



# Public and Private School Segregation in New York City

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# Public and Private School Segregation in New York City

## Executive summary

Although school segregation in New York City (NYC) has received a great deal of attention for several decades, the vast majority of contemporary analyses, in the city and elsewhere, exclude private school students. This is mostly due to the fact that formal desegregation efforts have focused on public schools.

Yet NYC's enormous private school sector—were it a school district, it would be among the 20 largest in the nation—differs substantially from the city's public sector in terms of the racial and ethnic composition of its students. For example, private schools serve about 14 percent of all NYC students, but 40 percent of its White students. Any attempt to describe the school segregation regime in NYC without private schools may therefore be missing an important part of the picture.

In this report, we present findings from a descriptive analysis of segregation by race and ethnicity in all NYC schools in the 2017-18 school year, with a particular focus on comparing the public and private sectors. A summary of our findings is as follows:

### **Racial and ethnic segregation is generally high in both sectors, but it is consistently higher in the private sector.**

- Based on segregation measures that include White, Black, Hispanic, and Asian students as separate groups (i.e., “multiracial segregation”), the typical public school is 33 percent less diverse than the public sector as a whole, whereas the typical private school is 51 percent less diverse than the private sector overall.
- Due to compositional differences between sectors, White private school students have far less opportunity for interaction with students of color than do their White public school peers. For instance, in a city where 23 percent of all students are White, the typical White private school student attends a school in which almost 90 percent of her peers are also White. In the public sector, by comparison, the typical White student's peers are just over 40 percent White.

### **The potential for total citywide integration is constrained by the separation of students between sectors.**

- For example, 16 percent of citywide “multiracial segregation” is found *between* the public and private sectors—that is, 16 percent of segregation is due to the racial/ethnic imbalance of students between sectors.
- This is in no small part because private schools serve 14 percent of the city's students but roughly two of every five of its White students.
- This “contribution” of between-sector segregation, along with high segregation within the private sector, means that perfect multiracial integration of the roughly

1,800 schools within the NYC public sector, without desegregation within the private sector *and* students moving between sectors, would leave approximately 30 percent of total citywide segregation intact.

**Schools’ religious affiliations play a role in segregation within the private school sector.**

- Most notably, segregation is substantially higher within the “non-Catholic religious” subsector than it is within the “Catholic” or “non-sectarian” subsectors.
- In addition, 31 percent of total multiracial segregation within the private sector is found *between* these three subsectors. That means that almost one-third of private sector segregation could not be addressed without students moving between these groups of schools.
- This is due partially to the fact that Catholic schools serve only 32 percent of all private school students, but almost two-thirds of Black, Hispanic, and Asian private school students attend private Catholic schools.

**Finally, we show that the separation of minority groups *from each other* is an important contributor to school segregation in NYC.**

- Approximately half of total citywide (public and private combined) multiracial segregation consists of the separation of White from Black, Hispanic, and Asian students, whereas the other half is due to the separation of Black, Hispanic, and Asian students from each other.
- The group structure of segregation, however, varies widely between sectors. Within the private sector, the separation of White from “minority” students is the major factor, whereas in the public sector we reach the opposite conclusion: total segregation is driven mostly by the separation of Black, Hispanic, and Asian students from each other.

Efforts to desegregate NYC public schools should of course be a priority. Yet our findings show that these efforts, without desegregation of the private sector and movement of students between sectors, may be limited in their potential *citywide* impact. This is particularly unfortunate given that the city’s student population is incredibly diverse, especially when private schools are included, and this diversity represents an opportunity for truly integrated schools.

It is unclear how a contraction of the public school sector would affect citywide segregation, as we cannot determine what parents would do without private school options (e.g., move to the suburbs or send their children to public schools in a manner that increases or reinforces segregation). Our results do, however, suggest that the private school sector in New York City exerts outsized influence on the city’s school segregation regime.

## Introduction

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Segregation in New York City schools has been a problem, and a source of public attention and controversy, for decades. Although a large-scale, mandatory desegregation program has never been put into effect, the city has tried several voluntary programs and initiatives, such as magnet schools and high school choice. In recent years, the city has rolled out a major multi-year plan to promote integration in its public schools (NYCSDAG 2019).

NYC is a somewhat unique context for big city segregation analyses. Its student population is not only the largest among the nation's cities, it is also among the most diverse in terms of race and ethnicity, with relatively large proportions of White, African-American, Latinx, and Asian students. Such diversity means that the potential for truly multiracial integration in NYC schools is enormous.

This potential, of course, has not been realized. Racial and ethnic segregation in NYC, beginning in pre-kindergarten classrooms (Potter 2016), is extensive. Kucsera and Orfield (2014) report that, in 2011-12, 85 percent of NYC's African-American students and 75 percent of its Latinx students attended "intensely segregated" schools (i.e., those in which 90-100 percent of students are minorities). Both proportions increased during the late 1980s. A *New York Times* analysis of 2009-10 data found that the African-American/White dissimilarity index (a common segregation measure) in New York City was among the highest of the 13 big cities they looked at, including Los Angeles and Philadelphia (Fessenden 2012).

Yet these analyses of school segregation in NYC do not include private schools. The purpose of this report is to describe and decompose school segregation by race and ethnicity in New York City, the nation's largest single-city school population, with a particular focus on segregation within and between the public and private sectors.

### **Previous research on private schools and segregation**

A large and long-standing body of research documents the segregation of U.S. schools. The extent of segregation, both in any given year and how it has changed over time, varies by location, the type of segregation (e.g., racial and ethnic versus income-based), the type of measure used, and other factors.

Isolating the effects of segregation (or desegregation) is difficult (Reardon and Owens 2014), but existing research suggests, for example, that desegregation reduces the dropout rate for African-American students (Guryan 2004) and improves their chances of graduating high school (e.g., Reber 2010). Researchers have also found that desegregation has positive effects on non-academic outcomes for African-American students, such as higher incomes, increased likelihood of having a white-collar job, reduced chances of living in poverty, improved health outcomes, and a lower probability of incarceration (Johnson 2011).

The segregation of Latinx students is less pronounced than but still comparable to that of African-American students, and it is growing (e.g., Orfield et al. 2014; Fry 2007), presumably with similar negative effects, especially for foreign-born Latinx students (Ryabov and Van Hook 2007).

Conversely, there is little evidence of negative academic effects of desegregation for White students (Angrist and Lang 2004; Guryan 2004; Johnson 2011), and indeed some indication that it might be beneficial for all students – i.e., it can prepare all students to succeed and improve social cohesion in an increasingly diverse nation by encouraging relationships and reducing prejudice between groups (Pettrigrew and Tropp 2006; Mickelson and Nkomo 2012).

Although private schools can be an important feature of the educational landscape, most analyses of school segregation exclude them. There are good reasons for this. For one thing, the federal government only collects private school data biennially, and the selection of variables is more limited than it is for public schools. Second, and perhaps more importantly, school desegregation efforts have traditionally focused on public schools.

That said, private schools serve roughly one in ten of the nation's schoolchildren, with higher proportions in many big cities (Snyder et al. 2016). And private school students tend to be disproportionately White relative to their public school counterparts (Broughman and Swaim 2013). Attempts to describe school segregation by race and ethnicity without including private schools, therefore, may be missing part of the picture.

