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## Diversity, Equity, and

 Inclusion (DEI) Scores on the District-Wide Survey and School Trends, 2020-21Key Findings

In spring 2021, new questions related to the topics of diversity, equity, and inclusion were added to the DistrictWide Surveys. This is the second report exploring these survey responses from 2020-21. After analyzing school-level topic scores containing the new questions, key findings include:

- Diversity, Equity, and Inclusion (DEI) topic scores are moderately correlated with Climate, Instruction, and Leadership topic scores on the District-Wide Surveys.
- School-level student and teacher demographics were related to school-level student DEI scores but not teacher DEI scores.
- Student DEI scores were related to school-level student achievement on the math interim assessment but not the reading interim assessment.
- Teacher DEI scores were not related to school-level teacher retention rates after controlling for other school-level factors.


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## Introduction

Each spring, the Office of Research and Evaluation (ORE) at the School District of Philadelphia (SDP) administers the District-Wide Surveys (DWS) to students, parents/guardians, teachers, school-based staff, and principals/assistant principals. The surveys ask about five key areas (constructs) tied to school improvement: Leadership, Professional Capacity, School Climate, Instruction, and Parent/Guardian Community Ties. In the winter of the 2020-21 school year, ORE worked with members of the newly developed Equity Coalition to develop new DWS questions about diversity, equity, and inclusion (DEI) that could help us understand the perspectives and experiences of parents/guardians, students, teachers, principals and assistant principals, and school-based staff. In May 2022, we published a first report summarizing the responses across respondent groups. ${ }^{1}$ This report builds on the findings by looking at school-level DEI scores and their relationship to other survey topics, student and teacher demographics, student achievement, and teacher retention.

## Survey Data \& Administration

The 2020-21 administration of the District-Wide Surveys took place from March 24 to May 28, 2021. Surveys were administered online via SurveyMonkey, and respondents either accessed the survey through their employee portal (District teachers, principals, assistant principals, schoolbased support staff), student portal (District students), parent portal (District parent/guardians), with a unique survey link (Charter principals and teachers) or through a website that required entering a valid student ID (District and Charter parent/guardians and students). Students in grades 3-12 take the District-Wide Survey, however only students in grades 6-12 were asked to respond to the DEI questions. ${ }^{2}$

## Response Rates

In 2020-21, about 62,400 students, parents/guardians from 24,300 households, 8,300 teachers, 240 principals and assistant principals (APs), and 1,530 school-based support staff members completed the District-Wide Surveys (Table 1). ${ }^{3}$

[^0]Table 1. District-Wide Survey Response Rates, 2020-21

| Survey | Number of Respondents | Response Rate |
| :--- | :---: | :---: |
| Student | 62,353 | $42 \%$ |
| Parent/Guardian | 24,313 | $15 \%$ |
| Teacher | 12,243 | $68 \%$ |
| Principal/AP | 242 | $45 \%$ |
| Support Staff | 1,525 | $43 \%$ |

## Diversity, Equity, and Inclusion Questions

As described in the previous report on the results of the DEI questions from the 2020-21 DistrictWide Surveys, the survey team adopted and adapted items from existing validated staff and student instruments developed by Panorama Education to create the new DEI questions. ${ }^{4}$ In some cases, items were adopted verbatim; in others, the wording was adapted to fit the specific SDP context and/or be appropriate for parent and guardian respondents, as the Panorama surveys were designed for students and school-based staff. Questions for each respondent group, listed by subtopic, are shown in Appendix A. Sub-topics were created after running a factor analysis, and subtopic and topic scores were confirmed with Cronbach's alpha calculations. For more information about the creation of Diversity, Equity, and Inclusion (DEI) scores, see Box 1.

## Exploratory Questions

1. How do the new DEI topic scores correlate with the other topics (Leadership, Professional Capacity, School Climate, Instruction, and Parent/Guardian Community Ties) on the student, teacher, and parent surveys?
2. Were school-level teacher and student demographics related to school-level teacher and student DEI scores?
3. Were school-level student DEI scores related to school performance on reading and math spring benchmark assessments?
4. Were school-level teacher DEI scores related to within-school teacher retention?
[^1]
## Box 1: A Deep Dive into Topic and Sub-Topic Scores

How do we create District-Wide Survey topic and sub-topic scores?
Calculating topic and sub-topic scores helps us compare responses across different topics. To calculate the sub-topic scores, we first assign each possible response a numeric value, with the most positive response assigned the highest value and the least positive the lowest. Next, we add these values for all of the items in the sub-topic. Finally, the sum is divided by the total count of survey items comprising that sub-topic (excluding those with missing values). The topic score is calculated by averaging all the sub-topic scores.

