 19 percentage points when compared to other charter schools in Kansas City and 20 percentage points when compared to district-operated (non-charter) schools in Kansas City (Appendix Table A.5).

The Kauffman School’s impact on enrollment in four-year colleges compares favorably to the average impacts found in studies of other high-performing charter schools (Figure II.2). The Kauffman School’s impact on enrollment in four-year colleges is between 4 and 6 percentage points larger than the average Chicago Noble charter school analyzed by Davis and Heller (2019), the average Boston charter school studied by Angrist et al. (2016), and the average KIPP middle school analyzed by Coen et al. (2019). (Note that some *individual* schools in those groups that were studied may have achieved higher impacts than the Kauffman School.) The Kauffman School’s impact is substantially larger than the average school included in a national study of charter lotteries (Place and Gleason 2019), and also larger than charter schools in Texas that have higher behavioral expectations and are more likely to have an extended school day and year than other charter schools (Dobbie and Fryer 2020).

Figure II.2. The Kauffman School’s impact on enrollment in four-year colleges compares favorably to those found in studies of other high-performing charter schools



Eighty percent of Kauffman School graduates enrolled in a four-year college. One of the goals stated in the Kauffman School’s charter is that at least 75 percent of graduating seniors attend a four-year college. The Kauffman School achieved this goal, with 80 percent of graduating seniors in the first two cohorts enrolling in a four-year college.² In the first cohort of Kauffman students, 79 percent of graduating seniors enrolled in a four-year college; in the second cohort of Kauffman students, 81 percent of graduating seniors enrolled in a four-year college.

The Kauffman School achieved its goal for enrollment in four-year colleges, with 80 percent of graduating seniors attending a four-year college.

B. Impact on high school graduation

The Kauffman School did not have a significant impact on high school graduation rates for its first two cohorts. We estimate impacts on high school graduation by comparing the graduation outcomes of students who enrolled in the Kauffman School in 5th grade with similar comparison students in Kansas City eight years later, when these students were expected to graduate from high school. There were no significant differences between the graduation rates of these Kauffman and comparison students. See Appendix D.1 for additional details.

This result may appear to conflict with Missouri state accountability reports, which show that the Kauffman School had a 100 percent adjusted-cohort graduation rate in 2018–19 and an 88 percent adjusted-cohort graduation rate in 2019–20.³ The Missouri accountability formula calculates the graduation rate among all students who enrolled as first-time 9th-graders in the Kauffman School and excludes students who transferred to another school. In contrast, for the impact analysis we calculate the graduation rate among all students who first enrolled as 5th-graders in the Kauffman School, including students who subsequently transferred to other schools in Missouri. When students who transferred out are included in the calculation, the Kauffman School’s graduation rate for the first two cohorts of students is 84 percent, which is not significantly different from that of comparison students in Kansas City.

Counting students who transferred out of the Kauffman School as Kauffman students for the purposes of the impact analysis defuses the potential criticism that the Kauffman School’s effects are overestimated because low-achieving students have left the charter school. The impacts we present can be interpreted as the effect of enrolling in the Kauffman School, accounting for the chance that a student might transfer out of the school. Appendix C.2 provides additional details.

² Because the Kauffman School’s college enrollment goal is for students who *graduate* from the Kauffman School, the college enrollment rate is based on students who remained enrolled in the Kauffman School through the end of 12th grade. This is different from the sample used to calculate the impact of the Kauffman School on enrollment in four-year colleges, which includes all students who enrolled in the Kauffman School in 5th grade regardless of whether they eventually transferred out of the school.

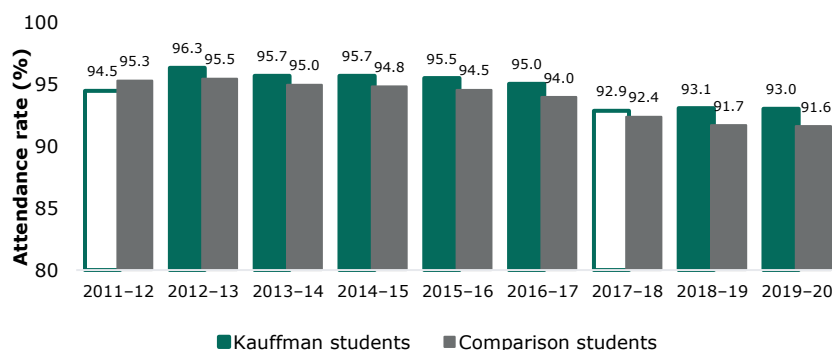
³ See the District Adjusted Cohort Graduation Rate report here: <https://apps.dese.mo.gov/MCDS/FileDownloadWebHandler.ashx?filename=cfe1a5d1-8b6aDistrict%20Adjusted%20Cohort%20Graduation%20Rate.xls>

III. THE KAUFFMAN SCHOOL HAD A POSITIVE IMPACT ON STUDENT ATTENDANCE AND REDUCED SUSPENSIONS IN 2019–20

A. Impacts on attendance and suspensions

The Kauffman School had a significant positive impact on student attendance rates in 2019–20. As shown in the last set of columns in Figure III.1, the average attendance rate of Kauffman students during 2019–20 was 93 percent, which was significantly higher than the attendance rate of comparison students, at 92 percent.⁴ This year’s impact is similar to the impact in prior years.

Figure III.1. The Kauffman School had a significant positive impact on student attendance during 2019–20



Note: Solid green bars indicate that the impact of the Kauffman School is statistically significant at the 0.05 level.

Kauffman students were suspended at rates significantly lower than comparison students in 2019–20 (Figure III.2).⁵

This is the second consecutive academic year in which the Kauffman School had a significant impact in reducing suspensions relative to comparison schools. In 2019–20, 22 percent of Kauffman students were suspended, which was significantly lower than the 30 percent suspension rate for comparison students. The

The 2019–20 school year marked the second consecutive year that Kauffman students were suspended at significantly lower rates than comparison students.

DATA

Attendance and suspension data for 2019–20 are from the first three quarters of the school year before remote schooling in Kansas City began in March 2020.

METHODS

We analyzed the attendance and suspension outcomes separately by year to highlight differences that may arise over time.

For the primary suspension analysis, we combined in-school and out-of-school suspension data into one variable, indicating whether a student received either type of suspension. Our aim in combining these data was to create a variable that would be as comparable as possible across schools, given that different schools have different standards for the types of disciplinary infractions that warrant in-school and out-of-school suspensions. We also present separate results for in-school and out-of-school suspensions.

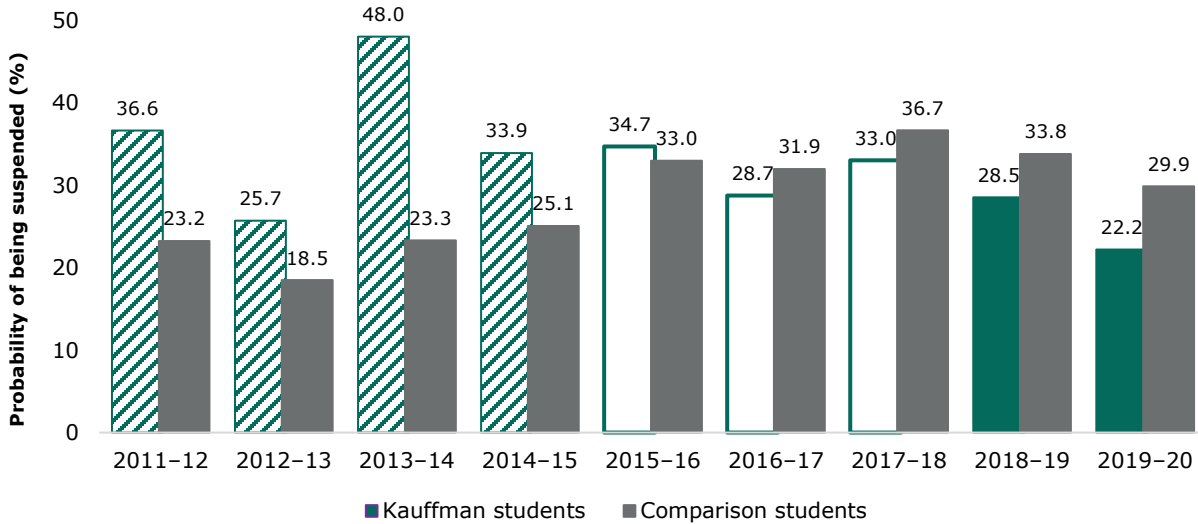
See Appendix B for details about how the variables were constructed. Appendix D contains the attendance and suspension impacts reported separately by grade level.

