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UNEQUAL CHOICES: School model diversity in denver public schools

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ACCESS FOR ALL?

Since choice was introduced in Denver Public Schools, there has been the hope that it would create many new opportunities for families to find the school that meets the needs of every student. There has also been the concern that the choices offered would replicate existing biases in the system - that families in low-income areas would be given choice in name only.

Sadly, our report confirms that even with an explosion of choice, charters and redesigns across Denver schools, inequities still persist in terms of real choices for families. Access to different types of schools is not distributed equally across the city, with some students facing daunting logistics and systemic barriers to enroll in certain programs.

Our report attempts to unwind the plethora of choices offered across Denver to make the essential argument that policymakers, and practitioners should focus on ensuring that the promise of choice does not become a real promise for some and a false hope for others.

Why School Model Diversity Matters

Denver Public Schools (DPS) has experienced a recent period of rapid growth—according to the district's annual Strategic Regional Analysis, ECE-12 enrollment has grown 32% since 2000, with the bulk of the enrollment growth occurring within the last decade.¹

During this time, the district saw a dramatic increase in the number of new schools that opened to keep up with enrollment demand or to meet a district-defined need— 76 new schools have been approved in DPS since 2008, bringing the total number of schools in DPS up to 208 during the 2018-19 school year.² Another 24 schools have been approved by DPS and are currently "on the shelf," awaiting clear enrollment demand and a facility. Currently, DPS has 92,331 students, the bulk of whom fall in grades K-5.³

In recent years, DPS has also become the subject of numerous studies highlighting the state of the "portfolio"

Figure 1. Denver Public Schools (DPS) Membership, 2017-18						
	DPS TOTAL	ECE - 5	6 - 8	9 - 12		
TOTAL STUDENTS	92,331	48,707	19,677	24,600		
TOTAL SCHOOLS	208	117	65	61		

model" and school choice.⁴ The consensus across the literature is that DPS is a "high choice" district, with a relatively large selection of schools that are supposed to meet a variety of student needs and interests. As the promise of the portfolio model is to enable families to find a "great fit" school among a diverse set of choices, A+ Colorado wanted to take a closer look. How diverse are the options in DPS?

The notion of school model diversity will also have added weight in the coming years, as the district's enrollment numbers continue to plateau or even decline in some neighborhoods. DPS will inevitably need to make some choices on what schools should remain open. The current policy landscape holds the rating on the district's School Performance Framework (SPF) as the most important factor in these decisions. But where does the school model fit into these considerations? If the promise of a portfolio method is greater diversity of options, we need to know the extent and reality of that diversity.

To our knowledge, a detailed, student-level analysis has not yet been completed on the variety of school models available to families in DPS. In this report, we take a look at school models and analyze the diversity of options that exist in the city and try to answer the following questions:

• Are certain models clustered in one region or another? i.e. Are there only Montessori schools, or dual-language schools in one part of the city? How does that track to neighborhood demographics?

• What regions of the district have the most diverse collection of schools? i.e. Where can families have a true range of options to meet their unique student needs?

• Do specific school models correlate with higher or lower performance?

• What grade bands have the most diverse options? Does Denver have of great diversity of options at the secondary level but lack options in elementary? Or vice versa?

The purpose of this report is to analyze the current school choice landscape from a model diversity perspective and highlight specific policy areas that can be leveraged to improve access to high quality school options that meet specific student needs.

We have also avoided value judgements on the different models described in this report. Our perspective is that a high-quality school district should include varied, diverse school options and offer families the right tools and resources to make informed decisions. We believe that regardless of what model families choose, they should have the right information to support their decisionmaking. And most critically, we believe that the choices should represent real options - not just the same brand of schools with different packaging.

Methodology and Limitations

To complete this analysis, we used a body of publicly available materials published by DPS, including Enrollment Guides, school websites, and the new School Finder tool. Publicly available statistics such as October Count and enrollment projections also informed the calculations used in the report.