In a recent national analysis, Monarrez et al. (2019) present a breakdown of the contribution of regular public, charter, magnet, and private schools to segregation in the areas in which they are located. They find that, controlling for school size and neighborhood composition, private schools are more likely than regular public schools to contribute to segregation in their host counties. They also show that, in mostly African-American and Latinx counties, private schools are as likely to increase segregation as are regular public schools, whereas in neighborhoods with comparatively low representation of African-American and Latinx students, private schools are substantially more likely to exacerbate segregation.

Di Carlo and Wysieńska Di Carlo (2017) focus specifically on comparing the public and private school sectors in Washington, D.C. They show that at least 25 percent of total citywide segregation is found between sectors – that is, even if both the public and private sectors were completely integrated internally, but no students moved between sectors, at least one-quarter of total segregation would remain intact.

The sorting of children into private schools may also exert undetected influence on public school desegregation outcomes. For example, Clotfelter (2006) finds that, due in large part to desegregation efforts, racial segregation within public school districts declined rather sharply between 1970 and 2000, but this was partially offset by increases in private school enrollment.

The role of private schools in segregation is particularly salient in larger cities and metro areas, where the representation of White students in private schools tends to be the most disproportionate, compared with smaller cities and metro areas, as well as in areas with large African-American student populations, even controlling for income (Reardon and Yun 2002). Regarding the latter, Clotfelter (2004) finds that, during the three decades following the beginning of serious desegregation efforts in the late 1960s, White enrollment in private schools in the South tended to rise along with the proportion of non-White students in public schools in the same county.

These studies suggest that between-sector segregation may be due in part to the decision of White families to avoid enrolling their children in public schools with significant shares of minority students (Saporito and Sohoni 2007). Put simply, from a between-sector perspective, the availability of private schools may exacerbate segregation (or at least reflect the underlying mechanisms by which segregation occurs).

The situation *within* sectors is somewhat more complicated. Earlier studies by James Coleman and colleagues (Coleman et al. 1982a, 1982b) found that, while private high schools enrolled larger shares of White students than public high schools, White students in these private school sectors were more evenly distributed than their public school peers. Greeley et al. (1982) reached a similar conclusion about private Catholic schools (the largest share of private schools at the time of the analysis).

More recent evidence, however, suggests that, nationally, African-American students who attend private schools are just as segregated from White students as are their African-American peers in public schools (Reardon and Yun 2002). Di Carlo and Wysieńska Di Carlo (2017) also reach this conclusion in their analysis of D.C. schools. Finally, a report by the Southern Education Foundation finds that private schools are almost 50 percent more likely than public schools to serve students who are 90 percent or more White (Suitts 2016). Thus, depending on the time period, location, and methods, private school sectors may or may not be more integrated internally than public school sectors.

## Data and measures

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Our data are from the Common Core of Data Public Elementary/Secondary School Universe Survey and the Private School Survey, both administered by the National Center for Education Statistics. The analysis presented below focuses entirely on the 2017-18 school year, the last year for which public and private school data are available. Additional details about the sample are discussed in the Technical Appendix.

Although income-based segregation is interdependent with segregation by race and ethnicity, and the two are often confounded, our analysis will focus exclusively on the latter due to data availability – private schools do not participate in the federal school lunch program, eligibility for which is typically used as a (rough) proxy for income.

**A note on nomenclature:** When discussing the findings in this report, we use the terms “Black” and “Hispanic” rather than African-American and Latinx, as the former two terms are the categories used by our federal government data sources. In addition, for the purposes of simplicity, we will at times use the term “minority” when referring to a combined category that includes Black, Hispanic, and Asian students.

Table 1 presents the number of schools and students in our sample, as well as the race and ethnicity distribution of students, by sector. Note that our sample does not include students who live in New York City but attend schools outside the city, and may include students who live outside the city, if they attend schools within its boundaries.

**TABLE 1**

Number of schools, enrollment, and student race and ethnicity distribution by sector and subsector, New York City schools, 2017-18					
	Public			Private	Citywide
	District	Charter	All		
No. of schools	1,591	226	1,817	520	2,337
Enrollment	932,047	110,201	1,042,248	164,266	1,206,514
% city students	77.3	9.1	86.4	13.6	100.0
<i>Student race and ethnicity distribution (column percentages)</i>					
White	16.5	4.5	15.2	69.2	22.5
Black	23.6	54.2	26.9	10.7	24.7
Hispanic	42.2	38.9	41.9	13.2	38.0
Asian	17.7	2.4	16.1	6.9	14.8

Notes: Excludes students coded as “American Indian/Alaska Native,” “Hawaiian Native/Pacific Islander,” or “Two or more races.” See the appendix for more details on the sample. Percentages may not sum to 100 due to rounding.

In 2017-18, roughly one in seven (13.6 percent) NYC students attended private schools. The vast majority of students (86.4 percent) were enrolled in regular public schools, with a smaller but meaningful proportion of them (9.1 percent of the city’s students) attending charter schools.

NYC students are remarkably diverse, particularly when private schools are included. Citywide, none of the four major race and ethnicity categories exceeds 40 percent representation, and none is below 14 percent. In this sense, the NYC student population represents a rare opportunity for true multiracial integration.

This citywide composition, however, masks quite a bit of variation by sector. Almost 70 percent of public school students are Black or Hispanic, whereas the opposite is true in private schools, which serve a student population that is over two-thirds White. As a result, while private schools serve only 14 percent of NYC’s students, they serve over 40 percent of its White students.

Our descriptive analysis of student segregation in New York City will use two different measures: the exposure/isolation index and Theil’s entropy index. These measures are



discussed in general terms below. Readers interested in more details should consult the Technical Appendix (also see Massey and Denton [1988]).

The **exposure (and isolation) index** is a simple, common manner of characterizing the segregation of two groups. If we use the example of White and Black students, the Black|White exposure index indicates the proportion of the typical White student's peers (fellow students within her school) who are Black. This is fundamentally a measure of interaction, or at least the possibility of interaction (Greene and Mellow 1998), between two different groups. It ranges from zero (in our example, the typical White student has no Black peers at her school) to one (all of her peers are Black). These can also be interpreted as percentages (0-100 percent).

The isolation index is very similar to the exposure index, except the former is the proportion of the typical student's schoolmates who *share* her race or ethnicity (e.g., the proportion of the average White student's school peers that are also White). It provides an idea of the degree to which the typical student of a given race or ethnicity is surrounded by peers who "look like they do."

The advantage of these measures is that they provide an easy-to-understand characterization of the typical student's situation (e.g., opportunity for interaction with other groups, or lack thereof). Disadvantages include the fact that they can only be calculated for two groups at a time (a particular problem in a multiracial city such as New York), as well as their sensitivity to the composition of the student population, which complicates comparisons between units (e.g., districts) and within units over time. For instance, exposure/isolation rates can change over time simply because the student population changes, even if those compositional changes are spread out between schools within the unit (for more discussion, see: Reardon and Owens 2014; Massey and Denton 1988).