⁴ As noted previously, the Kauffman student group used to calculate impacts consists of all students who enrolled in the Kauffman School when they were in 5th grade, including students who transferred out of the Kauffman School in subsequent years. The attendance rate for students who remained enrolled in the Kauffman School in 2019–20 was 94.9 percent.

⁵ It is important to note that the analysis of suspensions cannot distinguish effects driven by differences in student behavior from effects driven by differences in the enforcement of school policies or reporting practices. For example, if Kauffman students were less likely than students in other schools to be suspended, that could reflect a lower frequency of infractions among Kauffman students, or it could indicate that the Kauffman School does not suspend students for behaviors that other Kansas City schools consider to be infractions.

measure in Figure III.2 combines both in-school and out-of-school suspensions and represents the percentage of students receiving at least one suspension of either type.

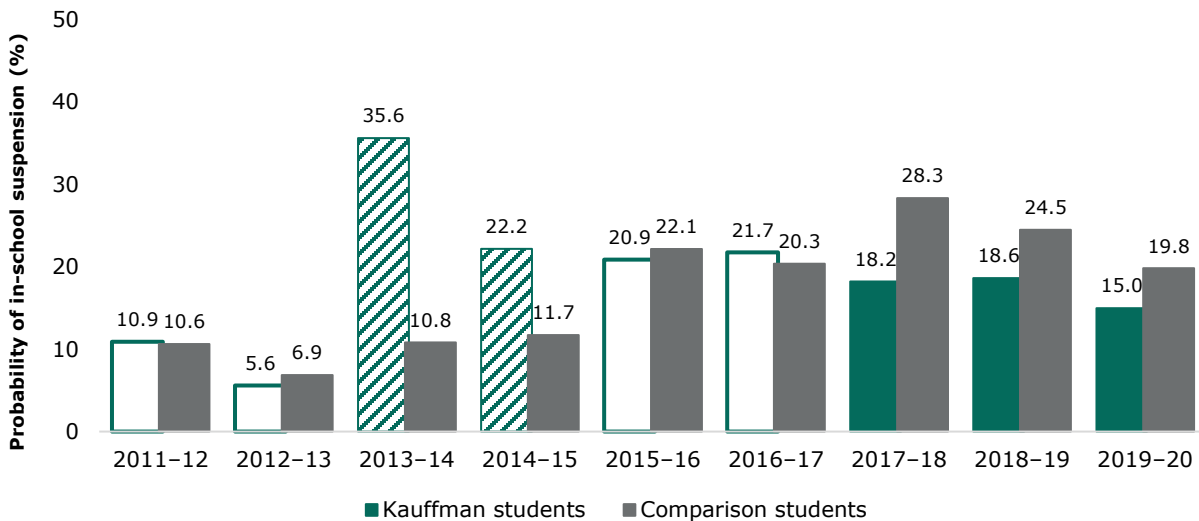
Figure III.2. Kauffman students had lower overall suspension rates than comparison students during 2019–20



Note: Dashed green bars indicate that the Kauffman School had a significant impact in increasing suspensions (p -value < 0.05). Solid green bars indicate that the Kauffman School had a significant impact in reducing suspensions.

We also measured the impact of the Kauffman School separately for in-school and out-of-school suspensions. Kauffman students were approximately 5 percentage points less likely to receive an in-school suspension relative to comparison students (Figure III.3).

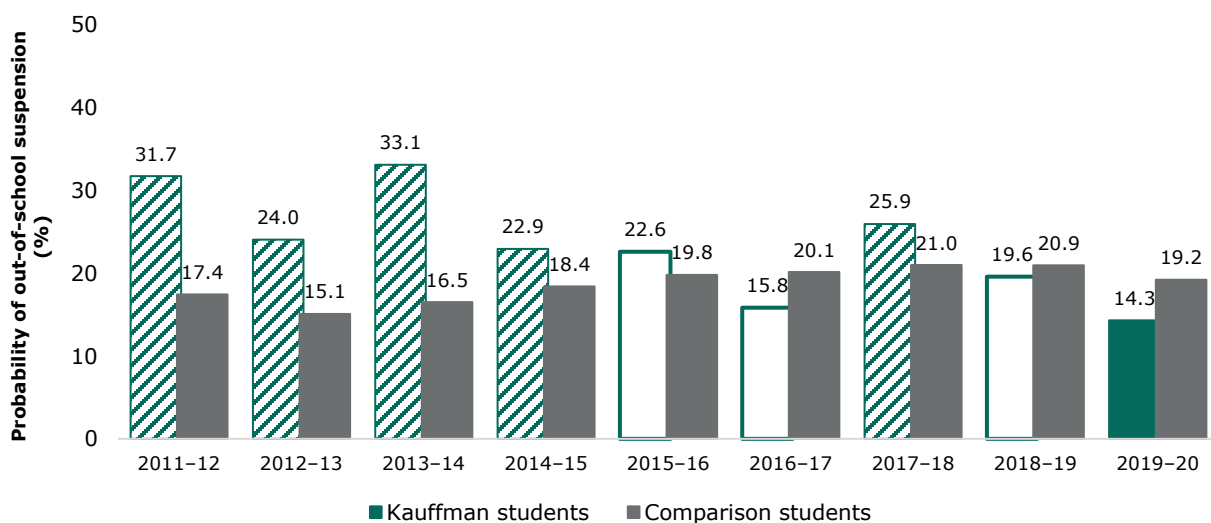
Figure III.3. Kauffman students had significantly lower rates of in-school suspensions than comparison students during 2019–20



Note: Dashed green bars indicate that the Kauffman School had a significant impact in increasing suspensions (p -value < 0.05). Solid green bars indicate that the Kauffman School had a significant impact in reducing suspensions.

Similarly, Kauffman students were approximately 5 percentage points less likely to receive an out-of-school suspension relative to comparison students (Figure III.4). This represents a departure from historical trends, such that 2019–20 is the first academic year in which the Kauffman School had a significant impact in reducing out-of-school suspensions. This is encouraging, given that research has shown out-of-school suspensions can negatively impact student academic performance and high school graduation rates (Lacoe and Steinberg 2019; Sorenson et al. forthcoming).

Figure III.4. Kauffman students had significantly lower rates of out-of-school suspensions than comparison students during 2019–20



Note: Dashed green bars indicate that the Kauffman School had a significant impact in increasing suspensions (p -value < 0.05). Solid green bars indicate that the Kauffman School had a significant impact in reducing suspensions.

IV. CONCLUSIONS

The Kauffman School has ambitious academic goals for its students in support of its mission to create college graduates. The results from our analysis of college enrollment, attendance, and suspension data show that the Kauffman School is either achieving or making substantial progress toward these goals.