We also took a slightly different approach than most existing research into the degree of choice in Denver Public Schools—instead of looking at the number of schools available, we looked at seat-level, or student level, data to account for the wide variety of school population sizes. The seat numbers used in this report are pulled from the 2018 enrollment projection listed in the 2018 Enrollment Guides. We also use the language "available" in this report to note how many seats are projected to exist within a given school, but this should not be taken to mean "open seats"—many schools described in this report have waiting lists and some require special entry criteria.

To calculate the relative diversity of each DPS region, we used the Shannon-Wiener Diversity Index (or Shannon Index), a calculation often used in biological sciences to give a quantitative value to relative diversity of a given community. The Shannon Index provides a look at both the number of school models ("richness"), and how evenly seats are distributed across those options ("evenness").

To calculate the Shannon Index, we zoomed in on each region in the district. First we calculate the evenness by

looking at the proportion of seats of different models within a region.

Shannon Index equation:

$$H = -\sum_{i=1}^{s} p_{i} \ln p_{i}$$

Where p_i is the proportion of available seats of the *i* model and *s* is the total number of models.

Next we divide the Shannon Index by the maximum diversity, producing the Shannon Equitability Index, helping us understand how close the actual diversity is to maximum diversity. The Equitability Index tells us both how diverse the available school models are, and how evenly distributed the seats are across the models.

Shannon Equitability Index:

$$E_{_{H}} = \frac{H}{\ln(s)}$$

This produces a value between 0 and 1, where 0 means that all seats are concentrated in a single model, and 1 means that seats are perfectly distributed across all model types.

Finally, this report does not attempt to offer an exhaustive accounting of the offerings of each school in DPS. For this information, please consult the DPS Enrollment Guides or contact the school you're interested in.

Definition of School Model Types

In order to analyze the diversity of school models in DPS, we must first identify and define the models themselves. We defined the model as the overall focus of the school, regardless of instructional approach and curriculum.⁵ We acknowledge this is part science and part art. To limit our subjectivity, we used school-reported information to make these determinations. We did not visit each school to check on whether schools were actually implementing the model they describe in public materials. Our perspective throughout this report is that of a public stakeholder—a parent, student, or community member interested in learning about the schools in their neighborhood—so we relied on the information most families and regular Denverites have access to.

Some schools fit neatly into one category. For example, some schools mention an explicit focus on preparation for a 4-year college or university for all students in their mission statement and thus fall neatly into a "college prep" category. Other schools required up to three

	Figure 2. Descriptions of School Model Types
MODEL TYPE	DESCRIPTION
ARTS-FOCUSED	The arts is the integral part of the school day for all students. This includes magnet programs like the Denver School of the Arts as well as open enrollment schools like Kunsmiller Creative Arts Academy and Noel Community Arts School.
ALTERNATIVE EDUCATION	Alternative Education schools are classified by Denver Public Schools as Pathways or Alternative Education Campuses (AECs). They offer specialized programming to reengage students, recover credits quickly, and graduate high school.
CREDENTIAL AND CAREER READINESS	Schools in this category offer students a variety of paths to graduating ready for a college or career. This includes schools that offer formal career pathways, have a significant focus on concurrent enrollment or early college courses, credit recovery, or provide job-related mentorship/internship programs that serve a majority of students.
COLLEGE PREP	These schools have an explicit focus on preparing all students for a 4-year college or university. At the high school level, these schools provide direct support and often financial assistance in the college application process. Unlike Credential and Career Readiness schools, these schools do not offer career pathways or credit recovery. For K-8 grades, schools have an explicit focus on preparing students for success in a rigorous, college prep high school environment. Schools in this category could have specific focus areas, such as Humanities or Science, Technology, Engineering, and Math (STEM), as long as the overall goal is preparation for the college level.
COMPREHENSIVE	This necessarily broad category defines schools that describe themselves as seeking a balanced approach that includes rigorous academics and an intentional focus on specials, electives, and extra-curricular activities. Over half of the elementary schools in the District have been placed in this category.
DUAL LANGUAGE	Dual language schools offer core content courses in languages other than English with the intention of building academic language ability in both languages. This differs from district Transitional Native Language Instruction (TNLI) programs that operate in Denver to support non-native English speakers in developing native-language foundations and eventual English proficiency. Of note, TNLI approaches are implemented in multiple school model types.
EARLY CHILDHOOD EDUCATION (ECE)	The district operates several dedicated ECE centers around the city, allowing these schools to focus on the specific learning needs of PK-K students.
INTERNATIONAL FOCUS	Schools with an international focus encourage students to make connections between their learning and the rest of the world, fostering understanding for diverse cultures. This category includes schools with and without a formal International Baccalaureate designation.
LEARNER CENTERED	This category encompasses school models in which students drive their own learning. This includes Montessori schools, Expeditionary Learning, and other schools that allow students flexibility in directing their learning experiences through projects, individual learning plans, etc.
BLENDED LEARNING	Schools in this category have an explicit focus on incorporating technology into the day-to-day activities of all students. This could include schools with a 1:1 student/device ratio, schools that utilize an online learning platform, or schools that otherwise use technology to meet the specific needs of each learner.
EXPERIENTIAL LEARNING	Experiential Learning schools offer on hands-on learning outside of the classroom, including field experiences, service learning, and expeditions.
WELLNESS	Schools focused on wellness have an explicit focus on encouraging all students to develop healthy habits toward fitness and other life choices.
SINGLE GENDER EDUCATION	These schools are tailored to the specific needs of students who identify with a certain gender.