Because we are primarily interested in comparing segregation between the public and private sectors, which are different in terms of the race and ethnicity of their student populations, most of our analysis and discussion will concentrate on a second index, **Thiel's entropy index** (Theil 1972; Theil and Finizza 1971). This measure focuses on the degree to which students are spread out evenly across schools within a unit (in our case, a city or a sector). For this reason, it is often classified as an "evenness" measure.<sup>1</sup>

Unlike exposure/isolation, Thiel's entropy index (henceforth simply the "entropy index") is independent of composition. According to this index, a district or city could theoretically be perfectly integrated even if its students were overwhelmingly a single race or ethnicity, or perfectly segregated even if racial and ethnic groups were equally represented. The focus is on how well a given level of diversity, whether high or low, is spread out across schools. This is useful for our purposes, since we are chiefly interested

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<sup>1</sup> A different "evenness" measure, the dissimilarity index, is perhaps the most common indicator in the segregation literature. We do not present it here primarily because it yields conclusions that are virtually identical to those based on the entropy index. In addition, dissimilarity can only be calculated for two groups at a time.

in comparing segregation between two sectors (public and private) that serve rather different groups of students.

The entropy index is increasingly common in the segregation literature. In addition to its independence from the composition of the student population, it offers two other advantages for our analysis. First, it can be calculated using multiple groups (i.e., race/ethnicity categories), rather than just for pairwise combinations. This is important given NYC’s multi-group diversity. Second, the index can be decomposed into within- and between-unit components, which, as we will see, provides very useful insight into segregation regimes (Reardon et al. 2000). The primary relevant disadvantage of the entropy index is the fact that it is somewhat difficult to interpret in “real world” terms, but this is less of a problem in our context, given that we are primarily interested in comparing sectors.

**A note on charter schools:** All of the analyses reported below include charter schools as part of the public schooling sector. The remainder of our results, however, do not include separate estimates for the charter subsector, as our focus is on the public and private sector comparison. In addition, segregation between these two subsectors makes only a very small contribution to total public sector segregation.

## Results

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### Exposure/isolation

Table 2 presents the exposure (and isolation) index values for each combination of student race and ethnicity, by sector and citywide. To facilitate interpretation, these indices are presented in terms of the average race and ethnicity distribution of the typical students’ school peers, by the race or ethnicity of that typical student (i.e., all estimates in Table 2 are calculated including all four race and ethnicity groups). Note that the diagonal cells in each panel (White|White, Black|Black, on so on) are *isolation* index values, which are also the difference between one (or 100 percent) and the sum of the three other cells in that row (each of which are exposure index values).

For example, in the first cell of the top panel (public schools), we see that the typical White public school student attends a school in which 41.5 percent of her peers are also White (this is the White isolation index). The proportion for private schools (the same cell in the second panel down) is 88.0 percent. Even in a city where only about one in five students is White, the typical private school student attends a school in which almost 90 percent of her peers are also White.

This discrepancy in the White isolation index between the two sectors may theoretically be due to greater segregation within the private sector. In reality, however, it is driven mostly by the aforementioned compositional differences between sectors – i.e., the larger White share of the private school student population relative to that of the public sector (see Table 1). Put differently, White private school students are more isolated than White public school students mostly because private schools serve a larger share of White students than do public schools. From this perspective, while the exposure and isolation

indexes are *within*-sector segregation measures, comparing them between NYC public and private schools is often telling us more about compositional differences (and segregation) *between* sectors.

It is therefore instructive to view the index values in Table 2 with reference to the overall composition figures presented in Table 1. For example, Table 1 shows that 22.5 percent of all city students are White. Yet, in Table 2, we see that the White isolation index for the entire city (public and private pooled together, the bottommost panel) is 0.609, which means that 60.9 of the typical White student’s peers are also White. Again, even in a city where students of color make up almost 80 percent of all students, the typical White student still attends a mostly white school.

**TABLE 2**

Race and ethnicity distribution of school peers (exposure and isolation indices) by student race and ethnicity and sector, New York City schools, 2017-18					
<b>Public school sector</b>					
<i>Proportion of peers who are</i>					
	<b>Race/ethnicity</b>	<b>White</b>	<b>Black</b>	<b>Hispanic</b>	<b>Asian</b>
<i>For the typical student who is</i>	White	0.415	0.114	0.276	0.195
	Black	0.065	0.531	0.337	0.067
	Hispanic	0.100	0.216	0.571	0.113
	Asian	0.185	0.111	0.294	0.410
<b>Private school sector</b>					
<i>Proportion of peers who are</i>					
	<b>Race/ethnicity</b>	<b>White</b>	<b>Black</b>	<b>Hispanic</b>	<b>Asian</b>
<i>For the typical student who is</i>	White	0.880	0.035	0.046	0.039
	Black	0.224	0.482	0.224	0.070
	Hispanic	0.240	0.182	0.497	0.081
	Asian	0.392	0.109	0.155	0.344
<b>Citywide (public+private)</b>					
<i>Proportion of peers who are</i>					
	<b>Race/ethnicity</b>	<b>White</b>	<b>Black</b>	<b>Hispanic</b>	<b>Asian</b>
<i>For the typical student who is</i>	White	0.609	0.081	0.180	0.130
	Black	0.074	0.529	0.330	0.067
	Hispanic	0.107	0.215	0.567	0.111
	Asian	0.198	0.111	0.285	0.406

Notes: Excludes students coded as “American Indian/Alaska Native,” “Hawaiian Native/Pacific Islander,” or “Two or more races.” See the appendix for more details on the sample. Proportions may not sum to 1 due to rounding.

The same story holds for the city’s Black and Hispanic students. Citywide, about 25 percent of all students are Black, but the typical Black student attends a mostly Black school (52.9 percent). Similarly, while 38 percent of all NYC students are Hispanic, the typical Hispanic student attends a mostly Hispanic school (56.7 percent). Even Asian students, who constitute less than 15 percent of the city's students, attend schools that are, on average, predominantly (over 40 percent) Asian.

And this citywide pattern is also found in both the public and private sectors—isolation rates are all substantially higher than we would expect (based on Table 1) in situation where students of different races and ethnicities were evenly spread out across schools within each sector. For instance, Black and Hispanic students constitute about 11 and 13 percent of the private school population, respectively, but the typical Black private school student attends a school that roughly half Black, and the typical Hispanic student’s peers are also about half Hispanic.

One consequence of this is that Black and Hispanic students, and to a lesser extent Asians, have relatively little opportunity for interaction with White students (and vice-versa). This is evident in the exposure index results in Table 2. For instance, citywide, Table 1 shows that over 20 percent of students are White, but the exposure rates in Table 2 indicate that the typical Black student’s school is only 7.4 percent White, and the typical Hispanic student’s schoolmates are only 10.7 percent White. Even in the private sector, where about 70 percent of all students are White, the White exposure rates for Black and Hispanic students are both under 25 percent.

Overall, then, students in NYC, in both the public and private sectors, attend schools in which their own races or ethnicities are strongly overrepresented, and students of other races and ethnicities are underrepresented, vis-à-vis the citywide distribution. This is indicative of the systematic sorting of students into schools in both sectors by race and ethnicity.

