A Convenient Rhetoric or Substantial Change of Teacher Racial Diversity? A Text Mining Analysis of Federal, State, and District Documents

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Abstract: Teacher racial diversity has been widely considered important in education. However, it remains unclear to what extent and how teacher racial diversity has been addressed at the federal, state, and district levels. In this study, we employed text mining to

collect and analyze over three million documents at the federal, state, and district levels. We found that while students of color had disproportionately less access to racially diverse teachers, the documents under our analysis insufficiently discussed the recruitment and retention of racially diverse teachers. Our findings also reveal that education agencies at the federal, state, and district levels paid scant attention to recruiting and retaining Hispanic teachers. For the states and districts that discussed the recruitment of racially diverse teachers, they primarily recruited teachers from institutions and organizations that primarily serve people of color, such as Historically Black Colleges and Universities, the Columbia Latino/a Law Student Association, the National Association of Asian American Professionals, and the National Black MBA Association. Given the findings and the projected growth of Black and Hispanic student enrollment in the United States, we provide five policy recommendations for policymakers and leaders to racially diversify the teacher workforce amid shifting student demographics, particularly Hispanic students.
Keywords: education policy; racial diversity; teacher diversity; teacher preparation; teacher recruitment; teacher retention; text mining

¿Una retórica conveniente o un cambio sustancial de la diversidad racial docente? Un análisis de *text mining* de documentos federales, estatales y distritales

Resumen: La diversidad racial docente ha sido ampliamente considerada importante en la educación. Sin embargo, sigue sin estar claro en qué medida y cómo se ha abordado la diversidad racial de los docentes a nivel federal, estatal y distrital. En este estudio, empleamos la *text mining* para recopilar y analizar más de tres millones de documentos a nivel federal, estatal y distrital. Descubrimos que, si bien los estudiantes de color tenían un acceso desproporcionadamente menor a maestros racialmente diversos, los documentos bajo nuestro análisis discutían de manera insuficiente el reclutamiento y la retención de maestros racialmente diversos. Nuestros hallazgos también revelan que las agencias de educación a nivel federal, estatal y distrital prestaron poca atención a la contratación y retención de maestros hispanos. Para los estados y distritos que discutieron el reclutamiento de maestros racialmente diversos, reclutaron principalmente maestros de instituciones y organizaciones que atienden principalmente a personas de color, como los Colegios y Universidades Históricamente Negros, la Asociación de Estudiantes de Derecho Latino/a de Columbia, la Asociación Nacional de Profesionales asiático-americanos y la Asociación Nacional Negra de MBA. Dados los hallazgos y el crecimiento proyectado de la inscripción de estudiantes negros e hispanos en los Estados Unidos, brindamos cinco recomendaciones de políticas para los legisladores y líderes para diversificar racialmente la fuerza laboral docente en medio de la demografía estudiantil cambiante, particularmente los estudiantes hispanos.
Palabras-clave: política educativa; diversidad racial; diversidad docente; preparación docente; reclutamiento de maestros; retención de maestros; *text mining*

Uma retórica conveniente ou uma mudança substancial na diversidade racial dos professores? Uma análise de *text mining* de documentos federais, estaduais e distritais

Resumo: A diversidade racial docente tem sido amplamente considerada importante na educação. No entanto, ainda não está claro até que ponto e como a diversidade racial de professores tem sido abordada nos níveis federal, estadual e distrital. Neste estudo, empregamos *text mining* para coletar e analisar mais de três milhões de documentos nos níveis federal, estadual e distrital. Descobrimos que, embora os alunos de cor tivessem

desproporcionalmente menos acesso a professores racialmente diversos, os documentos sob nossa análise discutiam insuficientemente o recrutamento e a retenção de professores racialmente diversos. Nossas descobertas também revelam que as agências de educação nos níveis federal, estadual e distrital prestaram pouca atenção ao recrutamento e retenção de professores hispânicos. Para os estados e distritos que discutiram o recrutamento de professores com diversidade racial, eles recrutaram principalmente professores de instituições e organizações que atendem principalmente pessoas de cor, como Faculdades e Universidades Historicamente Negras, Columbia Latino/a Law Student Association, National Association of Profissionais Asiáticos Americanos e a National Black MBA Association. Dadas as descobertas e o crescimento projetado de matrículas de alunos negros e hispânicos nos Estados Unidos, fornecemos cinco recomendações de políticas para formuladores de políticas e líderes para diversificar racialmente a força de trabalho de professores em meio a mudanças demográficas estudantis, particularmente estudantes hispânicos.