Note: These models do not consider non-choice alternative placements within the district, such as Gilliam and Ridge View Charter School.

Figure 3. DPS Population by Region							
CITY REGION	SEATS AVAILABLE WITHIN REGION (2018-19 SY)	NUMBER OF RESIDENT STUDENTS	% STUDENTS ELIGIBLE FOR FREE OR REDUCED PRICE LUNCH	% BLACK STUDENTS	% LATINX STUDENTS	% WHITE STUDENTS	% STUDENTS OTHER RACE OR ETHNICITY
FAR NORTHEAST	16,290	18,359	83%	22%	64%	6%	8%
NEAR NORTHEAST	22,442	25,949	49%	17%	32%	40%	10%
NORTHWEST	14,830	10,139	70%	8%	66%	21%	5%
SOUTHEAST	18,993	10,860	42%	10%	28%	51%	11%
SOUTHWEST	20,157	21,060	88%	3%	83%	8%	6%

Note: Denver Public Schools Planning and Analysis separates Near Northeast into two regions (Near Northeast and Central). Because this split is not reflected in the enrollment guides, this report examines the combined Near Northeast geography.

Sources: Demographics from Denver Public Schools Strategic Regional Analysis 2017. Regional capacity from A+ Analysis of DPS SchoolChoice Enrollment guides.

labels to fully describe the school model. Girls Athletic Leadership School (GALS) self-describes as a college preparatory school in its mission statement, but it's also a single-gender school--a factor that affects all aspects of the school-- and focuses on physical and emotional wellness throughout the school day. Thus, GALS is tagged "college prep," "single gender education," and "wellness." School model categories are not exclusive, and many schools have two or more tags.

In all, we identified 13 distinct school models in Denver Public Schools. A description of these models is provided in Figure 2, and a full list of schools and associated models is provided on our website apluscolorado.org.