Positive impact on enrollment in four-year colleges. The Kauffman School had a statistically significant positive impact on four-year college attendance for its first two cohorts, increasing enrollment by 19 percentage points relative to comparison students. This effect is large enough to close the gap in enrollment in four-year colleges for Black high school seniors in Missouri. The Kauffman School also achieved its goal of 75 percent of graduating seniors attending a four-year college.

Impact on enrollment in four-year colleges compares favorably to the impacts of other charter schools. The Kauffman School's impact on enrollment in four-year colleges is significantly greater than the impact of other charter schools in Kansas City. The Kauffman School's impact on enrollment in four-year colleges is also between 4 and 6 percentage points larger than the average effects observed for other successful charter schools such as those in Chicago, Boston, or the KIPP network.

Attendance rates significantly higher than those of other Kansas City Schools. During the 2019–20 school year, the attendance rates of Kauffman students were significantly higher than those of comparison students, by approximately 1 percentage point. This effect is in line with the effect of the Kauffman School on attendance in previous years.

Suspensions lower than in other Kansas City schools. Overall rates of suspensions were significantly lower, by about 8 percentage points, for Kauffman School students than for comparison students. This is the second consecutive school year in which Kauffman students were suspended at significantly lower rates than comparison students.

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APPENDIX

A. Background about the Kauffman School

For many years, the Kauffman Foundation has focused on improving education for children in Kansas City. Before opening the Kauffman School, the Kauffman Foundation operated several programs that addressed challenges faced in urban education. Such programs included Project Early (an early childhood program), Project Choice (a high school dropout prevention program), and the Kauffman Scholars program (a college access and scholarship program). These programs led Foundation leaders to consider the Foundation’s possible impact on Kansas City’s students through the establishment of a charter school. In March 2009, the Foundation assembled a school design team composed of Foundation education experts and the founding executive director of the Missouri Charter Public School Association.⁶ The team undertook a three-step process of exploration and decision making before establishing the Kauffman School.

Step 1. Analyzing Kansas City’s educational landscape. The school design team learned from a review of Kansas City assessment data that, during the 2008–09 school year, charter school enrollment accounted for one-third of all public school enrollment in Kansas City (North 2009). The team also found that, among Kansas City’s charter and non-charter schools, only 16 percent of middle schools and 7 percent of high schools could claim that at least 50 percent of their students achieved proficient or better on statewide mathematics assessments in 2009 (Richardson 2009).

From the Foundation’s perspective, the data suggested that Kansas City’s charter and non-charter public schools were struggling to help students achieve, and families might desire alternatives to the city’s traditional public schools. In light of students’ low academic performance, the Foundation determined that 5th grade was the optimal grade for students to enter its charter school, providing ample time to prepare struggling students for a college preparatory program that would begin in 9th grade.

Step 2. Selecting a location. The Foundation intended that the Kauffman School serve Kansas City’s low-income families. From a review of demographic data on Kansas City, the school design team learned that most of the city’s low-income population lives in the eastern part of the city, yet most of the city’s 23 charter schools were located in the western section of the city. Thus, the Foundation selected a site in the eastern side of the city. Using data on household income by zip code, the design team identified five sections of the city with high concentrations of low-income families. Students living within these five (since expanded to six) zip codes are given first preference for enrollment.⁷

In August 2013, the Kauffman School moved to its permanent location. The campus encompasses three buildings: a middle school, a high school, and a gymnasium and cafeteria/commons area. Design elements of the new buildings reflect the Kauffman School’s key values and accommodate its core activities. For example, the new buildings have interior windows to facilitate classroom

⁶ The design team was composed of Kauffman Foundation associates, Kauffman Scholars program staff, and consultants from various schools and organizations (Ewing Marion Kauffman Foundation 2010).

⁷ The Kauffman School also offers bus transportation for students who live more than one mile away from the school, thereby providing access to students in need across the city. During the Kauffman School’s second year of operation, the Foundation identified an additional zip code with a high concentration of low-income students and offered first preference for enrollment to those students as well.

observations, a central feature of the Kauffman School’s professional development model. According to the Kauffman School’s website, the interior windows create “an environment that is transparent” and encourage “staff, faculty, parents, and visitors to observe classroom instruction as they walk through the building” (Ewing Marion Kauffman School 2017). The Kauffman School also features teacher workrooms and community spaces for small- and large-group meetings, such as the weekly professional development meetings and community events.

Step 3. Identifying best practices. Before the school opened, the design team made extensive efforts to learn about the best practices of successful charter schools, a process the team described as the “year of learning.” The team reviewed research on charter schools and visited successful charter schools in New York, Massachusetts, Illinois, and Wisconsin to learn more about the variables that contributed to the success of those schools.

The Kauffman School enrolled its first class of 5th-graders (about 100 students) in fall 2011 and added a second class of 5th-graders (about 100 students) in fall 2012. In fall 2013, a third class of 5th-graders joined the Kauffman School (about 200 students). With the opening of its new campus, the Kauffman School had sufficient capacity to double the size of the cohort entering in 2013. Each year since then, the Kauffman School has continued to add a new 5th-grade class of more than 200 students, and graduated its first class of high school seniors in spring 2019.

B. Data preparation details

In this section, we provide details about the data used in our main analysis of the impact of the Kauffman School on student outcomes. We also present a set of descriptive statistics to show how Kauffman students compare to students in other public schools in Kansas City with respect to prior achievement and demographic characteristics.

1. Test score and student characteristic data

The Missouri Department of Elementary and Secondary Education (DESE) provided data on the results from its state assessment and on student characteristics for all students enrolled in Missouri public schools from 2007–08 through 2019–20. The state assessment data include the Missouri Assessment Program (MAP), proficiency levels, and information on test accommodations for each student by year, grade level, and content area. The data on student characteristics include information on demographic characteristics, free or reduced-price lunch status, limited English proficiency, disability, attendance, and disciplinary information for each student by year and school in which they were enrolled. School-level characteristics such as charter school classification and location are also included. Except for data redacted by DESE, the data include student-level data for all Missouri students. In the next section, we provide details about DESE’s data redacting process.

To link the state assessment and student characteristics data, we reduced both to the student level. From the assessment data, we removed records in which students had more than one unique subject-specific MAP score reported in a given year. From the characteristics data, we first removed all records with zero or missing reported attendance and then summed attendance and disciplinary variables across each student’s school-specific records to calculate student-year totals. We then

reduced the data to the student level, so that all year-specific attendance and/or disciplinary information was preserved in separate variables. Demographic information, free or reduced-price lunch status, limited English proficiency, and disability information were taken from the student's 4th-grade record, if available; from the next closest earlier grade if the 4th-grade record was not available; and from the 5th-grade record if no information from kindergarten through 4th grade was available.⁸ Students not found in both the assessment and the characteristics data files were dropped from the analysis.

To facilitate the analyses, we created several new variables using these data. We transformed student MAP scaled scores into z -scores based on statewide year-, grade-, and subject-specific means and standard deviations.⁹ We also used information on enrollment and absences to create a measure of the attendance rate that we bottom-coded at the year-specific first percentile to remove extreme outliers. We used disciplinary information to create yearly indicators of whether students were suspended that year.¹⁰ We then collapsed subject-specific 3rd- and 4th-grade MAP z -scores into grade-specific variables by taking each student's most recent score (by year) within the grade level for students who repeated 3rd or 4th grade. We created a single binary test accommodation indicator to represent having test accommodations on any 3rd- or 4th-grade MAP test.

For many students, data on one or more of the variables used as baseline controls are missing. About 15 percent of the students we could potentially include in our analysis sample are missing data on one or more of the baseline control variables. Instead of dropping them from the analysis, we used a multiple imputation procedure to estimate their missing baseline values (see the next section, "Methods," for details). As a robustness check, we analyzed the data without using imputation and found similar results. (Results are available upon request.)