Take, for example, the parent/guardian Belonging sub-topic. For each of the four items of this sub-topic, there are four scored response options (strongly disagree, disagree, agree, and strongly agree). Each response corresponds with a number from $0-10$, with 0 being the most negative and 10 being the most positive (i.e., strongly disagree $=0$ and strongly agree $=10$ ). To get the sub-topic score, we add up all the response values (each ranging from 0-10) and then divide by four (the total number of items). We repeat this process with each of the sub-topics, so each sub-topic has a score from 0-10. See below for an example on calculating the average for the parent/guardian Belonging sub-topic:

|  | Item 1 | Item 2 | Item 3 | Item 4 |
| :--- | :--- | :--- | :--- | :--- |
| Survey Responses <br> and Values | Strongly disagree $=$ <br> 0 | Agree $=$ <br> 6.66 | Strongly agree $=$ <br> 10 | Disagree $=$ <br> 3.33 |

Belonging sub-construct average score: $(0+6.66+10+3.33) / 4=5$

## What does a higher/lower score mean?

Scores for the DEI topics and sub-topics can range from 0-10. A score of 0 means respondents at that school answered DEI questions very negatively, while a score of 10 means respondents answered questions very positively. The higher a topic score, the more positively respondents answered the DEI questions.

## Data sources and analysis

School-level topic scores for the District-Wide Surveys are only calculated if schools meet response rate thresholds. ${ }^{5}$ In addition to District-Wide Survey data, we looked at school performance on the reading and math interim assessments and teacher retention. First, we ran correlational analyses for the DEI scores with each of the variables of interest. Then we ran OLS regression models for

[^2]research questions 2-4; in research question 2, DEI scores were the dependent variable, and in questions 3-4, DEI scores were tested as an indicator of other school-level outcomes (interim assessment scores and teacher retention). All models were checked for assumptions of normality, linearity, homoscedasticity, and multicollinearity, and no assumption violations were found.

## Interim assessments

SDP first implemented a universal K-12 interim assessment program in the 2020-21 school year. ${ }^{6}$ Students in grades K-5 took aimswebPlus, and students in grades 6-12 took Star in both reading and math. AimswebPlus was administered during three windows throughout the year and Star during four windows. Both assessments placed students into tiers, with Tier 1 being considered at or above the benchmark for that grade. The analyses in this report used the percentage of students at a school who placed into Tier 1/At or Above Benchmark in the spring (final) window as the measure of student performance on interim assessments.

## Teacher retention

Teacher retention data was based on the percentage of teachers retained in a school from October 1 of the 2020-21 school year to October 1 of the 2021-22 school year. To calculate the within-school retention rate, we count the number of teachers who taught in the same school from one October to the next, then divide that number by the total number of teachers.

## Findings

The next four sections outline the results for our analysis of DEI topic scores. First, we looked at whether school-level DEI scores were correlated with other topic scores on the District-Wide Surveys. Next, we explored whether school-level student and teacher demographics affect DEI scores. Then we looked at whether DEI scores were related to student achievement. Finally, we analyzed teacher DEI scores' relationship to within-school teacher retention. ${ }^{7}$

## DEI topic scores are moderately correlated with Climate, Instruction, and Leadership scores.

Student and teacher school-level DEI scores were only slightly correlated (.183), and student and parent scores were moderately correlated with each other (.375; Table 2). Overall DEI scores (student, teacher, and parent/guardian combined) were moderately correlated with other survey topic scores, including Climate, Instruction, and Leadership (Table 3). Moderate correlations in this

[^3]case indicate that DEI scores are likely related to other factors at the school but are still measuring a separate concept. The topic score correlations were higher for students than for teachers and parents/guardians.