Distribution of School Models

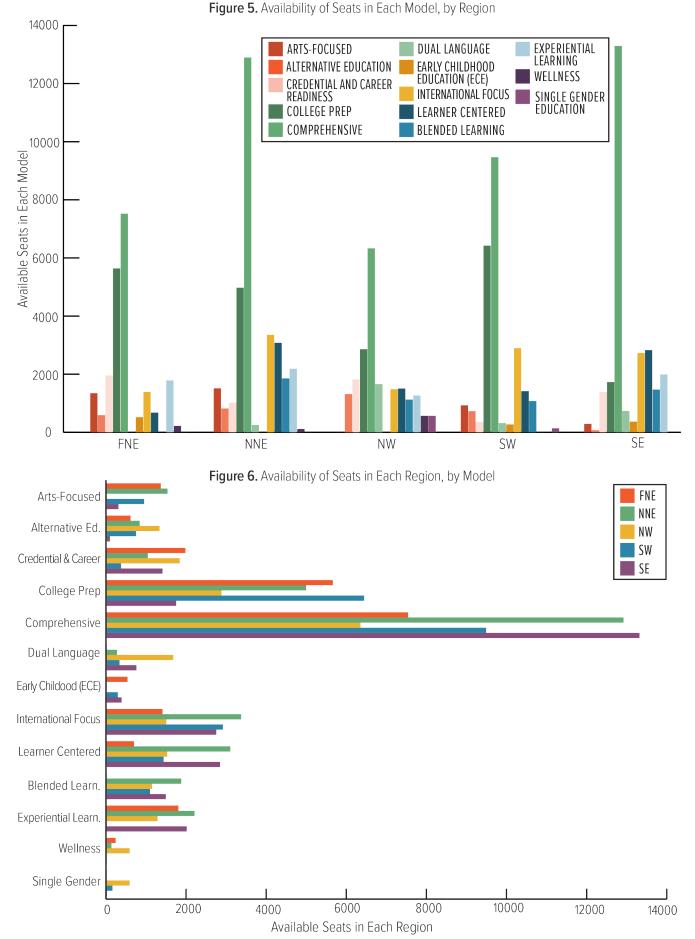
This report enumerates 13 distinct school models in Denver Public Schools. Overall, no one region has seats in every model but each region of the city has some seats in 10-11 out of the 13 models identified in this report. By far, however, there are more seats in comprehensive schools than any other school model, with the majority of these seats in the Southeast and Near Northeast regions.

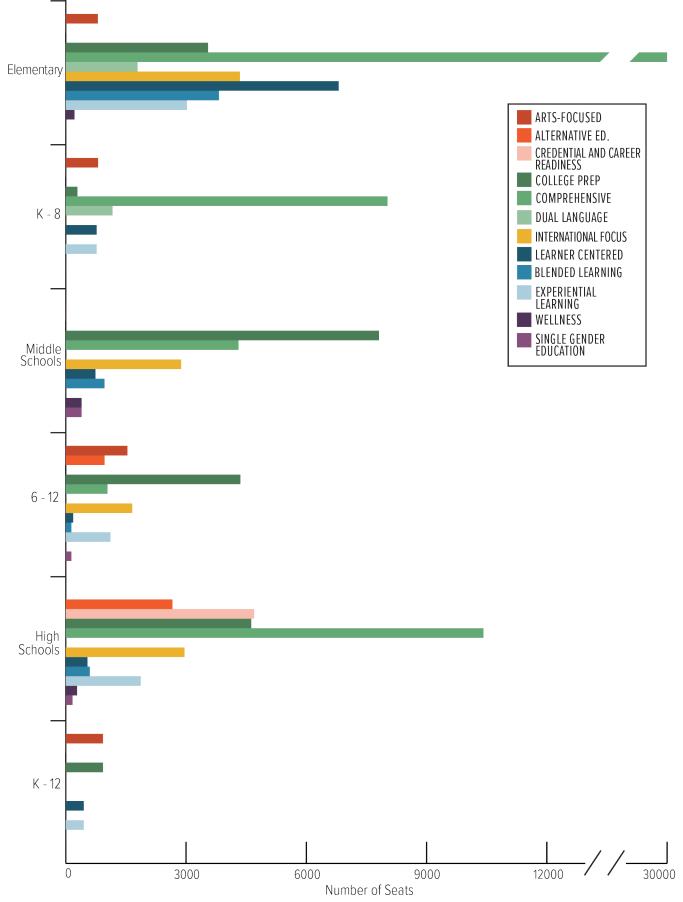
Each region of the city offers a unique set of options for students. To get a sense of both the diversity of the region and how accessible those diverse choices are, we look to the results of our Shannon Equitability Index calculations. Just as a forest is made of many tree species, each with many individual trees, each region in DPS is made up of many school models, each with many individual seats within that model. For more information about how we calculated the Shannon Equitability Index, see the Methodology and Limitations section of this report.