The results in Table 2, however, are somewhat less useful for comparing the extent of segregation between the public and private sectors, given the stark compositional differences between the two sectors. For example, the exposure of Black and Hispanic students to White students is higher in the private than the public sector mostly because the former is largely White, and the latter is not. This speaks to the need for alternative measures, which account for these compositional differences and thus allow for a clearer comparison.

### **Evenness (entropy index)**

To reiterate, the entropy index focuses on the dispersion of students across schools regardless of composition. In this sense, it is agnostic about unit diversity, and instead measures the degree to which that diversity, whether it is high or low, is shared across schools within the unit.

The entropy index is expressed in terms of how much, on average, schools deviate from unitwide (sector- or citywide) diversity (or “entropy”). Suppose, for example, we have a district that, overall, serves a student population that is half White and half Black. If schools in this district also tend to be roughly half White and half Black, deviation from unitwide diversity (segregation) is low. If, on the other hand, schools tend to vary widely from the “half and half” composition, with some schools serving overwhelmingly White and others serving overwhelming Black student populations, then deviation from

unitwide diversity is high, indicating high segregation. Table 3 presents the entropy index values for multiple race and ethnicity comparisons, as well as by sector (public/private).

For example, the first column of the first row shows that White|Black segregation within the NYC public school sector is 0.562, which means that the “amount of Black|White diversity” in the typical NYC public school is 56.2 percent lower than it is for NYC public school students as a whole. If, hypothetically, all NYC public schools were the same in terms of their students’ racial and ethnic diversity (in this case defined solely in terms of White and Black students, “ignoring” Hispanic and Asian students), the index would be zero, indicating perfect integration.

**TABLE 3**

Entropy segregation index by race and ethnicity comparison and sector, New York City schools, 2017-18			
	Public	Private	Citywide
<i>Two-group comparisons</i>			
White   Black	0.562	0.640	0.634
White   Hispanic	0.385	0.630	0.515
White   Asian	0.289	0.489	0.406
Black   Hispanic	0.280	0.314	0.282
Black   Asian	0.570	0.455	0.563
Hispanic   Asian	0.365	0.421	0.369
White/Asian   Black/Hispanic	0.376	0.575	0.445
White   Minority	0.323	0.593	0.469
<i>Multi-group comparisons</i>			
White   Black   Hispanic	0.336	0.555	0.415
Black   Hispanic   Asian	0.330	0.350	0.331
Multiracial (W B H A)	0.328	0.509	0.386

Notes: White|Minority comparison aggregates categories of Black, Hispanic, and Asian (H<sub>W|B|H|A</sub>), whereas multiracial (H<sub>W|B|H|A</sub>) comparison includes each group separately. Excludes students coded as “American Indian/Alaska Native,” “Hawaiian Native/Pacific Islander,” or “Two or more races.”

As a very rough rule of thumb, entropy index values between 0.20-0.40 might be interpreted as reflecting moderate segregation, and values above 0.40 can be interpreted as high segregation.

The results for the two-group comparisons (the first eight rows in Table 3) show, first, that segregation is moderate-to-high in both sectors for all race and ethnicity comparisons. As is often the case, White|Black segregation is generally the strongest among all the combinations. Focusing solely on White and Black students, the typical school (public or private) is approximately 63 percent less diverse than the city overall. The citywide separation of White and Hispanic students (0.515) is also very pronounced, as is that of White from Asian students (0.406) and White from the “minority” category (0.469), which includes Black, Hispanic, and Asian students as a single combined group.

Finally, if we combine White and Asian students and compare them with a combined Black and Hispanic group, we find similarly high segregation citywide (0.445).<sup>2</sup>

Second, Table 3 indicates that what we might call the “traditional” conceptualization of segregation — the separation of White from Black, White from Hispanic, and White from Asian students — is generally more extensive in the private than in the public sector. This is modestly true of the White|Black comparison (0.562 vs. 0.640), while the private school sector is substantially more segregated than the public sector when it comes to the separation of White and Hispanic (0.385 vs. 0.630), White and Asian (0.289 vs. 0.489), and White and minority students (0.323 vs. 0.593).

Third, when it comes to the separation of minority groups from each other (rows 4-6), segregation levels are similar between sectors, with the exception of the segregation of Black and Asian students, which is moderately higher in the public sector. Clearly, there is more to segregation in NYC than just the separation of white students from students of color. We return to this issue below.

The entropy index is particularly valuable in the case of a multiracial population such as NYC students because it can be calculated for more than two groups at a time. The final three rows of Table 3 can be interpreted in the same manner as above, except that the “amount of diversity” from which schools can deviate includes more than two groups.

For example, citywide, the typical school is about 42 percent less diverse than the city overall when it comes to White, Black, and Hispanic students (the third to last row). In other words, the diversity of the average school is 42 percent lower than it would be in a situation where every school served the same percentage of White, Black, and Hispanic students as the city as a whole (“ignoring” Asian students). This, however, is driven in no small part by the private sector (56 percent), whereas segregation of these groups is more moderate (but still substantial) within the public sector (34 percent).

In the final row of Table 3, we present the entropy index for all four race and ethnicity groups separately; we call this “multiracial” segregation. The index is about 0.39 citywide (the low end of the “high segregation” range, by our rule of thumb). Once again, though, it is higher in the private vis-à-vis the public sector by a meaningful margin (0.509 versus 0.328, respectively).

To reiterate, these inter-sectoral differences are not due to composition. For example, they are not influenced by the fact that the private sector, unlike the public sector, serves a majority White student population. They are, rather, attributable to differences between the sectors in the extent of sorting of students by race and ethnicity, specifically greater deviation of the typical private school’s composition from the private sector overall than

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<sup>2</sup> The rationale for combining White and Asian students is, for example, that these two groups exhibit substantially higher achievement outcomes than do their Black and Hispanic peers in NYC (NCES 2019). Whether or not this is the proper approach for a segregation analysis is open to debate. Most of our results throughout the remainder of this report will be presented for different combinations of race/ethnicity groups.

is found in the public sector (at least in the case of the “traditional” segregation comparisons). In other words, the private school sector is not only less diverse than the public sector, but that diversity is consistently less spread across schools within the private sector than is the case within the public school sector.

***Segregation by county***

One quick additional exercise we might perform with these simple comparisons of the entropy index is to take a look at segregation in each of NYC’s five counties. Inter-county variation in school segregation, and/or differences between counties in the public/private comparisons, might, for example, stem from underlying differences in residential segregation (Hemphill and Mader 2016) or the availability of and demand for private schools. Table 4 presents the entropy index by county. For space purposes, we only present three race and ethnicity comparisons per sector.

**TABLE 4**

Entropy segregation index by race and ethnicity comparison, sector and county, New York City schools, 2017-18					
	Bronx	Kings	New York	Queens	Richmond
<i>Public Sector</i>					
White   Black	0.367	0.579	0.519	0.533	0.423
White   Minority	0.218	0.293	0.358	0.221	0.224
Multiracial	0.167	0.345	0.319	0.275	0.186
<i>Private Sector</i>					
White   Black	0.548	0.779	0.332	0.641	0.278
White   Minority	0.462	0.708	0.338	0.548	0.202
Multiracial	0.348	0.636	0.325	0.462	0.194
<i>Citywide</i>					
White   Black	0.462	0.702	0.548	0.589	0.429
White   Minority	0.338	0.531	0.435	0.356	0.247
Multiracial	0.205	0.447	0.360	0.320	0.202

Notes: White|Minority comparison aggregates categories of Black, Hispanic, and Asian ( $H_{W|BHA}$ ), whereas multiracial ( $H_{W|B|H|A}$ ) comparison includes each group separately. Excludes students coded as “American Indian/Alaska Native,” “Hawaiian Native/Pacific Islander,” or “Two or more races.”