Table 2. Student and parent/guardian DEI scores were moderately correlated

|  | Student DEI Score | Teacher DEI Score | Parent/Guardian <br> DEI Score |
| :--- | :---: | :---: | :---: |
| Student DEI Score | $1(\mathrm{n}=148)$ | $.183^{*}(\mathrm{n}=142)$ | $.375^{* *}(\mathrm{n}=101)$ |
| Teacher DEI Score |  | $1(\mathrm{n}=202)$ | $.087(\mathrm{n}=131)$ |
| Parent DEI Score |  |  | $1(\mathrm{n}=138)$ |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01$

Table 3. Overall DEI scores were moderately correlated with Climate, Instruction, and Leadership scores

| DWS Topics | Overall DEI <br> Score | Student DEI <br> Score | Teacher DEI <br> Score | Parent/ <br> Guardian <br> DEI Score |
| :--- | :---: | :---: | :---: | :---: |
| Climate | $.581^{* *}$ <br> $(\mathrm{n}=180)$ | $.720^{* *}$ <br> $(\mathrm{n}=148)$ | $.413^{* *}$ <br> $(\mathrm{n}=202)$ | $.642^{* *}$ <br> $(\mathrm{n}=138)$ |
| Instruction | $.541^{* *}$ <br> $(\mathrm{n}=180)$ | $.615^{* *}$ <br> $(\mathrm{n}=148)$ | $.203^{* *}$ <br> $(\mathrm{n}=202)$ | $.455^{* *}$ <br> $(\mathrm{n}=138)$ |
| Parent/Guardian Community Ties | $.200^{*}$ <br> $(\mathrm{n}=131)$ | $\mathrm{N} / \mathrm{A}$ | $.158^{*}$ <br> $(\mathrm{n}=202)$ | $.506^{* *}$ <br> $(\mathrm{n}=138)$ |
| Professional Capacity | $.227^{* *}$ <br> $(\mathrm{n}=176)$ | $\mathrm{N} / \mathrm{A}$ | $.578^{* *}$ <br> $(\mathrm{n}=202)$ | $\mathrm{N} / \mathrm{A}$ |
| Leadership | $.595^{* *}$ <br> $(\mathrm{n}=131)$ | $\mathrm{N} / \mathrm{A}$ | $.574^{* *}$ <br> $(\mathrm{n}=202)$ | $.556^{* *}$ <br> $(\mathrm{n}=138)$ |

*p<.05, ** $\mathrm{p}<.01$
Note: N/A indicates this respondent group was not asked questions about this topic.

## School-level student and teacher demographics were related to student DEI scores but not teacher DEI scores.

For our next three research questions, we ran correlation analyses and then, if applicable, regression models for the variables of interest. Only the regression results are reported below, but correlation tables can be found in Appendix B. At a school-level, student demographics (the percentage of students who were Black/African American or Hispanic/Latinx (Black/Latinx), the percentage of students receiving special education services, the percentage of students who were English Learners, and the percentage of students who were economically disadvantaged) were related to student DEI scores (Table 4). For Black/Latinx students, students receiving special education services, and economically disadvantaged students, the coefficients were negative, meaning that the larger the percentage of each group at the school, the lower (and more negative) the school-level DEI score was.

The percentage of teachers who were Black/Latinx at a school was also negatively related to student DEI scores (Table 5), though the coefficient was smaller when controlling for student demographics and smaller still when controlling for both student demographics and student achievement (the percentage of students in Tier 1/At or Above Benchmark in reading and math). This may indicate that the percentage of teachers who are Black/Latinx at schools is driven by another factor that also affects student DEI scores. Teacher DEI scores were not correlated with either student or teacher school-level demographics, and therefore we did not run additional regression analyses (see Tables B2 and B4).

Table 4. Student demographics were related to school-level student DEI scores

|  | Student DEI Score |  |  |
| :--- | :---: | :---: | :---: |
| Variable | B | S.E. | $\boldsymbol{\beta}$ |
| \% Black/Latinx students | -.641 | .225 | $-.265^{*}$ |
| \% students receiving special education services | -1.274 | .448 | $-.191^{*}$ |
| \% English Learners | .959 | .362 | $.191^{*}$ |
| \% economically disadvantaged students | -1.349 | .372 | $-.340^{* *}$ |