2. High school graduation and college enrollment data

High school graduation data are provided by DESE and based on students still enrolled in public schools in Missouri during the 2019–20 school year. Because we cannot distinguish between students who transferred to an out-of-state school, students who are missing from the data due to DESE's redacting process, and students who dropped out of school before 2019–20, students who are not present in the 2019–20 school year are excluded from our high school graduation and college enrollment analyses.

⁸ Starting with Cohort V Kauffman and comparison students, all information about free lunch status comes from earlier than 4th grade. This is because starting in 2014–15, Kansas City Public Schools participated in the Community Eligibility Provision meal service option, and free or reduced-price lunch status was not tracked in subsequent years. Because some Kansas City students may have transferred into the district after tracking of free or reduced-price lunch status ended, for most cohorts of students we impute missing information on free lunch status in cases where it is not available in any earlier grade. However, starting with Cohort IX 5th-grade students, we excluded the free or reduced-price lunch variable from the analysis, rather than imputing missing data, because almost all of the comparison students enrolled in Kansas City Public Schools for the first time after the district stopped tracking lunch status information.

⁹ DESE sent us separate non-redacted but completely de-identified data that we used to calculate the statewide means and standard deviations.

¹⁰ We used 4th-grade attendance and suspensions as control variables in all analyses. If 4th-grade information on these variables was missing, 3rd-grade values were used instead.

College enrollment data are based on DESE’s six-month student graduate follow-up file.¹¹ These data track the status of each high school graduate six months after graduation. DESE’s data collection process starts with a query to the StudentTracker service from the National Student Clearinghouse (NSC) to identify graduates enrolled in an NSC-participating college (approximately 97 percent of college students nationwide and 96 percent in Missouri).¹² These data are then sent to the districts from which the student graduated, and they are given the opportunity to update the follow-up status based on information they have about their graduates.¹³

As a quality check for these data, we submitted a separate data request to the NSC for the college enrollment history of Kauffman students, using name and date-of-birth information obtained from the Kauffman School. We then compared each student’s status—attendance at a four-year college, attendance at a two-year college, or not attending college—between that data request and the reported six-month follow-up data obtained from the Kauffman School for the same Kauffman students.

Of the 75 students we sent to the NSC for matching across the first two cohorts of Kauffman School graduates, 5 students did not appear in the NSC data but appeared in the six-month follow-up report as attending a four-year college. In addition, one student was classified as enrolled in a two-year college in the NSC data but was enrolled in a four-year college based on the six-month follow-up file. These discrepancies may result from the Kauffman School being able to capture additional information through direct follow-up with students who are missing from the NSC data due to administrative data issues that cause a student not to match NSC records (for example, typos in student name or date of birth, gaps in NSC coverage, or students opting out of having their data released by the NSC). If other schools in Kansas City are equally as good at tracking the status of their high school graduates as the Kauffman School is, then discrepancies between the six-month graduate follow-up file and the NSC data would not have an effect on the college enrollment impact estimates in this report. However, if the Kauffman School does a better job of tracking the status of its graduates, these discrepancies could lead to an upward bias in the impact estimates.

3. DESE’s data redacting process

Starting with data requests filled in 2016, DESE began redacting observations in which some combination of student demographic or proficiency information could identify a group with fewer than five students in a particular grade and school district. The new redacting policy led to the removal of between 10 and 30 Kauffman students from each cohort. DESE removed a larger proportion of students from the first two cohorts because the starting sample in 5th grade was only about 100 students for Cohorts I and II, whereas later cohorts had more than 200 students.

¹¹ For most analyses, we use the six-month follow-up file we received from DESE that includes all high school graduates in Missouri except for students who were removed through DESE’s data redacting process. To calculate the rate of enrollment in four-year colleges for Kauffman School graduates, we used a non-redacted version of the six-month follow-up file that we received from the Kauffman School, which included only Kauffman students.

¹² NSC coverage rates are fall 2019 rates for all Title IV degree-granting institutions, from the NSC’s Enrollment Coverage Workbook, available at https://nscresearchcenter.org/wp-content/uploads/NSC_COVERAGE.xlsx

¹³ Valid statuses include attending a four-year college, attending a two-year college, attending some other postsecondary school, competitively employed, otherwise employed, in the military, other status, and unknown.

4. *Sample selection*

The main results in this report are based on a matched comparison group selected from all students attending schools within the borders of the Kansas City Public School system, including other charter schools. The impact estimates can therefore be interpreted in terms of how much more or less likely a Kansas City student would be to graduate from high school on time and enroll in college if that student were to enroll in the Kauffman School rather than in a typical Kansas City school. However, given the considerable number of charter schools serving students in the Kansas City area, a comparison of the Kauffman School’s impacts on student outcomes to those of other Kansas City charter schools might also be of interest. Thus, we report our results in three ways. We use comparison groups of students from (1) all public schools in Kansas City (the primary impact estimates), (2) district-operated (non-charter) Kansas City Public Schools only, and (3) other charter schools within Kansas City only.

The *Kauffman School group* is composed of students who were enrolled in the Kauffman School in 5th grade in any year from 2011–12 through 2019–20 for at least part of the school year.¹⁴ The *Kansas City district schools* comparison group is composed of students who were enrolled in the Kansas City Public Schools district in 5th grade in our analysis years, during at least part of the school year, and who were not included in the Kauffman School group. The *Kansas City charter schools* comparison group includes only those students who were enrolled in 5th grade for all or part of the school year in a Kansas City charter school other than the Kauffman School. The *all Kansas City public schools* comparison group includes all students in either of the two comparison groups.

In addition to these sample restrictions, we excluded Kauffman and comparison students who were missing any outcome test scores, attendance, or suspension measures and any students who were missing all 3rd- and 4th-grade MAP test scores.¹⁵

6. *Descriptive statistics: What types of students attend the Kauffman School?*

The baseline average characteristics of all students in the Kauffman School for the most recent cohort (Cohort IX) and other students in Kansas City are shown in Table A.1.¹⁶ Kauffman students differed significantly from students enrolled in Kansas City public schools on several baseline measures.¹⁷ For example, Kauffman students were more likely to be Black, less likely to be Hispanic, and less likely to be English language learners than students in other Kansas City schools.

¹⁴ In 2014–15, the Kauffman School began accepting new students in grades 6 and higher who were not previously enrolled in the school in 5th grade, such that approximately 4 percent of students in these grades were backfilled. Backfilled students were excluded from our analysis because the amount of time they spent at the Kauffman School is not comparable to that of other students in the same grade. Some 5th-grade students were also enrolled in the school midyear. These students were included in the analysis because they spent part of their 5th-grade year at the Kauffman School.

¹⁵ Students who transfer to different school districts in Missouri will generally remain in our sample, but students who leave the state will be excluded because their test scores, attendance, and suspension outcome measures will be missing.

¹⁶ See Johnson and Thal (2020) for baseline characteristics of students from the previous cohort.

¹⁷ Characteristics for which there are a small percentage of Kauffman students in our sample (e.g., English language learner) may not be representative of the Kauffman School overall because of DESE’s data redacting policy. See Johnson et al. (2016) for baseline characteristics of earlier cohorts of Kauffman students before the redacting policy was enacted.

Table A.1. Baseline 4th-grade average characteristics of Kauffman students and other Kansas City public school students: Cohort IX 5th-graders

	Kauffman School	All Kansas City public schools	Kansas City district schools	Kansas City charter schools
4th-grade mathematics scaled score	351	354	348	363**
4th-grade ELA scaled score	359	362	357	369**
Black	0.90	0.56**	0.54**	0.59**
Hispanic	0.05	0.28**	0.29**	0.26**
English language learner	0.04	0.29**	0.31**	0.25**
Male	0.52	0.51	0.53	0.48
Disabled	0.11	0.11	0.14	0.06*
Any baseline test accommodation	0.03	0.06*	0.08**	0.03
4th-grade attendance rate	0.93	0.94*	0.94	0.94*
4th-grade ever suspended	0.18	0.14	0.13	0.17
Sample size	200	1,778	1,054	742

Note: There is no row for free or reduced-price lunch status in the table because comparison students in this cohort first enrolled in Kansas City public schools after the district stopped collecting information on lunch status.