Citywide (the three bottommost rows), the entropy index is higher in Kings County (Brooklyn) than in the other four counties for all three racial/ethnic comparisons presented in the table, while segregation, particularly multiracial segregation, is comparatively low in Bronx and Richmond (Staten Island) counties.

This characterization of inter-county differences generally holds up in both sectors, although the White|minority index for public schools is highest in New York County (Manhattan). It also bears noting that the relatively high citywide segregation in Kings County, while present in both sectors, is clearly exacerbated by the private sector, in which the entropy index for all three racial and ethnic combinations is substantially higher in Kings County than it is in the other four counties.

## **Within-/between-sector decomposition**

All of the results above measure *within*-unit segregation. That is, they gauge the separation of students by race and ethnicity within the public sector, within the private sector, and within the city overall. If, however, we are to understand the role of the public and private sectors in citywide segregation, we might conceptualize total citywide segregation as consisting of three components: 1) segregation within the public sector; 2) segregation within the private sector and; 3) segregation *between* sectors.

All three can “hinder” the achievement of citywide integration, which is defined here as a situation in which every single school has the same racial and ethnic composition as the city as a whole (for example, per Table 1, multiracial integration would mean that every single school, public and private, was roughly 23 percent White, 25 percent Black, 38 percent Hispanic, and 15 percent Asian).

Integrating schools *within* each sector — essentially, shuffling public school students such that every public school has the same composition as the public sector as a whole, and doing the same for the private sector — would go a very long way toward achieving citywide integration.

There is, however, a compositional imbalance between sectors in NYC (e.g., the private sector serves a disproportionate number of White students). As a result, even if both sectors were perfectly desegregated internally, achieving the *citywide* totals would be impossible, since neither sector would have a sufficient number of students in each group. The degree to which this imbalance between public and private sectors “prevents” perfect citywide integration is a useful way to interpret between-sector segregation. And the entropy index can be used to quantify this (Reardon et al. 2000).

Table 5 presents this decomposition of citywide segregation (row 1) into: within-public sector (row 2); within-private sector (row 3) and; between-sector (row 4) components. Note that rows 2-4 in each column (both the percentages and the entropy index [H] values) sum to row 1.

The percentages in the table represent the proportion of total segregation (row 1) “contributed” by each component, by race and ethnicity comparison. They can also be interpreted as the amount by which total citywide segregation would be reduced if perfect integration was achieved within each sector (rows 2-3) or between sectors (row 4).

For instance, eliminating White|Black segregation within the private school sector (row 3, first supercolumn) — i.e., reshuffling students such that every private school had the same percentage of White and Black students as the private sector as a whole — would reduce citywide Black|White segregation by 13.3 percent. Doing the same in the public sector would cause a reduction of 64.4 percent. Perfect desegregation of both the public and private sectors would therefore reduce total citywide segregation by  $13.3 + 64.4 = 77.7$  percent. The remainder (22.3 percent) is found between sectors (row 4). Without moving Black and White students between sectors, 22 percent of total citywide segregation would not be affected by perfect desegregation of both sectors.



Note that, for all four racial/ethnic comparisons, the contribution of within-public sector segregation is larger than that of within-private sector segregation. This is not because the public sector is more segregated (as we've shown, the opposite is the case). It is, rather, because the public sector is larger. Desegregating over 1,800 NYC public schools contributes more to citywide desegregation than does desegregating 520 private schools, even though the latter sector is generally more segregated internally (see the Technical Appendix).

**TABLE 5**

**Sectoral decomposition of segregation (entropy) index by race and ethnicity comparison, New York City schools, 2017-18**

Component	Race and ethnicity comparison							
	White   Black		White   Minority		White   Black   Hispanic		Multiracial	
	H <sub>W B</sub>		H <sub>W BHA</sub>		H <sub>W B H</sub>		H <sub>W B H A</sub>	
	H	%	H	%	H	%	H	%
(1) Total citywide	0.6344	100.0	0.4687	100.0	0.4148	100.0	0.3864	100.0
(2) Within public sector	0.4088	64.4	0.2224	47.5	0.2724	65.7	0.2757	71.4
(3) Within private sector	0.0841	13.3	0.0934	19.9	0.0576	13.9	0.0492	12.7
(4) Between sector	0.1414	22.3	0.1528	32.6	0.0848	20.4	0.0615	15.9

Notes: White|Minority comparison aggregates categories of Black, Hispanic, and Asian (H<sub>W|BHA</sub>), whereas multiracial (H<sub>W|B|H|A</sub>) comparison includes each group separately. Excludes students coded as "American Indian/Alaska Native," "Hawaiian Native/Pacific Islander," or "Two or more races." Rows 2-4 in the columns of percentages may not sum to 100 due to rounding.

Table 5 indicates that between 16-33 percent of segregation, depending on the race and ethnicity comparison, is found *between* the public and private sectors. If, for example, full White|minority desegregation (the second supercolumn) were somehow achieved in the public sector, with the proportions of White and minority students in every single public school being identical to their representation in the public sector overall, more than half of total citywide White|minority segregation would remain intact, in the form of segregation within the private sector (19.9 percent) and that between sectors (32.6 percent).

The large between-sector contribution, again, is largely due to the fact that private schools serve a disproportionate number of White students and public schools a disproportionate number of minority students. As a result of this inter-sectoral imbalance, it would be impossible for schools in either sector to achieve uniform White|Minority diversity equivalent to that of the city as a whole, even if both sectors were completely desegregated internally. Put crudely, in shifting students around to attempt to match the citywide percentages, public schools would "run out" of White students, and private schools would "run out" of minority students. Without the movement of students *between* sectors, some segregation (in this case, 32.6 percent, almost one-third) would remain intact no matter what happened *within* either sector.

For the full multiracial comparison (final supercolumn), between-sector segregation accounts for roughly 16 percent of total citywide segregation. If we combine this with the contribution of within-private sector segregation (almost 13 percent), we find that perfect integration within the public sector would leave almost 30 percent of citywide multiracial segregation intact.

In other words, even if we were magically to integrate all NYC public schools, shifting around students from a population of over one million such that the racial and ethnic makeup of over 1,800 schools was exactly the same as the public sector as a whole, almost 30 percent of total citywide segregation would remain. Private schools serve only about 15 percent of the city's students, but, in a sense, the private sector exerts outsized influence on citywide segregation levels.

As a frame of reference for this multiracial decomposition, Reardon et al. (2000), in a national analysis using data from 1995, report that 41 percent of total multiracial metro area segregation is due to segregation between central cities and surrounding suburbs. Given the often-extensive racial and ethnic compositional differences between cities and suburbs, it is not surprising that the contribution of between-sector segregation in NYC does not reach that level (though see Di Carlo and Wysińska Di Carlo [2017]).