*p<.05, ** p <. 01

Table 5. The percentage of Black/Latinx teachers at a school was negatively related to student DEI scores

|  | Student DEI Score |  |  |
| :--- | :---: | :---: | :---: |
| Variable | B | S.E. | $\boldsymbol{\beta}$ |
| Model 1 |  |  |  |
| \% Black/Latinx teachers | -2.160 | .206 | $-.655^{* *}$ |
| Model 2 |  |  |  |
| \% Black/Latinx teachers | -1.502 | .250 | $-.456^{* *}$ |
| \% Black/Latinx students | .079 | .234 | .033 |
| \% students receiving special education services | -1.189 | .401 | $-.178^{* *}$ |
| \% English Learners | .643 | .328 | .128 |
| \% economically disadvantaged students | -1.404 | .333 | $-.353^{* *}$ |
| Model 3 |  |  |  |
| \% Black/Latinx teachers | -.936 | .243 | $-.280^{* *}$ |
| \% Black/Latinx students | .512 | .233 | $.212^{*}$ |
| \% students receiving special education services | .048 | .426 | .007 |
| \% English Learners | 1.065 | .316 | $.212^{* *}$ |
| \% economically disadvantaged students | -.957 | .318 | $-.241^{* *}$ |
| \% of students in Tier 1/At or Above Benchmark in <br> reading | -.007 | .003 | $-.220^{*}$ |
| \% of students in Tier 1/At or Above Benchmark in <br> math | .022 | .003 | $.756^{* *}$ |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01$

## Student DEI scores were related to achievement on the math interim assessment but not the reading interim assessment.

We next used the percentage of students who scored in Tier 1/At or Above Benchmark in reading and math for the spring 2021 window to look at whether school-level DEI scores were related to student achievement. Student DEI scores were a significant positive indicator of student achievement in math but not reading (Table 6). This means that schools with higher student DEI scores also had more students placing in the highest tier of the math interim assessments. Additionally, we ran a model that included an interaction effect for the percentage of Black/Latinx students and student DEI scores (Table 7). That interaction variable coefficient was significant, which means that the effect of DEI scores on math achievement on the interim assessment was larger for schools with higher percentages of Black/Latinx students. The percentage of Black/Latinx students and student DEI scores were centered here to avoid multicollinearity issues.

Table 6. Student DEI scores were a significant indicator of student achievement for math but not reading

|  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Reading |  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Math |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Variable | B | S.E. | $\boldsymbol{\beta}$ | $\mathbf{B}$ | S.E. | $\boldsymbol{\beta}$ |
| \% Black/Latinx students | -32.765 | 5.141 | $-.447^{* *}$ | -35.389 | 4.593 | $-.425^{* *}$ |
| \% students receiving special <br> education services | -51.316 | 10.227 | $-.255^{* *}$ | -59.607 | 9.137 | $-.260^{* *}$ |
| \% English Learners | -38.892 | 8.243 | $-.256^{* *}$ | -37.950 | 7.364 | $-.220^{* *}$ |
| \% economically disadvantaged <br> students | -31.483 | 8.642 | $-.262^{* *}$ | -13.725 | 7.720 | -.100 |
| Student DEI score | 2.391 | 1.859 | .079 | 12.756 | 1.660 | $.371^{* *}$ |

[^4]Table 7. DEI scores' effect on math achievement was larger for schools with higher percentages of Black/Latinx students

|  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Reading |  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Math |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Variable | B | S.E. | $\boldsymbol{\beta}$ | $\mathbf{B}$ | S.E. | $\boldsymbol{\beta}$ |
| \% Black/Latinx students <br> (centered) | -33.178 | 5.193 | $-.453^{* *}$ | -36.705 | 4.561 | $-.440^{* *}$ |
| \% students receiving special <br> education services | -51.970 | 10.301 | $-.258^{* *}$ | -61.689 | 9.048 | $-.269^{* *}$ |
| \% English Learners | -39.178 | 8.273 | $-.258^{* *}$ | -38.862 | 7.266 | $-.225^{* *}$ |
| \% economically disadvantaged <br> students | -35.527 | 10.763 | $-.296^{* *}$ | -26.594 | 9.453 | $-.195^{*}$ |
| Student DEI score (centered) | 1.919 | 2.006 | .063 | 11.254 | 1.762 | $.327^{* *}$ |
| Interaction of \% Black/Latinx <br> students and Student DEI | 5.115 | 8.085 | .043 | 16.280 | 7.101 | $.121^{*}$ |

*p<.05, **p<. 01

## Teacher DEI scores were not related to school-level teacher retention rates after controlling for other school-level factors.

We also looked at whether teacher's perceptions of DEI at a school level may affect the teacher retention rate at that school. In this analysis, we used within-school retention from October 2020 to October 2021. When looking solely at teacher DEI scores, they were a significant positive indicator of retention, meaning that schools with higher teacher DEI scores also had higher rates of retention (Table 8). However, teacher DEI scores were no longer significant after controlling for principal tenure at the school, the percentage of teachers who were Black/Latinx, and teacher survey topic scores for Climate and Leadership, which means that school-level teacher DEI scores are not a true indicator for school-level teacher retention.