*Significantly different from Kauffman students at the 5 percent level.

**Significantly different from Kauffman students at the 1 percent level.

C. Methods

In this section, we provide details about our analysis methodology, including information about our propensity-score matching and imputation procedures.

1. Comparing Kauffman students to students from other Kansas City schools

Given that all Kauffman students have chosen to enroll in the Kauffman School, they might differ from other Kansas City students in important ways. Therefore, any effort to measure the effect of the Kauffman School on student achievement requires the identification of a comparison group of Kansas City students who, as of 4th grade (before the Kauffman School's 5th-grade entry year), are similar to the students about to enter the Kauffman School. Otherwise, any differences we find in later student outcomes might not be attributable to the effect of the Kauffman School.

To guarantee that the comparison group is similar, the gold standard research design would require a lottery in which some of the students who apply to the Kauffman School are randomly selected to attend the school and others are randomly denied acceptance to the school. We would then fairly compare the achievement of the two randomly established groups, and assume that any naturally occurring differences among students would be randomly distributed between the two groups. However, the Kauffman School has not been oversubscribed enough to turn away large numbers of

applicants; therefore, we cannot adopt this research design. Instead, we turned to the next best approach. We used data from students across Kansas City to identify a matched comparison group of students who were similar to Kauffman students in the 4th grade, immediately before Kauffman students enrolled in the school.

To construct a comparison group of students, we implemented a propensity-score matching procedure. We matched students attending other schools in Kansas City to Kauffman students based on characteristics including prior test scores, prior attendance, prior suspensions, and demographic characteristics. This approach is a commonly used alternative when random assignment is not possible. In fact, research has shown that the propensity-score matching procedure can produce valid impact estimates that replicate the results of experimental research designs in the context of charter school evaluation (Tuttle et al. 2013; Gill et al. 2015).

2. Constituting the Kauffman student group

Throughout our analysis, we classify any student who was enrolled for at least part of his or her 5th-grade year in the Kauffman School as a Kauffman student. Classifying students in this manner defuses the potential criticism that the Kauffman School's effects are overestimated because low-achieving students have left the charter school. However, the inclusion of these students might lead to understatement of the impact of the Kauffman School on student achievement, as students who left the Kauffman School early would not have experienced its full impact. This conservative analytic approach eliminates the risk of overestimating the impact, but it means that the full impact on students who continue in the Kauffman School for additional years is likely to be underestimated.

Data for our analysis were available for nine cohorts of Kauffman students. Cohort I students are those who entered the Kauffman School as 5th-graders in 2011–12 (the year the Kauffman School opened). Each subsequent cohort entered the Kauffman School during the following year, and the most recent cohort of students (Cohort IX) entered in 2019–20.

The high school graduation and college enrollment reflect the average effect of the Kauffman School across all cohorts with available data. For example, the college enrollment impacts are the average of the Kauffman School's estimated impact on the first two cohorts of students enrolling in the Kauffman School.

3. Multiple imputation methodology

We calculated impact estimates by using a multiple imputation procedure with $M = 10$ imputed data sets. We imputed missing baseline outcome variable values separately by treatment or comparison status by using a chained linear equations model that included all outcome variables and all student characteristic variables in the final impact regressions. Results that exclude imputed data and limit the sample to students for whom all data were nonmissing are available upon request.

Students were excluded from the imputation model if they had missing data for all 3rd- or 4th-grade MAP test scores or missing data for any outcomes. Missing values were imputed before both propensity-score matching and regression analyses in each multiple imputation data set.

After collecting coefficient and standard error estimates from each of the 10 imputed data sets, we computed multiple imputation coefficients and standard errors by using Rubin’s combination method (Rubin 1987). The multiple imputation beta (β_M) coefficient is the average of the beta coefficient values in each imputed data set (β_m); the multiple imputation standard error is the square root of the within-imputation coefficient variance (Var_W) plus the between-imputation coefficient variance (Var_B) inflated by a finite imputation correction multiplier:

$$(1) SE_M = \sqrt{Var_W + \left(1 + \frac{1}{M}\right) Var_B} = \sqrt{\left(\frac{\sum_{m=1}^M Var_m}{M}\right) + \left(1 + \frac{1}{M}\right) \left(\frac{\sum_{m=1}^M (\beta_m - \beta_M)^2}{M - 1}\right)}$$

4. Propensity-score matching methodology

We estimated a propensity score for each eligible treatment and comparison student in each multiple imputation data set using a stepwise logistic regression model. We used an entry criterion of ($p < .20$) to determine whether each variable would enter the final logistic regression model. (See Table A.2 for a list of the variables.)

As a result of the data redacting process, there were some cohorts in which all Kauffman students with a certain characteristic were removed from the data. For example, all Cohort I 10th-grade English language learner Kauffman students were redacted from the data. In such cases, we dropped all comparison students with this characteristic from the data before the matching.

Table A.2. Potential covariates used for propensity-score matching

4th-grade mathematics and ELA MAP z-scores
Second- and third-order polynomials of 4th-grade mathematics and ELA MAP z-scores
3rd-grade mathematics and ELA MAP z-scores
4th-grade attendance rate and ever-suspended variables
Gender, race, individualized education program, English language learner, free or reduced-price lunch, any baseline test accommodation
Indicators for imputed 3rd- and 4th-grade mathematics and ELA MAP z-score variables
Indicator for imputed 4th-grade attendance rate or ever-suspended variables

Note: Free or reduced-price lunch status is not included as a covariate for Cohort IX 5th-graders because comparison students in this cohort first enrolled in Kansas City public schools after the district stopped collecting lunch status information.

After generating propensity scores for each Kauffman student and each eligible comparison student, we selected a matched comparison group by finding comparison students with propensity scores within a given threshold, or radius, from each Kauffman student’s propensity score. Comparison students were sampled with replacement, which means that each comparison student could be matched to multiple Kauffman students. To limit the number of possible comparison students, we specified a minimum matching radius and maximum number of potential matched neighbors.¹⁸ Because district students differed more from Kauffman students on baseline characteristics relative to

¹⁸ For each analysis, the matching radius was 0.0012 for the all-Kansas City comparison group; it was 0.0022 for the district comparison group and 0.0018 for the charter comparison group. The maximum number of potential matched neighbors was 20.

the other two groups, we made the matching radius larger for the district comparison group. This was necessary to prevent the samples of the Kauffman and matched comparison students from being too small. If there were no comparison students within the matching radius for a given treatment student, that student was excluded from the matched comparison impact analyses. We used a weighting scheme in which each treatment student had a weight of one, and each comparison student was weighted according to the number of matching treatment students. Table A.3 shows a summary of matching information from the 2019–20 school year for each comparison group.¹⁹