That said, while full multiracial desegregation of NYC's public schools would go a long way toward achieving full citywide integration, this lofty goal would still leave a substantial proportion of total multiracial segregation intact (and even more for the other race and ethnicity comparisons). In that sense, the dividing sectoral line between public and private schools represents a kind of invisible ceiling on the efficacy of public sector desegregation efforts.

### **Decomposition of the private sector by religious affiliation**

In addition to calculating the contribution to total segregation of between-sector segregation, we can also perform the same exercise *within* sectors—i.e., by subsectors. For example, Di Carlo and Wysińska Di Carlo (2017), in an analysis of public and private school segregation in the District of Columbia, break down public sector segregation between the charter and regular public subsectors.

As mentioned above, we do not report this charter/regular public school decomposition here, as segregation between the charter and regular public school subsectors is negligible (as it was in D.C.). But there is an additional, potentially important within-sector decomposition in NYC, and that is segregation within and between schools of different religious affiliations within the private sector. For example, when looking at private schools, there is evidence that White students are racially isolated in non-Catholic religious schools more than they are in catholic schools (Reardon and Yun 2002).

Religious affiliation might shape segregation regimes, most obviously, because of the association between race and ethnicity and religion (e.g., Catholic students will tend to be White and Hispanic, Jewish students will tend to be White). But there may be other relevant factors here, such as the possibility of an association between schools' religious

affiliation and the tuition they charge, or variation between different religious affiliations in the likelihood of serving students of other faiths, or the possibility that private schools of different affiliations are concentrated in certain neighborhoods.

At the very least, as shown in Table 6, private schools do vary by religious affiliation in terms of the students they serve. Our dataset allows us to break down private schools into three groups: Catholic schools; non-Catholic religious (“other religious”) schools (e.g., Jewish, Muslim); and non-sectarian schools (no religious affiliation).

**TABLE 6**

	Private subsector			
	Catholic	Other religious	Non-sectarian	All private
Schools	173	214	133	520
Students	52,350	76,578	35,338	164,266
% private students	31.9	46.6	21.5	100.0
<i>Student race and ethnicity distribution (column percentages)</i>				
White	37.1	91.1	69.0	69.2
Black	19.9	3.3	13.4	10.7
Hispanic	33.2	2.1	7.5	13.2
Asian	9.8	3.5	10.1	6.9
<i>Segregation (entropy index)</i>				
White   Black	0.556	0.812	0.381	0.640
White   Minority	0.408	0.785	0.271	0.593
White   Black   Hispanic	0.385	0.753	0.311	0.555
Multiracial	0.355	0.729	0.258	0.509

Notes: White|Minority comparison aggregates categories of Black, Hispanic, and Asian (H<sub>W|BHA</sub>), whereas multiracial (H<sub>W|B|H|A</sub>) comparison includes each group separately. Excludes students coded as “American Indian/Alaska Native,” “Hawaiian Native/Pacific Islander,” or “Two or more races.”

The vast majority (about 74 percent) of NYC’s private schools do maintain some religious affiliation, Catholic or otherwise, and almost 80 percent of private school students attend one of these schools.

Looking at the race and ethnicity distributions, it seems that, while Asian students’ representation is lower than it is citywide in all three subsectors (and in private schools in general), Catholic schools are quite diverse, with no more than 40 percent representation of any group. In contrast, non-Catholic religious and non-sectarian private schools are heavily White, particularly the former (91.1 percent).

Segregation (again, as measured by the entropy index) is moderate-to-high within the Catholic subsector, generally only moderate within the non-sectarian subsector, and strikingly high among non-Catholic religious schools, which exhibit entropy index values

around 0.70-0.80 for all of the race and ethnicity comparisons presented in Table 6. This subsector has grown in size substantially since the early 2000s (Domanico 2014), and it plays a disproportionately important role in shaping segregation within the private sector.

The primary reason for this within-subsector segregation among religious non-Catholic schools is, most likely, the aforementioned association between religion and race and ethnicity. Most notably, roughly two-thirds of all schools within the non-Catholic religious subsector are coded as having a Jewish religious orientation, and the overwhelming majority of students who attend these schools are White (note, however, that some scholars argue that Jews of color may be undercounted in typical surveys [Kelman et al. 2019]). Moreover, these schools are highly concentrated in Kings County, which helps explain that county's relatively private sector high segregation rates (see Table 4).

In Table 7, we quickly break down segregation within the private sector into within- and between-subsector components (with subsector defined in terms of the three categories of private schools – Catholic, other religious, and nonsectarian). These calculations (Reardon et al. 2000) are the same as those presented in Table 5, except the most aggregate unit is the private sector instead of the entire city, and the more disaggregate units are subsectors based on religious affiliation instead of sectors based the public/private dichotomy.

**TABLE 7**

Decomposition of private sector segregation (entropy index) by religious affiliation, by race and ethnicity comparison, New York City schools, 2017-18									
Race and ethnicity comparison									
Component	White   Black $H_{W B}$		White   Minority $H_{W BHA}$		White   Black   Hispanic $H_{W B H}$		Multiracial $H_{W B H A}$		
	H	%	H	%	H	%	H	%	
(1) Total private sector	0.6404	100.0	0.5928	100.0	0.5554	100.0	0.5085	100.0	
(2) Within Catholic subsector	0.2070	32.3	0.1388	23.4	0.1699	30.6	0.1533	30.1	
(3) Within other religious subsector	0.1709	26.7	0.1772	29.9	0.1234	22.2	0.1418	27.9	
(4) Within non-sectarian subsector	0.0949	14.8	0.0585	9.9	0.0599	10.8	0.0558	11.0	
(5) Between subsector	0.1676	26.2	0.2183	36.8	0.2023	36.4	0.1576	31.0	

Notes: White|Minority comparison aggregates categories of Black, Hispanic, and Asian ( $H_{W|BHA}$ ), whereas multiracial ( $H_{W|B|H|A}$ ) comparison includes each group separately. Excludes students coded as "American Indian/Alaska Native," "Hawaiian Native/Pacific Islander," or "Two or more races."

Table 7 suggests that segregation within the private sector is driven not only by high levels of segregation within the Catholic and non-Catholic religious subsectors, but also by the segregation of students between all three subsectors.<sup>3</sup> For example, in the multiracial comparison (final supercolumn), which includes all four race and ethnicity categories, roughly 31 percent of total private sector segregation is between subsectors based on religious affiliation.

This means that even if all three subsectors were completely desegregated internally, with all schools within these subsectors exhibiting the same racial composition as their subsectors overall, almost one-third of total segregation would remain intact. Moreover, the contribution of between-subsector segregation is even higher in the White|minority (36.8 percent) and White|Black|Hispanic (36.4 percent) comparisons.

One big underlying reason for this between-subsector segregation is that Catholic schools serve only 32 percent of all private school students, but the majority of private school students of color (approximately 65 percent) attend Catholic schools. This imbalance means, put simply, that perfect multiracial integration is only about 70 percent possible unless students were to switch between subsectors (i.e., students of color would have to switch out of the Catholic subsector and White students would have to move into the Catholic subsector from the other two).