Table 8. Teacher DEI scores were not a significant indicator of teacher retention after controlling for other school-level metrics

|  | Teacher Retention Within-School Year |  |  |
| :--- | :---: | :---: | :---: |
| over Year |  |  |  |
|  | $\boldsymbol{\beta}$ |  |  |
| Model 1 | B | S.E. | $\boldsymbol{\beta}$ |
| Teacher DEI score |  |  |  |
| Model 2 | 4.164 | 1.301 | $.221^{* *}$ |
| Teacher DEI score |  |  |  |
| Principal tenure (years) at school in SY 20-21 | -.272 | 1.483 | -.014 |
| Teacher Climate | .281 | .181 | .106 |
| Teacher Leadership | 3.343 | 1.148 | $.277^{* *}$ |
| \% Black/Latinx teachers | 1.936 | 1.068 | .170 |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01$

## Conclusions

In the winter of the 2020-21 school year, ORE worked with members of the newly developed Equity Coalition to develop survey questions about diversity, equity, and inclusion (DEI) that were added to the District-Wide Surveys and could help us understand the perspectives and experiences of parents/guardians, students, teachers, principals and assistant principals, and school-based support staff. Overall DEI scores (student, teacher, and parent/guardian combined) were moderately correlated with other survey topic scores, including Climate, Instruction, and Leadership. For Black/Latinx students, students receiving special education services, and economically disadvantaged students, the larger the percentage of each group at the school, the lower the school-level DEI score was. The percentage of teachers who were Black/Latinx at a school was also negatively related to DEI scores, though it was less so when controlling for student demographics and student achievement. Student DEI scores were a significant positive indicator of student achievement in math but not reading, meaning schools with higher student DEI scores also had more students placing in the highest tier of the math interim assessments. Teacher DEI scores were initially related to school-level retention rates but were not after controlling for other schoollevel factors.

This information can be used to guide the work of the Equity Coalition and to identify schools for potential support around Guardrail 4 , which states, "Our students' potential will not be limited by practices that perpetuate systemic racism and hinder student achievement." ${ }^{8}$ To see full results from the District-Wide Surveys, visit https://philasd.org/dwsresults.

[^5]
## Appendix A: DEI Survey Questions

Table A1. Teacher Survey DEI Questions

| Sub-topic | Question Text |
| :---: | :---: |
| Belonging | I feel like I belong at my school |
|  | I feel connected to other adults at my school |
|  | My colleagues understand me as a person |
| Cultural Awareness and Action | In my classes, I give my students opportunities to learn about people from different races, ethnicities, or cultures. |
|  | I can easily interact with students in my classes who are from a different cultural background than my own |
|  | I am comfortable incorporating new material about people from different backgrounds into my lessons |
|  | I am comfortable discussing race-related topics with my students |
|  | When a sensitive issue of diversity arises in class, I can implement strategies to appropriately address the situation |
| Anti-racist Professional Culture | I am comfortable discussing race-related topics with my colleagues |
|  | Teachers at my school have important conversations with each other about race, even when the conversation might be uncomfortable |
|  | My professional development experiences help me explore new ways to promote equity in my practice. |
|  | Leaders at this school work to advance student equity |
|  | The equity-focused professional development I have received is valuable |

Table A2. Parent/Guardian Survey DEI Questions

| Sub-topic | Question Text |
| :---: | :---: |
| Belonging | My child feels like he or she belongs at their school |
|  | I feel connected to the teachers at my child's school |
|  | My child feels connected to the teachers at their school |
|  | My child's teachers understand my child as a person |
| Cultural Awareness and Action | Adults at my child's school talk with students about race, even when the conversation might be uncomfortable |
|  | When there are major news events related to race, adults in my child's school talk about them with students |
|  | Adults at my child's school treat people from different races, ethnicities, or cultures fairly |
|  | Adults at my child's school are able to address sensitive issues of diversity when they arise |
|  | At school, my child learns about people from different races, ethnicities, or cultures |