Table A.3. Matching information summary for the 2019–20 analysis

	All Kansas City public schools	Kansas City district schools	Kansas City charter schools
Cohort II 12th-graders (attendance, suspension, high school graduation, and college analyses)			
Number of Kauffman students	44	44	44
Mean number of Kauffman students matched	42	40	42
Mean number of comparison students	407	203	174
Mean matches per Kauffman student	15.7	8.6	6.1
Cohort III 11th-graders (attendance and suspension analyses)			
Number of Kauffman students	122	122	122
Mean number of Kauffman students matched	112	96	102
Mean number of comparison students	476	304	195
Mean matches per Kauffman student	6.6	4.8	3.3
Cohort IV 10th-graders (attendance and suspension analyses)			
Number of Kauffman students	144	144	144
Mean number of Kauffman students matched	136	124	118
Mean number of comparison students	556	315	240
Mean matches per Kauffman student	7.2	3.9	3.9
Cohort V 9th-graders (attendance and suspension analyses)			
Number of Kauffman students	148	148	148
Mean number of Kauffman students matched	141	130	128
Mean number of comparison students	694	430	254
Mean matches per Kauffman student	8.5	5.7	3.7
Cohort VI 8th-graders (attendance and suspension analyses)			
Number of Kauffman students	156	156	156
Mean number of Kauffman students matched	144	138	141
Mean number of comparison students	687	368	301
Mean matches per Kauffman student	11.7	5.6	5.1
Cohort VII 7th-graders (attendance and suspension analyses)			
Number of Kauffman students	163	163	163
Mean number of Kauffman students matched	154	149	124
Mean number of comparison students	690	425	206
Mean matches per Kauffman student	11.5	6.5	3.1

¹⁹ For the grade/cohort combinations from the previous year, see Johnson and Thal (2020).

Table A.3 (continued)

	All Kansas City public schools	Kansas City district schools	Kansas City charter schools
Cohort VIII 6th-graders (attendance and suspension analyses)			
Number of Kauffman students	192	192	192
Mean number of Kauffman students matched	183	173	172
Mean number of comparison students	909	632	390
Mean matches per Kauffman student	14.5	11.1	5.5
Cohort IX 5th-graders (attendance and suspension analyses)			
Number of Kauffman students	200	200	200
Mean number of Kauffman students matched	198	198	186
Mean number of comparison students	1,122	718	519
Mean matches per Kauffman student	18.0	14.0	8.6

Table A.4 presents summary statistics to show how well Kauffman students were matched to comparison students on baseline characteristics.²⁰ On average, comparison students from each matched group were not significantly different from Kauffman students on any baseline characteristic used in the analysis.

Table A.4. Baseline 4th-grade average characteristics of matched comparison samples for the 2019–20 analysis

	Kauffman School	All Kansas City public schools	Kansas City district schools	Kansas City charter schools
Cohort II 12th-graders				
4th-grade mathematics scaled score	636	637	638	638
4th-grade ELA scaled score	650	649	653	649
Free or reduced-price lunch	0.84	0.89	0.92	0.86
Black	0.95	0.98	0.96	0.95
Hispanic	0.02	0.01	0.03	0.04
English language learner	0.02	0.03	0.02	0.04
Male	0.50	0.39	0.42	0.49
Disabled	0.02	0.01	0.01	0.01
Any prior test accommodation	0.00	0.00	0.00	0.00
4th-grade attendance rate	0.97	0.97	0.97	0.97
4th-grade ever suspended	0.14	0.20	0.17	0.19
Sample size	42	407	203	174
Cohort III 11th-graders				
4th-grade mathematics scaled score	634	633	633	637
4th-grade ELA scaled score	649	650	648	651
Free or reduced-price lunch	0.91	0.93	0.93	0.92
Black	0.91	0.91	0.89	0.91
Hispanic	0.04	0.05	0.05	0.05

²⁰ The composition of each group of Kauffman students differs slightly from one matched comparison group analysis to the next, depending on the comparison group. Table A.4 shows the averages for the Kauffman students included in the main analysis, in which the comparison group includes all Kansas City public schools.

Table A.4 (continued)

	Kauffman School	All Kansas City public schools	Kansas City district schools	Kansas City charter schools
English language learner	0.02	0.03	0.03	0.02
Male	0.43	0.43	0.47	0.44
Disabled	0.01	0.03	0.01	0.03
Any prior test accommodation	0.03	0.03	0.03	0.06
4th-grade attendance rate	0.96	0.96	0.96	0.96
4th-grade ever suspended	0.16	0.14	0.15	0.14
Sample size	112	476	304	195
Cohort IV 10th-graders				
4th-grade mathematics scaled score	634	634	635	632
4th-grade ELA scaled score	648	648	647	646
Free or reduced-price lunch	0.95	0.93	0.94	0.91
Black	0.89	0.90	0.88	0.87
Hispanic	0.06	0.06	0.05	0.07
English language learner	0.01	0.02	0.02	0.04
Male	0.42	0.46	0.49	0.46
Disabled	0.05	0.05	0.05	0.03
Any prior test accommodation	0.05	0.05	0.06	0.05
4th-grade attendance rate	0.96	0.96	0.95	0.95
4th-grade ever suspended	0.21	0.19	0.18	0.22
Sample size	136	556	315	240
Cohort V 9th-graders				
4th-grade mathematics scaled score	2,445	2,444	2,445	2,437
4th-grade ELA scaled score	2,451	2,451	2,449	2,447
Free or reduced-price lunch	0.96	0.96	0.95	0.96
Black	0.91	0.91	0.90	0.91
Hispanic	0.05	0.06	0.06	0.05
English language learner	0.02	0.02	0.03	0.05
Male	0.45	0.47	0.50	0.41
Disabled	0.08	0.07	0.10	0.06
Any prior test accommodation	0.09	0.10	0.10	0.07
4th-grade attendance rate	0.95	0.95	0.95	0.95
4th-grade ever suspended	0.19	0.18	0.15	0.21
Sample size	141	694	430	254
Cohort VI 8th-graders				
4th-grade mathematics scaled score	451	451	447	458
4th-grade ELA scaled score	462	460	457	465
Free or reduced-price lunch	0.94	0.93	0.95	0.95
Black	0.94	0.95	0.95	0.96
Hispanic	0.01	0.01	0.01	0.01
English language learner	0.01	0.01	0.01	0.00
Male	0.43	0.49	0.49	0.45
Disabled	0.04	0.04	0.04	0.03
Any prior test accommodation	0.01	0.02	0.02	0.00
4th-grade attendance rate	0.96	0.96	0.95	0.96
4th-grade ever suspended	0.22	0.21	0.21	0.24
Sample size	144	687	368	301

Table A.4 (continued)

	Kauffman School	All Kansas City public schools	Kansas City district schools	Kansas City charter schools
Cohort VII 7th-graders				
4th-grade mathematics scaled score	441	441	438	448
4th-grade ELA scaled score	456	455	454	459
Free or reduced-price lunch	0.92	0.94	0.94	0.95
Black	0.98	0.98	0.98	0.99
Hispanic	0.00	0.00	0.00	0.00
English language learner	0.01	0.01	0.01	0.01
Male	0.45	0.47	0.46	0.46
Disabled	0.07	0.07	0.08	0.02
Any prior test accommodation	0.36	0.36	0.40	0.28
4th-grade attendance rate	0.95	0.95	0.95	0.95
4th-grade ever suspended	0.22	0.22	0.21	0.21
Sample size	154	690	425	206
Cohort VIII 6th-graders				
4th-grade mathematics scaled score	354	352	351	358
4th-grade ELA scaled score	363	363	363	365
Free or reduced-price lunch	0.96	0.96	0.95	0.95
Black	0.90	0.91	0.90	0.91
Hispanic	0.04	0.05	0.05	0.06
English language learner	0.04	0.05	0.05	0.04
Male	0.45	0.46	0.49	0.45
Disabled	0.05	0.06	0.05	0.02
Any prior test accommodation	0.37	0.39	0.42	0.32
4th-grade attendance rate	0.94	0.94	0.94	0.94
4th-grade ever suspended	0.21	0.20	0.21	0.19
Sample size	183	909	632	390
Cohort IX 5th-graders				
4th-grade mathematics scaled score	351	350	352	358
4th-grade ELA scaled score	359	358	359	361
Free or reduced-price lunch	n/a	n/a	n/a	n/a
Black	0.90	0.91	0.90	0.91
Hispanic	0.05	0.04	0.05	0.05
English language learner	0.04	0.04	0.04	0.04
Male	0.52	0.50	0.52	0.48
Disabled	0.11	0.10	0.10	0.08
Any prior test accommodation	0.03	0.03	0.03	0.04
4th-grade attendance rate	0.93	0.93	0.93	0.94
4th-grade ever suspended	0.18	0.19	0.16	0.20
Sample size	198	1,122	718	519

Notes: Free or reduced-price lunch status is not included for Cohort IX 5th-graders because comparison students in this cohort first enrolled in Kansas City public schools after the district stopped collecting lunch status information. The Kauffman characteristics and sample size represent the total number of Kauffman students matched to the full comparison group of students from all Kansas City public schools. No differences between averages for Kauffman students and comparison group students are significantly different from zero.