Figure 4. Diversity by DPS Region						
REGION	MODELS AVAILABLE	Shannon Equitability Index				
DPS OVERALL	13	.76				
FAR NORTHEAST	10	.71				
NEAR NORTHEAST	11	.73				
NORTHWEST	11	.83				
SOUTHWEST	11	.67				
SOUTHEAST	11	.67				

*Shannon Equitability Index closer to 0 means less diverse options and less even access to those options. An Index score closer to 1 means there are more diverse options and more evenly distributed access to those options.

The most diverse region is the Northwest Region, with a Shannon Equitability Index of .83. The least diverse regions are the Southwest and Southeast (.67). This means that the Northwest region has more options and these options are more evenly distributed in this region than in others. Conversely, the Southwest and Southeast regions have more concentrated options.





Northwest Snapshot

SINGLE GENDER

COMPREHENSIVE

COLLEGE PREP

0%

46%

35%

0%

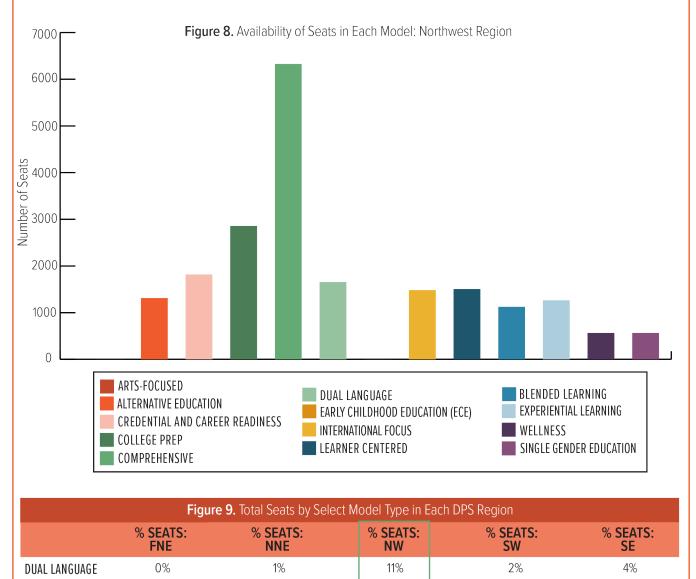
57%

22%

Why is the Northwest more diverse than other regions in DPS? This diversity may be attributed to a few factors. While there are no arts-focused schools or dedicated ECE schools in the Northwest region, every other category is represented in the Northwest. However, the Northwest has a lower proportion of high frequency models like comprehensive and college prep than other regions-- only 43% of NW seats are tagged comprehensive, compared to 53% district-wide. Additionally, 19% of seats in the NW are in college prep schools, compared to 23% district-wide.

Also, the Northwest has a larger proportion of underrepresented models— over half of the total dual language schools and more the three-quarters of single gender education seats are in the Northwest, and these seats make up a larger proportion of the total seats in the region than any other region (11% of NW seats are dual language, and 4% of NW seats are single gender).

These lower proportions in the Northwest are made up by other, less common models, which contributes to greater model diversity.



2%

43%

19%

0%

66%

9%

1%

50%

34%

Figure 10a-b. Comprehensive Seats in DPS							
Figure 10a. Location of Comprehensive Seats							
PROPORTION OF % TOTAL SEATS: % TOTAL SEATS							
53%	8%	14%	7%	10%	14%		
Figure 10b. Comprehensive Seats as a Proportion of Total Seats in Each Region							
% TOTAL SEATS: FNE			% TOTAL SEATS: % TO NW		% TOTAL SEATS: SE		
46%	57%	43%		50%	66%		

Comprehensive Seats

The majority of seats in DPS, regardless of grade band, are "comprehensive," or schools that have an intentionally broad focus that include a number of supplemental and extra-curricular options. These schools represent over half of the total DPS student population, but these seats are not evenly distributed across the district. For example, fewer than 1 in 10 of comprehensive seats can be found in the Far Northeast, while over a quarter of the seats can be found in the Near Northeast and Southeast. Is there a clear policy rationale for the lack of comprehensive seats in the Far Northeast? If so, it is an unstated policy objective without deep rationale or purpose.