Table A3. Principal/AP Survey DEI Questions

| Sub-topic | Question Text |
| :---: | :---: |
| Belonging | I feel like I belong in my school |
|  | I feel connected to other adults in my school |
|  | My colleagues understand me as a person |
| Cultural Awareness and Action | Staff at my school have important conversations with each other about race, even when the conversation might be uncomfortable |
|  | I think about what my colleagues of different races, ethnicities, or cultures experience |
|  | In my school, students have opportunities to learn about people from different races, ethnicities, or cultures |
|  | My professional development experiences help me explore new ways to promote equity in my practice |
|  | I can easily interact with students in my school who are from a different cultural background than my own |
|  | I am comfortable discussing race-related topics with students |
|  | I am comfortable discussing race-related topics with my colleagues |

Table A4. Student Survey DEI Questions

| Sub-topic | Question Text |
| :---: | :---: |
| Educating All Students | I spend time at school with students from different races, ethnicities, or cultures |
|  | Students from different races, ethnicities, or cultures hang out with each other at school |
|  | Students at my school treat people from different races, ethnicities, or cultures fairly |
|  | Adults at my school treat people from different races, ethnicities, or cultures fairly |
|  | Students at my school have close friends from different racial, ethnic, or cultural backgrounds |
| Cultural Awareness and Action | Teachers encourage me to learn about people from different races, ethnicities, or cultures |
|  | Students at my school have important conversations with each other about race, even when the conversation might be uncomfortable |
|  | When there are major news events related to race, adults at my school talk about them with students |
|  | I feel comfortable sharing my thoughts about race-related topics with other students at my school |
|  | My teachers care about my culture, ethnicity, and identity |

Table A5. School Support Staff Survey DEI Questions

| Sub-topic | Question Text |
| :--- | :--- |
| Belonging | I feel like I belong at my school |
|  | I feel connected to other adults at my school |
|  | My colleagues understand me as a person |
|  | I am comfortable discussing race-related topics with students <br> Strategies to appropriately address the situation |
|  | I am comfortable discussing race-related topics with my colleagues |
|  | The equity-focused professional development I have received is <br> valuable |
|  | Leaders at my school work to advance student equity |

## Appendix B: Full Correlation Results

Table B1. Student DEI scores correlated with student demographics

|  | Student DEI |
| :--- | :--- |
| \% of students Black/African American | $-.628^{* *}(\mathrm{n}=148)$ |
| \% of students Hispanic/Latinx | $.250^{* *}(\mathrm{n}=148)$ |
| \% of students White | $.507^{* *}(\mathrm{n}=148)$ |
| \% of students American Indian/Alaskan Native | $-.218^{* *}(\mathrm{n}=148)$ |
| \% of students Asian | $.451^{* *}(\mathrm{n}=148)$ |
| \% of students Multi-Racial/Other | $.505^{* *}(\mathrm{n}=148)$ |
| \% of students Native Hawaiian/Pacific Islander | $.182^{*}(\mathrm{n}=148)$ |
| \% of students receiving special education services | $-.434^{* *}(\mathrm{n}=148)$ |
| \% of students economically disadvantaged | $-.550^{* *}(\mathrm{n}=148)$ |
| \% of English Learners | $.217^{* *}(\mathrm{n}=148)$ |

*p<.05, ** $\mathrm{p}<.01$

Table B2. Teacher DEI scores correlated with teacher demographics

|  | Teacher DEI |
| :--- | :--- |
| \% of teachers Black/African American | $-.051(\mathrm{n}=200)$ |
| \% of teachers Hispanic/Latinx | $-.039(\mathrm{n}=121)$ |
| \% of teachers White | $.096(\mathrm{n}=202)$ |
| \% of teachers Asian/Pacific Islander | $-.026(\mathrm{n}=121)$ |
| \% of teachers Multi-Racial/Other | $.103(\mathrm{n}=84)$ |
| \% of teachers Native American/Alaskan Native | $.370(\mathrm{n}=16)$ |

*p<.05, ** $\mathrm{p}<.01$

Table B3. Student DEI scores correlated with teacher demographics

|  | Student DEI |
| :--- | :--- |
| \% of teachers Black/African American | $-.679^{* *}(\mathrm{n}=147)$ |
| \% of teachers Hispanic/Latinx | $.076(\mathrm{n}=92)$ |
| \% of teachers White | $.618^{* *}(\mathrm{n}=148)$ |
| \% of teachers Asian/Pacific Islander | $.203(\mathrm{n}=90)$ |
| \% of teachers Multi-Racial/Other | $-.112(\mathrm{n}=64)$ |
| \% of students Native American/Alaskan Native | $-.396(\mathrm{n}=11)$ |