### **Within-/between-group decomposition**

Just as total citywide segregation, as measured by the entropy index, can be broken down into within-/between-sector (and subsector) components, one can also gauge the degree to which total segregation is due to the separation of White from minority students versus the separation of minority students *from each other*.

We have characterized the former (segregation of White from minority students) as the “traditional” form of segregation, and the results reported above indicate that it is still the dominant form of school segregation in NYC. But modern segregation regimes are—and basically always have been—more complicated than just the “White/non-White” dichotomy. Different race and ethnicity groups are also segregated from each other (e.g., Reardon et al. 2000, Stroub and Richards 2013). And, if we view diversity as a resource from which everyone can benefit, this is important.

Table 8 presents, by sector, the proportion of total segregation ( $H_{W|B|H|A}$ ) that is due to: 1) separation of White from Black, Hispanic, and Asian students ( $H_{W|BHA}$ ); and 2) separation of Black, Hispanic, and Asian students from each other ( $H_{B|H|A}$ ).

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<sup>3</sup> Note that the contribution of the “other religious” (non-Catholic religious) subsector is not as large as one might expect given that it is the largest and most internally segregated of the three. This is due to unusually low diversity (i.e., entropy) in this subsector (see the Technical Appendix). Put differently, the non-Catholic religious subsector is so overwhelmingly White that, were it perfectly integrated internally, its schools would still be far off the *sectorwide* racial and ethnic composition. In this sense, much of the “contribution” of this subsector to sectorwide desegregation would come in the form of its White students moving across subsector lines.

Once again, rows (2) and (3) add up to row (1). In other words, the percentages in Table 8 represent the degree to which total segregation (row 1), whether within the public sector (first supercolumn), private sector (second supercolumn), or citywide (third supercolumn), is due to “traditional” segregation of White students from students of color (row 2) or the separation of minority groups from each other (row 3).

**TABLE 8**

Group decomposition of segregation (entropy) index by sector, New York City schools, 2017-18

Component	Public		Private		Citywide	
	H	%	H	%	H	%
(1) Total segregation ( $H_{W B H A}$ )	0.3275	100.0	0.5085	100.0	0.3864	100.0
(2) Between White and minority ( $H_{W B H A}$ )	0.1059	32.3	0.3870	76.1	0.1878	48.6
(3) Between minority ( $H_{B H A}$ )	0.2217	67.7	0.1215	23.9	0.1986	51.4

Notes: Excludes students coded as “American Indian/Alaska Native,” “Hawaiian Native/Pacific Islander,” or “Two or more races.”

Citywide (final supercolumn), total multiracial segregation is driven in roughly equal parts by the separation of White from minority students (48.6 percent) and the separation of minority students from each other (51.4 percent). In other words, NYC’s student population is remarkably multiracial, and so is its segregation structure. As a result, even if the city’s White students were perfectly integrated with its minority students, with the same proportions of both groups in every single school, public and private, about half of total multiracial segregation would remain intact, in the form of segregation of the three minority groups from each other.

But this breakdown varies quite drastically by sector. Within the public sector, the segregation of minorities from each other actually contributes roughly twice as much (67.7 versus 32.3 percent) to total multiracial segregation as does the segregation of White from minority students. The opposite is true in the private sector, where over three quarters of total segregation consists of segregation of White from minority students. In other words, the multiracial segregation of White, Black, Hispanic, and Asian students not only varies between sectors in terms of extent, but form as well.

Table 8 indicates that the “traditional” conceptualization of segregation — as the separation of White from minority students — is incomplete, and particularly so in the

public sector. In fact, even if White and minority students were completely integrated citywide (with White students representing about 23 percent of students in every school), half of total segregation would remain, since Black, Hispanic, and Asian students would still be segregated from each other. And, in the public sector, such White|minority integration would leave three-quarters of segregation intact.

Conversely, in the private sector, while segregation of minority groups from each other plays an important role in total segregation (24 percent), most segregation assumes the “traditional” form of the separation of White from minority students.

This public/private discrepancy in the between-group breakdown is likely due in part to the fact that the sorting of students into schools is far more tied to residence in the public versus the private sector (due to school zoning policies), and so residential segregation of minority groups from each other plays a bigger role in the former. The private school religious affiliation angle discussed above may also play a role, since two of the subsectors (non-sectarian and religious non-Catholic) are heavily White, thus exacerbating the “traditional” form of segregation.

But the results in Table 8, specifically the much larger contribution of segregation between minority groups in the public versus the private sector, is also due to two other factors that warrant brief discussion. The first is the fact that these contributions, like those of segregation within the public versus the private sectors (Table 5), are partially a function of enrollment share, and the public school student population is overwhelmingly (about 85 percent) Black, Hispanic, and Asian, whereas most private school students are White. As a result, even though, in both sectors and citywide, the segregation of White from minority students is generally stronger than the segregation of minority students from each other (Table 3), segregation between minority groups contributes more to citywide segregation in the public sector (and it plays a large role in absolute terms in that sector, as well as citywide).

The second factor is the inclusion of Asian students in the “minority” group. As shown in Table 3, White students are less segregated from Asians than they are from Black and Hispanic students, and Asian students are more segregated from Black and Hispanic students than are Black and Hispanic students from each other. Performing the group decomposition presented in Table 8 while excluding Asian students—i.e., decomposing the segregation of White from Black and Hispanic students vs. Black and Hispanic students from each other—increases the “between White and minority” contributions to 87 percent in the private sector, 55 percent in the public sector, and 69 percent citywide. This alters our conclusion that total public sector segregation is driven primarily by the separation of minority students from each other (it is instead roughly half and half). But it still clearly illustrates the important role of segregation between minority groups in NYC, particularly in the public sector.

## Discussion

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If we conceptualize student diversity as a resource, then New York City is a case in which that resource is abundant but woefully under-exploited. The city's remarkably diverse student population remains systematically sorted into schools by race and ethnicity. By including private (and charter) schools, the analysis reported above is a rare examination of segregation of all NYC students. Our results lend themselves to three major implications.

**First, the private school sector exerts outsized influence on segregation in New York City, and ignoring private schools imposes a kind of invisible ceiling on the citywide efficacy of desegregation efforts.** Efforts to desegregate NYC public schools, which serve the vast majority of the city's students, should always be a priority. Yet, due to high segregation within the private sector and the racial and ethnic imbalance of students between sectors, even if public schools were perfectly integrated, about 30 percent of citywide multiracial segregation would remain intact (and more depending on the groups included). So long as private schools serve 15 percent of the city's students but 40 percent of its White students, the citywide impact of even the most successful public sector desegregation efforts will be constrained. Private schools should be encouraged to make their student populations look more like the city in which they operate, and schools (in both sectors) must aim to achieve a more uniform dispersion across schools of students by race and ethnicity.

**Second, religious affiliation or orientation is an important underlying factor in segregation within the private sector.** In New York City, the Catholic school subsector serves a diverse student population but the distribution of these students across schools reflects moderate to strong segregation, the non-sectarian subsector is racially and ethnically homogeneous but comparatively integrated, and the religious non-Catholic subsector is neither diverse nor integrated (indeed, the subsector is heavily segregated). Moreover, segregation between these three subsectors accounts for about 30 percent of total multiracial private sector segregation. This is not an easy issue to address, as it is due in part to the association between religion and race and ethnicity (as well as, perhaps, how likely students are to attend schools even if they do not identify with those schools' religious affiliations). Yet the fact remains that students of different races and ethnicities are sorted into these subsectors in a manner that generates segregation within the private sector, which, in the case of NYC, exacerbates overall citywide segregation. The private sector is not a monolith.