Looking at the proportion of comprehensive seats to total seats in each region gives a clearer picture on the diversity of options. Two-thirds of the seats in the Southeast are comprehensive, while fewer than half of the seats in the Far Northeast and Northwest are comprehensive.

Learner Centered Seats

Learner centered models are distributed throughout the district, but are disproportionately allocated in specific regions. The learner centered category includes Montessori and Expeditionary Learning programs, and schools that incorporate project-based learning or design thinking. 10% of schools district-wide have this tag, and each region includes a share of these seats. However, learner centered models are not distributed proportionally within each region (Figure 11a). There are fewer learner centered seats in the Far Northeast and Northwest than other regions and these seats represent a smaller proportion of seats (14% and 12%, respectively), compared to other regions. The Near Northeast region, however, has a higher proportion of learner centered seats than other regions--nearly a quarter (23%) of the total K-5 seats in this region are learner centered (Figure 11b). There are no learner centered seats in 9-12 grades in the FNE, NW, or SW.

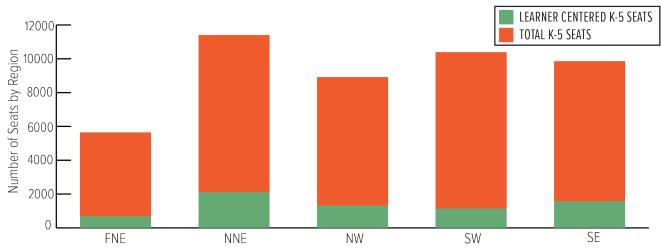
Surprisingly, while over two-thirds of K-5 seats are in comprehensive schools, there are almost twice as many "learner centered" seats as "college prep" seats in K-5 grades. This is notable given the district approved nearly a dozen college prep elementary schools in the 2017 Call for New Quality Schools process and indicates this may change if these schools move forward with opening.⁶ According to 2018 projections, learner centered seats are the second most prevalent model district-wide at the K-5 level, after comprehensive seats.

College Prep Seats

Given the rise in college prep focused schools in the last decade, we wanted to take a specific look at the distribution of these seats. We found that while 23% of seats district-wide are in college prep schools, the Far Northeast and Southwest have the largest concentrations of these schools. Over a third of the seats in each of these regions are tagged with "college prep" (35% in the Far Northeast, 34% in the Southwest).

Figure 11a. Learner Centered Seats in DPS						
PROPORTION OF TOTAL DPS SEATS ECE - 12	% TOTAL SEATS: FNE	% TOTAL SEATS: NNE	% TOTAL SEATS: NW	% TOTAL SEATS: SW	% TOTAL SEATS: SE	
10%	1%	3%	2%	2%	3%	

Figure 11b. Proportion of K-5 Learner Centered Seats to Total K-5 Seats, by Region



Conversely, only 9% of the seats in the Southeast region are considered college prep (DSST Byers MS and HS, Grant Beacon, and Rocky Mountain Prep Creekside; the latter two are also tagged blended learning.)

Additionally, college prep seats represent a higher proportion of seats in grades 6 and above than all other models. As we've discussed, the majority of seats in DPS are comprehensive, or intentionally broad in focus with access to a variety of supplemental programming and extracurriculars. However, looking at the distribution of school models across grade bands tells a different story. The vast majority of comprehensive seats, nearly 35,000 are in the K-5 or K-8 schools. However, looking at middle and high schools district-wide, college prep seats actually outnumber comprehensive seats (17,725 seats vs. 15,773 seats, respectively).

Indeed, options get further constrained for schools serving grades 6 and above in the Far Northeast. 72%