*p<.05, **p<. 01

Table B4. Teacher DEI scores correlated with student demographics

|  | Teacher DEI |
| :--- | :--- |
| \% of students Black/African American | $-.011(\mathrm{n}=202)$ |
| \% of students Hispanic/Latinx | $.045(\mathrm{n}=202)$ |
| \% of students White | $-.065(\mathrm{n}=202)$ |
| \% of students American Indian/Alaskan Native | $-.070(\mathrm{n}=202)$ |
| \% of students Asian | $.036(\mathrm{n}=202)$ |
| \% of students Multi-Racial/Other | $.031(\mathrm{n}=202)$ |
| \% of students Native Hawaiian/Pacific Islander | $-.123(\mathrm{n}=202)$ |
| \% of students receiving special education services | $-.119(\mathrm{n}=202)$ |
| \% of students economically disadvantaged | $.050(\mathrm{n}=202)$ |
| \% of English Learners | $.015(\mathrm{n}=202)$ |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01$

Table B5. Student DEI scores correlated with student achievement

|  | Student DEI |
| :--- | :--- |
| \% of students at Tier 1/At or Above Benchmark in Reading | $.548^{* *}(\mathrm{n}=147)$ |
| \% of students at Tier 1/At or Above Benchmark in Math | $.747^{* *}(\mathrm{n}=147)$ |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01$

Table B6. Teacher DEI scores correlated with teacher retention

|  | Teacher DEI |
| :--- | :--- |
| Teacher retention within-school year over year SY 21-22 | $.221^{* *}(\mathrm{n}=202)$ |
| Teacher retention within-school within-year SY 20-21 | $.107 \quad(\mathrm{n}=202)$ |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01$

## Appendix C: Beta Regression Model Details

Presented below are beta regression models equivalent to the OLS models in tables 6,7 , and 8 of this report. These models were created to demonstrate that models which assume boundary conditions resulted in similar overall conclusions to the models presented in the main body of this report.

Unlike the models in the main body of this report, beta regressions use log. By taking the exponent of each of these log odds, we can obtain the odds ratio for a given indicator. For example, in Table C1, students' average DEI score has a log odds of 0.608 when predicting the percentage of students at or above benchmark in math. This number can be translated into a conventional odds ratio, through the formula e. 608 yielding a value 1.837. This means that, on average, for a 1-point increase in a school's average DEI score, there is an $84 \%$ increase in the odds of being at or above benchmark.

To illustrate what this means in practice, consider a hypothetical school in which $25 \%$ of students are meeting the testing standard in math, which is equivalent to an odds ratio of 1:3 (one "yes" per three "no's"). This, in turn, means that a 1-point increase in average DEI score is associated with an increase in the odds ratio that expresses the percentage of students at that school meeting the math testing standard. In this case, the updated odds would be 1.84:3, which translates to 1.84 of every 4.84 students, or $38 \%$.

Table C1. Beta regressions resulted in conclusions very similar to OLS regressions

|  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Reading |  |  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Math |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Variable | B | S.E. | $\mathbf{e}^{\mathbf{B}}$ | B | S.E. | $\mathbf{e}^{\mathbf{B}}$ |
| Intercept | 1.079 | $0.401^{* *}$ | 2.942 | 1.040 | 0.353 | $2.828^{* *}$ |
| \% Black/Latinx students | -0.016 | $0.003^{* * *}$ | $0.984^{* * *}$ | -0.015 | 0.002 | $0.985^{* * *}$ |
| \% students receiving special <br> education services | -0.030 | $0.006^{* * *}$ | $0.971^{* * *}$ | -0.030 | 0.004 | $0.970^{* * *}$ |
| \% English Learners | -0.019 | $0.004^{* * *}$ | $0.981^{* * *}$ | -0.016 | 0.003 | $0.984^{* * *}$ |
| \% economically disadvantaged <br> students | -0.012 | $0.004^{* *}$ | 0.988 | -0.009 | 0.004 | $0.991^{*}$ |
| Student DEI score | 0.072 | 0.093 | 1.075 | 0.608 | 0.078 | $1.837^{* * *}$ |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01,{ }^{* * *} \mathrm{p}<.001$