D. Additional impact estimates

This section describes the Kauffman School impact estimates for college enrollment and high school graduation, both for the main analysis sample and separately for the district and charter comparison groups. We then show the 2019–20 attendance and suspension impact separately for each grade level.

1. Impacts on college enrollment and high school graduation

The impact estimates for the Kauffman School on college enrollment and high school graduation for its first two cohorts are shown in Table A.5, separately for the main citywide comparison group as well as for the district and charter comparison groups. The results are based on regression models that include the Kauffman students and matched comparison students, and control for small remaining differences in prior achievement and other baseline characteristics.²¹ As noted previously, any student who is enrolled in the Kauffman School as a 5th-grader for at least part of the school year is included in the Kauffman group for all impact estimates. The impact estimates should therefore be interpreted as the average effect of enrolling in the Kauffman School, accounting for the possibility that students may leave.

Table A.5. Impact of Kauffman School on college enrollment and high school graduation

	Citywide comparison group	Compared to Kansas City district schools	Compared to Kansas City charter schools
Enrollment in four-year colleges	0.19** (0.05)	0.20** (0.05)	0.19** (0.06)
Enrollment in any college	0.17** (0.04)	0.20** (0.05)	0.16* (0.06)
High school graduation	0.01 (0.03)	0.01 (0.04)	0.01 (0.05)
Sample size	963	597	405

Notes: This table shows impacts of the Kauffman School in percentage point units. Standard errors are shown in parentheses below each impact estimate. The sample sizes represent the total number of Kauffman and matched comparison students in each analysis.

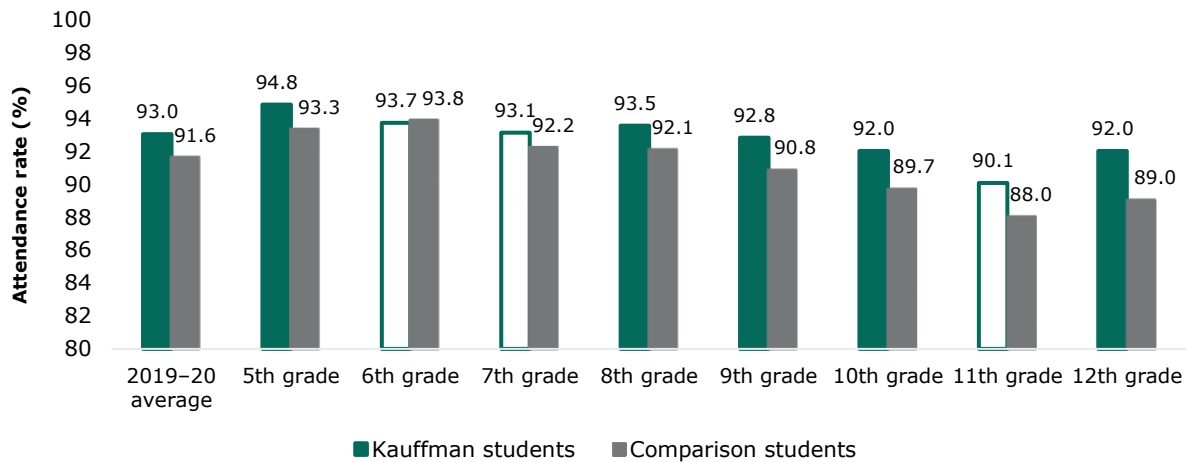
*Significantly different from zero at the 5 percent level.

²¹ Appendix Table A.2 provides a list of variables included in the model.

2. Grade-level attendance and suspension impacts

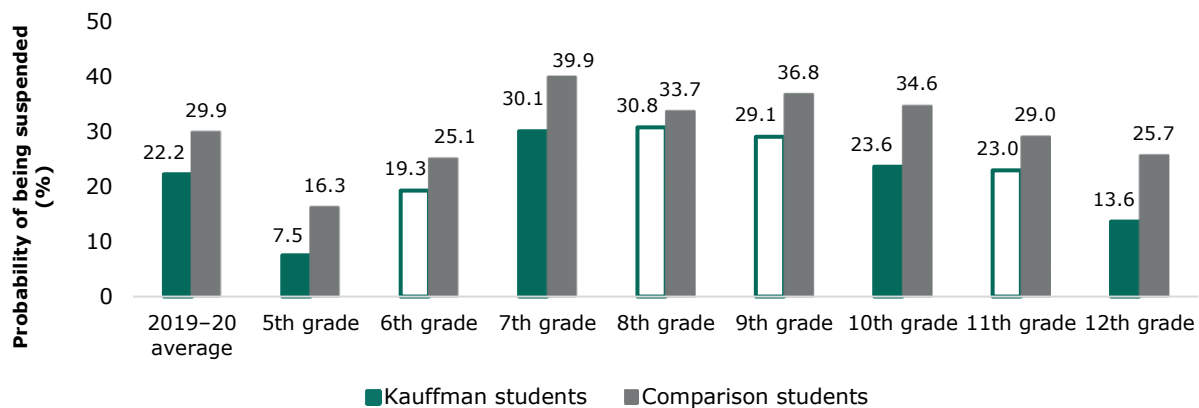
Figure A.1 shows the 2019–20 attendance impacts separately for each grade level. Figures A.2 through A.4 show separate grade-level impacts for overall, in-school, and out-of-school suspensions. Caution should be used when drawing conclusions based on the statistical significance of grade-level comparisons. More than 20 comparisons are being made, so at least one would be expected to show statistical significance due to random chance.

Figure A.1. The Kauffman School had a positive impact on student attendance overall during 2019–20; attendance rates for Kauffman students were higher than those for comparison students for seven of eight grade levels



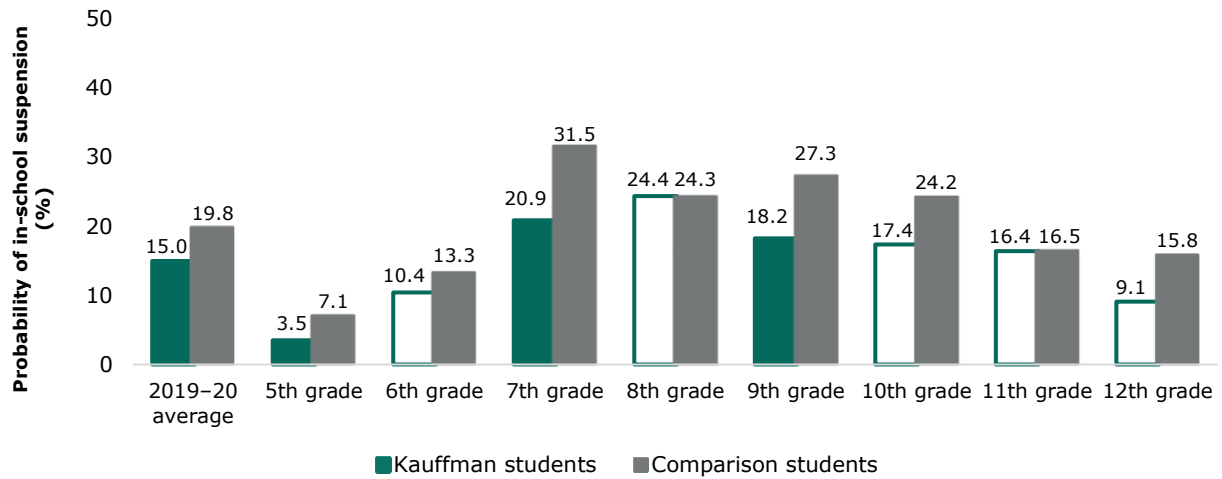
Note: The solid green bars indicate that the impact of the Kauffman School is statistically significant at the 0.05 level.