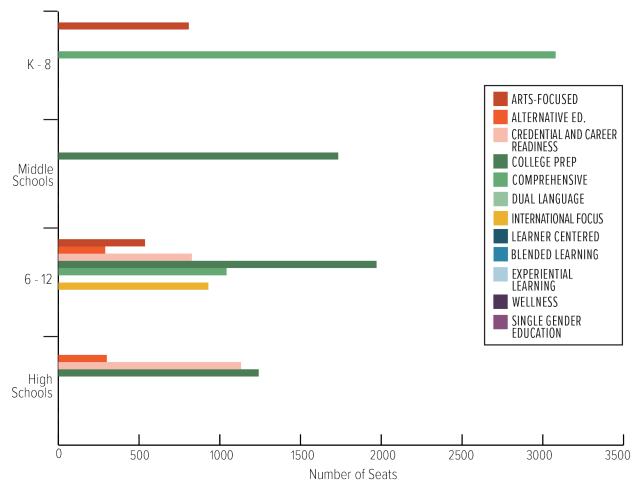


Figure 12. Far Northeast Focus: Models with Available Seats, Grades 6-12

of middle school seats (grades 6-8 and 6-12 schools) in the Far Northeast are in college prep schools. This is particularly impactful for students transitioning out of a K-5 setting as most non-college prep seats are found in K-8 schools that may or may not have room to accomodate incoming 6th graders. Once again, the lack of diversity of options in the Far Northeast represents a troubling trend.

Relationship Between Model and Performance

School model is just one of the many complex factors that may contribute to school performance, so it's important to not attribute school ratings solely to the model of the particular school. However, we believe any description of the education landscape in DPS requires a discussion of school quality using available measures.

District-wide, there seems to be little correlation between school model and performance. Below is a table depicting the percentage of green/blue seats on the DPS School Performance Framework by school model. Seven out

of the thirteen models analyzed in this report have over 50% quality seats, as defined by the 2016 DPS School Performance Framework.⁷ Fewer than half of the seats in six models are high guality-Alternative Education, Comprehensive, Career and Credential Readiness, Experiential Learning, International Education, and Single Gender Education. Considering the prevalence of comprehensive schools, the fact that fewer than half of these seats meet the quality bar is concerning. Nearly 90% of the dedicated Early Childhood Education seats are high quality, making this model an outlier compared to other models, although this might be because early childhood ratings include different information than K-12 frameworks. It would also be worthwhile to examine performance for individual student groups at each of these models to see where students are best served.

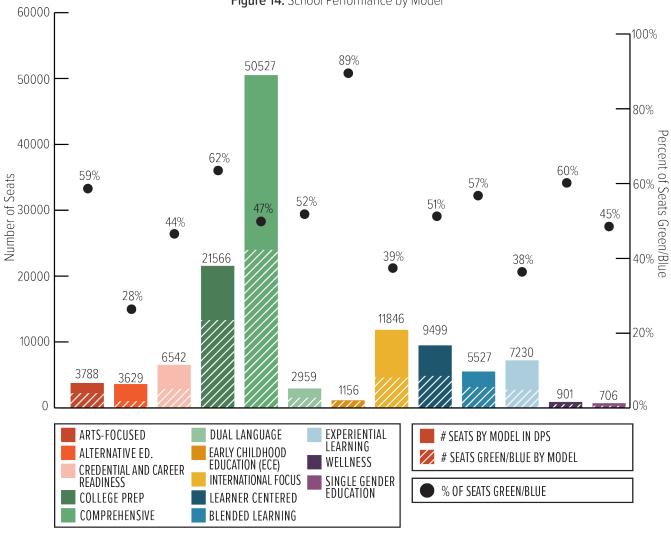


Figure 14. School Performance by Model

RECOMMENDATIONS

We hope this report continues an ongoing conversation about the choice system in DPS and leads researchers and stakeholders to further examine the district in the following areas:

• Define demand: This report attempts to describe one side of a complex supply and demand equation. Now that we know the supply side—what models are available and how they are distributed—the next step for researchers is to find ways to discern demand. What models do families and students want? Despite the quantity of data DPS collects through the unified choice process, this is more of a challenge than one might expect—how are families making choices? Would families make other choices if more or different models were available in their neighborhood? This will help DPS determine "district needs" in the future and help align the portfolio to community demand.

• Examine assumptions & break cycles: This report highlights many aspects of the current diversity of school models in Denver both reinforcing current assumptions and breaking down others. Policymakers and practitioners should ask themselves hard questions about why certain models are prioritized in different parts of the city. Breaking legacies of systemic injustice will require interrogating current thinking and practices in certain parts of the city to bring real options to families.