Table C2. Beta regressions resulted in conclusions very similar to OLS regressions

|  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Reading |  |  | Percentage of Students in <br> Tier 1/At or Above <br> Benchmark in Math |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Variable | B | S.E. | $\mathbf{e}^{\mathbf{B}}$ | B | S.E. | $\mathbf{e}^{\mathbf{B}}$ |
| Intercept | 1.262 | 0.511 | $3.533^{*}$ | 1.527 | 0.428 | $4.605^{* * *}$ |
| \% Black/Latinx students <br> (centered) | -0.016 | 0.003 | $0.984^{* * *}$ | -0.016 | 0.002 | $0.984^{* * *}$ |
| \% students receiving special <br> education services | -0.030 | 0.006 | $0.970^{* * *}$ | -0.031 | 0.004 | $0.969^{* * *}$ |
| \% English Learners | -0.020 | 0.004 | $0.981^{* * *}$ | -0.017 | 0.003 | $0.983^{* * *}$ |
| \% economically disadvantaged <br> students | -0.014 | 0.005 | $0.986^{* *}$ | -0.013 | 0.004 | $0.987^{* *}$ |
| Student DEI score (centered) | 0.051 | 0.010 | 1.053 | 0.543 | 0.083 | $1.722^{* * *}$ |
| Interaction of \% Black/Latinx <br> students and Student DEI | 0.002 | 0.004 | 1.002 | 0.007 | 0.003 | $1.007^{*}$ |

${ }^{*} \mathrm{p}<.05,{ }^{* *} \mathrm{p}<.01,{ }^{* * *} \mathrm{p}<.001$

Table C3. When we consider boundary conditions for our predictor variable, we find that some covariates (principal tenure and Leadership scores) become more significant. However, we still do not find a significant relationship between teacher DEI and retention.

|  | Teacher Retention Within-School Year |  |  |
| :--- | :---: | :---: | :---: |
| over Year |  |  |  |
|  | $\mathbf{e}^{\mathbf{B}}$ |  |  |
| Intercept | $\mathbf{B}$ | S.E. | 1.258 |
| Teacher DEI score | 0.229 | 0.831 | 1.204 |
|  | 0.186 | 0.103 |  |
| Intercept | -0.033 |  | 0.967 |
| Teacher DEI score | -0.205 | 0.118 | 0.815 |
| Principal tenure (years) at school in SY 20-21 | 0.033 | 0.015 | $1.034^{*}$ |
| Teacher Climate score | 0.203 | 0.092 | $1.225^{*}$ |
| Teacher Leadership score | 0.264 | 0.084 | $1.303^{* *}$ |
| \% Black/Latinx teachers | -0.336 | 0.301 | 0.715 |

[^6]
[^0]:    ${ }^{1}$ Linker, K, and A. Reitano. (2022). Responses to New Diversity, Equity, and Inclusion (DEI) Questions on the District-Wide Survey, 2020-21. School District of Philadelphia Office of Research and Evaluation. Available at: https://www.philasd.org/research/wp-content/uploads/sites/90/2022/05/DEI-Responses-2020-21-District-Wide-Survey-May-2022.pdf
    ${ }^{2}$ For a list of all questions asked on the District-Wide Surveys, see https://www.philasd.org/research/programsservices/district-wide-surveys/allquestions/.
    ${ }^{3}$ For information about the representativeness of student and parent responses, see https://www.philasd.org/research/2021/10/12/representativeness-of-the-2019-20-district-wide-student-and-parent-guardian-survey-results-2/.

[^1]:    ${ }^{4}$ The Panorama Equity and Inclusion Surveys: https://go.panoramaed.com/thanks/measuring-equity-inclusion?submissionGuid=baac0511-51e1-4196-aabd-9c9669cf5dad

[^2]:    ${ }^{5}$ Response rate thresholds for 2020-21: student $=25 \%$, parent/guardian $=10 \%$, teacher $=25 \% ; n<5$ are suppressed regardless of the percentage.

[^3]:    ${ }^{6}$ For more information about assessments, see
    https://www.philasd.org/research/category/assessments/star/.
    ${ }^{7}$ Because the metrics we used for student achievement and retention are percentages and cannot be greater than 100, we also ran beta regressions. The overall conclusions related to DEI scores did not change, but those beta regression results are presented in Appendix C.

[^4]:    *p<.05, **p<. 01

[^5]:    ${ }^{8}$ For more information about the Board Goals and Guardrails, see https://www.philasd.org/schoolboard/goals-and-guardrails/.

[^6]:    *p<.05, ${ }^{* *} \mathrm{p}<.01$