Figure A.2. Kauffman students had lower overall suspension rates than comparison students during 2019–20; suspension rates for Kauffman students were lower for all grade levels



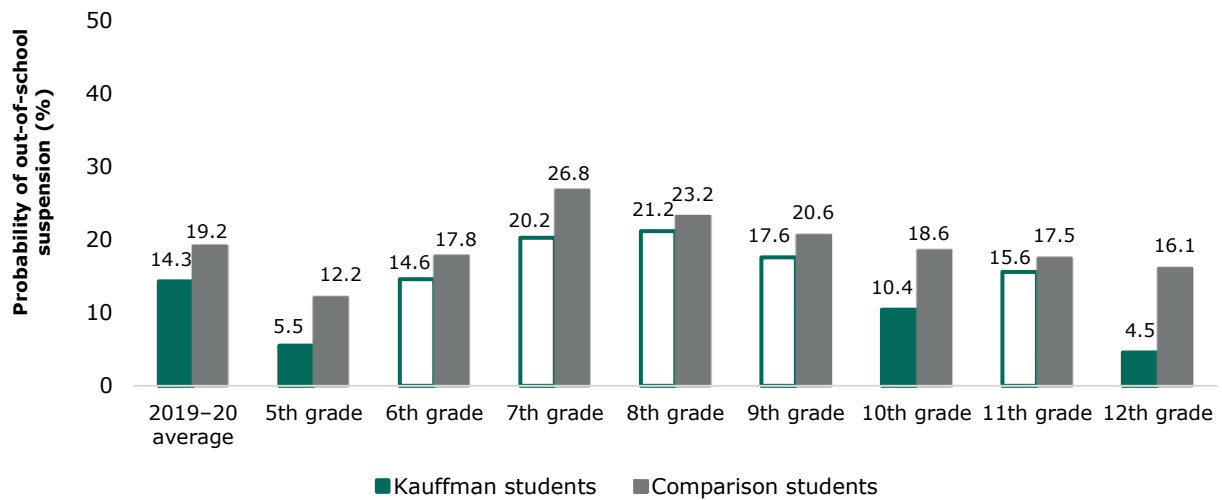
Note: Solid green bars indicate that the Kauffman School had a significant impact in reducing suspensions (p -value < 0.05).

Figure A.3. Kauffman students had significantly lower rates of in-school suspensions than comparison students during 2019–20; in-school suspension rates for Kauffman students were lower for seven of eight grade levels



Note: Solid green bars indicate that the Kauffman School had a significant impact in reducing suspensions (p -value < 0.05).

Figure A.4. Kauffman students had significantly lower rates of out-of-school suspensions than comparison students during 2019–20; out-of-school suspension rates for Kauffman students were lower for all grade levels



Note: Solid green bars indicate that the Kauffman School had a significant impact in reducing suspensions (p -value < 0.05).

E. Changes in the impacts of the Kauffman School over time

In this section, we report estimates of the Kauffman School’s impact on college enrollment, high school graduation, attendance, and suspensions separately for each cohort and year. We also test whether the impacts during each year were significantly different from those in the previous year.

The Kauffman School’s estimated impact on enrollment in any college increased by 16 percentage points between 2018–19 and 2019–20 (Table A.6). However, due to the small sample sizes of Kauffman students in the first two cohorts, this difference in impacts is not statistically significant (p -value = 0.08). Though the difference is not statistically significant, it may be helpful to provide additional information about the change in enrollment rates that led to this increase in impacts between 2018–19 and 2019–20. Neither the college enrollment rates of Kauffman School graduates in the analysis sample (86 percent in 2018–19 and 83 percent in 2019–20) nor the college enrollment rates of other students in Kansas City (39 percent in 2018–19 and 38 percent in 2019–20) changed substantially between those two years. The change in impacts on enrollment in any college is therefore driven by an increase in the college enrollment rates of students who enrolled in the Kauffman School in 5th grade and subsequently transferred to a different middle or high school in Missouri. The college enrollment rates for students who transferred out of the Kauffman School were 33 percent in 2018–19 and 62 percent in 2019–20.

Table A.6. Comparison of college enrollment and high school graduation impacts: Cohort I and II 12th-graders

	Cohort I 12th graders (2018–19)	Cohort II 12th graders (2019–20)
Impact on enrollment in four-year colleges	0.16 (0.07)	0.22 (0.07)
Impact on enrollment in any college	0.10 (0.07)	0.26 (0.06)
Impact on high school graduation	-0.02 (0.05)	0.05 (0.03)
Sample size	514	449

Notes: The results are marginal effects from logit models in which the outcome variable is an indicator for college enrollment or high school graduation. Standard errors appear in parentheses below each impact estimate. The sample size row shows the average number of Kauffman and matched comparison students in the analysis each year. There were no significant differences in impacts between the 2019–20 and 2018–19 school years.

Table A.7 shows the yearly impacts of the Kauffman School on attendance and overall suspensions, as well as separately for in-school and out-of-school suspensions. There were no statistically significant differences in the estimated impacts on these outcomes between 2018–19 and 2019–20.

Table A.7. Comparison of impacts of the Kauffman School on attendance and suspensions across years

	2011– 12 average	2012– 13 average	2013– 14 average	2014– 15 average	2015– 16 average	2016– 17 average	2017– 18 average	2018– 19 average	2019– 20 average
Attendance rate (%)	-0.83 (0.48)	0.87** (0.31)	0.72 (0.27)	0.87 (0.23)	0.96 (0.22)	1.06 (0.25)	0.48 (0.27)	1.36* (0.27)	1.41 (0.28)
Probability of being suspended (%)	13.4 (5.2)	7.22 (3.5)	24.7** (2.6)	8.85** (2.4)	1.72* (2.4)	-3.20 (2.1)	-3.64 (1.9)	-5.25 (1.7)	-7.66 (1.46)
Probability of in-school suspension (%)	0.27 (3.9)	-1.27 (2.2)	24.8** (2.6)	10.5** (2.1)	-1.29** (2.1)	1.39 (2.0)	-10.1** (1.6)	-5.88 (1.5)	-4.84 (1.30)
Probability of out-of-school suspension (%)	14.2 (4.7)	8.97 (3.4)	16.6 (2.8)	4.51** (2.3)	2.79 (2.2)	-4.29* (1.8)	4.95** (1.7)	-1.35** (1.5)	-4.91 (1.30)
Sample size	677	1,213	2,067	3,066	3,156	4,064	4,877	5,923	6,651

Notes: The suspension results are marginal effects from logit models in which the outcome variable is an indicator for receiving a suspension during the year. Standard errors appear in parentheses below each impact estimate. The sample size represents the total number of Kauffman students and matched comparison students in each analysis.

*Significantly different from the prior school year's outcomes at the 5 percent level.

**Significantly different from the prior school year's outcomes at the 1 percent level.