• **Inform policy:** We also urge the district to use this information to determine the value of a diverse portfolio. As we've shown, school model does not necessarily correlate with school performance. In other words, there is no sure bet to help the district reach its 2020 goals in terms of school model. However, 80% of schools on "the shelf," or schools that are approved but not yet open, are college prep schools. If the district values a diverse portfolio, what policies could be enacted to incentivize the authorization and opening of less-common models?

• **Improve access:** We encourage DPS to continue to improve the availability of and access to information about schools. By making this information available in a variety of languages and platforms, families are more likely to have access to the information they need to make informed choices based on their own needs and desires for their children.

• Find and learn from model type exemplars: Denver should make a concerted effort to highlight exemplar models and network learning across the system. Failure to do creates "deserts" across the system that are clear in this report. These may be examples from within our current context or national leaders in distinct model types. We have a responsibility to ensure the diversity of our system is also rooted in excellence.

• Looking beyond our context for other models: This report was built with and based in current examples and models that are in Denver Public Schools. Consequently, models that currently are not in operation in Denver aren't listed here. We believe it's important to name them and consider whether adding them would add to the quality diversification of our portfolio overall. Models that promote racial or ethno-cultural reinforced learning, Classical schools, indigenous education models, military schools, or liberatory learning exist in other cities and towns around the country but not currently in Denver. As policymakers and practitioners consider what is next for Denver, they should not just use data about what we currently have, but should consider what is not present to build the portfolio of tomorrow.

END NOTES

- 1 Planning and Analysis. *Denver Public Schools Strategic Regional Analysis: Fall 2017.* PDF. Denver Public Schools, 2017.
- 2 Denver Public Schools Portfolio Management Team. 2018 Call for New Quality Schools. Denver Public Schools, December 2017. http://portfolio.dpsk12.org/wp-content/uploads/2017/12/2018_CNQS_VF.pdf
- 3 Denver Public Schools Student Submissions Team. *Denver Public Schools Report of Student Membership 2017-*2018. Denver Public Schools, January 9, 2018. http://thecommons.dpsk12.org/cms/lib/CO01900837/Centricity/ domain/31/student submissions/forms/OC_Membership_2017.pdf
- 4 See the following resources for more information on portfolio strategies and school choice: Campbell, Christine, et al. "Stepping Up: How Are American Cities Delivering on the Promise of Public School Choice?" Center on Reinventing Public Education, Nov. 2017. https://www.crpe.org/sites/default/files/crpestepping-up-american-cities-public-school-choice.pdf. Gross. Betheny, et al. "Are City Schools Becoming Monolithic? Analyzing the Diversity of Options in Denver, New Orleans, and Washington, D.C." Center on Reinventing Public Education, Aug. 2017. https://www.crpe.org/sites/ default/files/crpe-diversity-options-monolithic.pdf. McShane, Michael Q. "Measuring Diversity in Charter School Offerings." American Enterprise Institute, July 2015. https://www.aei.org/wp-content/uploads/2015/07/Measuring-Diversity-in-Charter-School-Offerings.pdf
- 5 These models do not consider non-choice alternative placements within the District, such as Gilliam and Ridge View Charter School.
- 6 Denver Public Schools Portfolio Management Team. 2018 Call for New Quality Schools. Denver Public Schools, December 2017. http://portfolio.dpsk12.org/wp-content/uploads/2017/12/2018_CNQS_VF.pdf
- 7 We use the 2016 School Performance Framework due to concerns that the 2017 School Performance Framework misrepresented student achievement, particularly at the elementary level. For more information about the misalignment of the 2017 School Performance Framework Results, see V. Schoales. "Denver's Good but Is It That Good?" A+ Colorado Rambles Blog (19 October 2017). http://apluscolorado.org/blog/denvers-good-but-isit-that-good/



ABOUT A+ COLORADO

The mission of A+ Colorado is to sharpen public education by building public will and advocating for the changes necessary to dramatically increase student achievement in schools and districts in Colorado. We are an independent, nonpartisan 501(c)(3) organization working to bring the power of data and research to challenge ourselves, educators and policymakers to rethink public education.

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