**Third, New York City's multiracial student population is segregated multiracially, and true integration, particularly in the public sector, requires attention to the separation of minority groups from each other.** We find that multiracial segregation in the private sector is driven mostly by the separation of Whites from minorities, whereas in the public sector the separation of minorities from each other is the primary contributor to total segregation (though this is due in large part to the fact that Black, Hispanic, and Asian students constitute around 85 percent of the public school population). As a result, even if perfect integration of White and minority students were achieved within both



sectors (with no attention to the specific race or ethnicity of minority students), roughly half of total multiracial segregation across the entire city would remain intact, as Black, Hispanic, and Asian students would still be systematically separated from each other. In NYC, particularly in the public sector, the “traditional” conceptualization of segregation — as the separation of White from minority students — is, at best, incomplete. The separation of White from minority students should remain the priority, given the academic and economic disparities that, on average, tend to exist between these groups. That said, insofar as the benefits of diversity go beyond observable academic and postsecondary outcomes, integration, like segregation, should be multiracial.

All three of these policy implications may generalize to other cities or metro areas, but it is also likely that the structure of public/private school segregation varies by context in policy-relevant ways. For example, Di Carlo and Wysińska Di Carlo (2017), in a similar analysis of public and private schools in the District of Columbia, find relatively equal levels of segregation in both sectors (whereas here we find more segregation in the private sector in NYC), and they also find a larger contribution of between-sector segregation than we do in NYC. Based on these findings, citywide integration in D.C. might focus more on the race and ethnicity balance between sectors, whereas integration in NYC would have comparatively more leverage by integrating schools within each sector. In this sense, then, our results indicate that the question is not just *whether* private schools matter for segregation, but *how* they matter as well.

To be clear, it would not necessarily be appropriate to conclude that private schools are “responsible” for increasing citywide segregation. It is impossible to say what would happen—or would have happened—if private school options were not available or were severely limited. Parents might choose to leave the city for the suburbs, or they might end up sending their children to public schools in a manner that actually reinforced rather than attenuated segregation. Nevertheless, it is clear that the private sector, as well as segregation between sectors, play meaningful roles in shaping total citywide segregation in New York City. Attempts to incorporate private schools into desegregation policy could therefore yield outsized benefits.

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## Technical appendix

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### Sample

Students coded as “American Indian/Alaska Native,” “Hawaiian Native/Pacific Islander,” and “Two or more races” are eliminated entirely from the analysis, due to the low frequencies of these students. Students in these three categories amounted to about three percent of our original sample.

In addition, our original dataset included 36 schools for which there were no or incomplete race and ethnicity frequencies, and an additional 46 schools with reported enrollments of under 20 White, Black, Hispanic, and Asian students. All of these schools are excluded from our analysis (including the latter set of schools does not affect our results). Note that the Private School Universe Survey may not include every private K-12 school in NYC.

### Segregation measures

Using the example of the exposure of Black students to White students, the **Exposure index** (EXP) can be expressed as:

$$\text{EXP} = \sum_{i=1}^n \left( \frac{b_i}{B} \right) \left( \frac{w_i}{t_i} \right)$$

where  $b$  and  $w$  represent the number of Black and White students, respectively, in each school  $i$ ,  $B$  is the number of Black students across the entire subsector, sector, or city, and  $t$  is the total number of students at the school (in our analysis,  $t$  includes all students, regardless of race or ethnicity). EXP can range from 0 (the typical Black student has no White peers at her to school) to 1 (the typical Black student's peers are entirely White). The Black isolation index is the same except  $w_i$  is replaced with  $b_i$ . Exposure (and isolation) index results are presented in Table 2.

**Theil's entropy index** (Thiel 1972) operationalizes diversity in terms of entropy ( $E$ ), which is defined as:

$$E = \sum_{i=1}^n Q_r \ln \frac{1}{Q_r}$$

where  $Q_r$  is the proportion of the population represented by racial or ethnic group  $r$ . When all groups are equally represented in the unit,  $E$  takes on a maximum value of 1. When the entire unit consists of a single group,  $E$  assumes a minimum value of 0.

Entropy is calculated across the entire unit ( $E$ ) (subsector, sector, or citywide) and for each individual school ( $E_i$ ).  $H$  is a weighted average of the deviation of schools' diversity from unitwide diversity.  $H$  can be expressed as:

$$H = \sum_{i=1}^n \left[ \frac{t_i(E - E_i)}{ET} \right]$$

where  $t_i$  is the number of students at school  $i$ , and  $T$  represents the size of the student population across the entire unit. In a unit where every school exhibits precisely the same level of diversity as the district as a whole ( $[E - E_i]=0$  for all values of  $i$ ),  $H$  takes on a minimum value of 0, indicating no segregation (*within* the unit). Entropy index results are presented in Tables 3, 4, and 6, and are used in the decompositions presented in Tables 5, 7, and 8.

*Sectoral decomposition of H.* The decompositions of the entropy index ( $H$ ) are from Reardon et al. (2000). Citywide  $H$  in the equation below is constituted by three different components. The first ( $H_{PuXPr}$ ) is segregation between public and private sectors. The second is segregation within the private sector, weighted by both the private sector's relative size ( $T_{Pr}/T$ ) and its relative diversity or entropy ( $E_{Pr}/E$ ). The third and final term in the equation is segregation within the public sector ( $H_{Pu}$ ), also weighted by relative size and entropy.

$$H = H_{PuXPr} + \frac{T_{Pr}E_{Pr}}{TE} H_{Pr} + \frac{T_{Pu}E_{Pu}}{TE} H_{Pu}$$

These calculations are presented in Table 5. Note that the decomposition of  $H$  within the private sector by religious affiliation (presented in Table 7) is very similar but the two final terms are replaced by three terms for each of the types of religious affiliation, and the first term is segregation between three subsectors instead of two sectors.

*Group decomposition of H.* In the equation below, total White|Black|Hispanic|Asian segregation ( $H_{W|B|H|A}$ ) is composed of: 1) segregation between White and minority students ( $H_{W|BHA}$ ), weighted by the relative magnitude of entropy between White and minority students ( $E_{W|BHA}/E_{W|B|H|A}$ ) and; 2) segregation between minority (Black, Hispanic, and Asian) students ( $H_{B|H|A}$ ), weighted by the relative magnitude of entropy between Black, Hispanic, and Asian students ( $E_{B|H|A}/E_{W|B|H|A}$ ), and the proportion of Black, Hispanic, and Asian students in the unit ( $Q_{BHA}$ ).

$$H_{W|B|H|A} = \left( \frac{E_{W|BHA}}{E_{W|B|H|A}} \right) H_{W|BHA} + Q_{BHA} \left( \frac{E_{B|H|A}}{E_{W|B|H|A}} \right) H_{B|H|A}$$

These calculations are presented in Table 8.



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