Palavras-chave: política educacional; diversidade racial; diversidade docente; preparação de professores; recrutamento de professores; retenção de professores; *text mining*

A Convenient Rhetoric or Substantial Change of Teacher Racial Diversity? A Text Mining Analysis of Federal, State, and District Documents

The importance and benefits of increasing teacher racial diversity have been widely agreed upon. Improving the recruitment and retention of teachers of color has long been a policy goal, especially in districts with large percentages of students of color (Bates & Glick, 2013). Despite theoretical arguments and a large body of research that demonstrate the benefits and importance of diversifying the teacher workforce (Villegas & Irvine, 2010), it is unclear *to what extent* and *how* federal, state, and school districts have addressed it. The most recent state-by-state analysis of teacher diversity was conducted in 2014 by the Center for American Progress (Boser, 2014). Despite the rhetoric on racial diversity, to what extent and how has teacher racial diversity been addressed recently? To answer this question, this study employed text mining—automatically extracting information from texts (Wang, 2016)—to collect and analyze over three million documents at the federal, state, and district levels. The analysis of the massive amount of data was guided by three specific questions: (1) To what extent and how has teacher racial diversity been discussed in congressional hearings on education? (2) To what extent and how has teacher racial diversity been discussed by state education agencies? and (3) To what extent and how has teacher racial diversity been discussed by school districts?

Literature Review
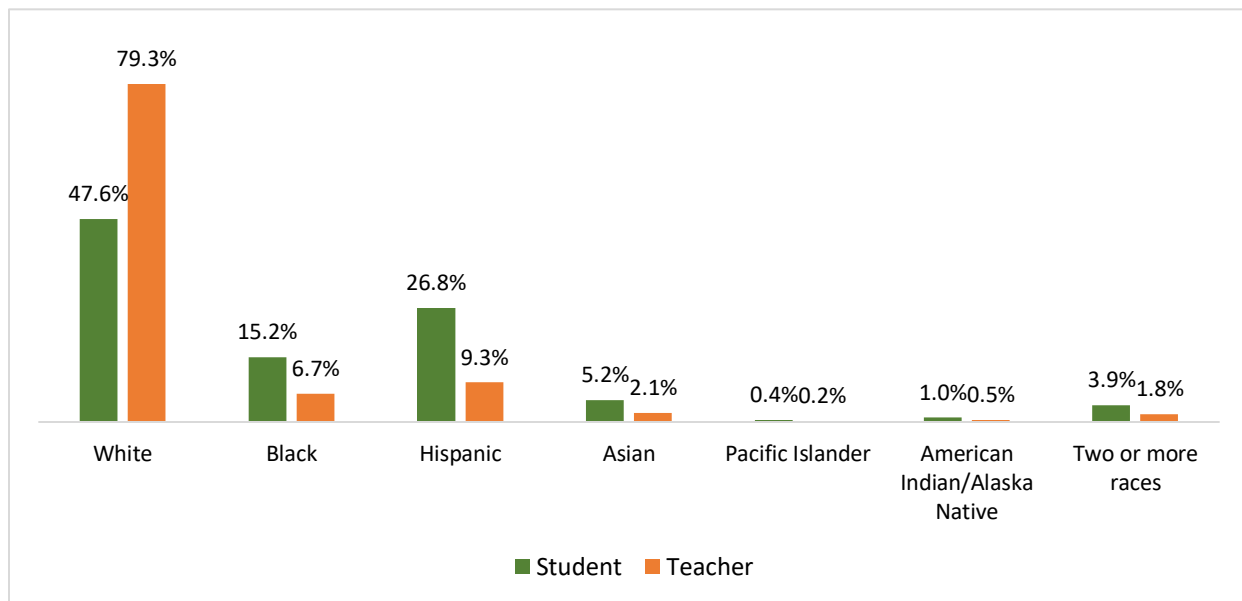
The Teacher-Student Racial Diversity Gap

There has been a growing need for teacher racial diversity across the nation against the backdrop of the increasing teacher-student racial gaps. While the idea of improving the racial diversity of the teacher workforce has long been championed, the racial background of the teacher workforce often does not match the student population (Boser, 2014; King & Darling-Hamond, 2018). Many times, education agencies struggle to recruit racially diverse teachers to proportionately match their student body. The visible images on websites and publications of educational organizations often "do not reflect the populations these teacher education programs serve" (Souto-

Manning & Emdin, 2020, p.1). Efforts to measure the difference between racially diverse students and their teachers reveal a sharp teacher-student racial gap. The 2011 Teacher-Diversity Index developed by the Center for American Progress reported that nationally 40% of the school-age population were students of color, while only 17% of the teacher workforce were teachers of color (Boser, 2014).

Since then, the teacher-student racial gap has continued to widen in the United States (Cherng & Halpin, 2016). During the 2017–2018 school year, White teachers were still the only racial group that was over-represented in terms of the teacher-student racial gap. Other racial groups of teachers, such as Black, Hispanic, Asian, Pacific Islander, and American Indian/Alaskan Native, were under-represented with disproportionately higher numbers of students in these racial categories. Figure 1 illustrates the teacher-student racial gap across the country during the 2017–2018 school year. Nationally, 47.6% of students were White, followed by 15.2% Black students, 26.8% Hispanic students, and 5.2% Asian students. By contrast, 79.3% of teachers were White, followed by 9.3% Hispanic teachers, 6.7% Black teachers, and 2.1% Asian teachers (National Center for Education Statistics, 2019).

Figure 1
The Teacher-Student Racial Gap at the National Level (2017–2018 school year)

Similar to the aggregated demographics at the national level, the teacher-student racial gap persisted at the state level. Take California and Texas, the two states with the largest numbers of student enrollment, for instance (see Figure 2). In 2018–2019, the California teacher workforce was predominantly White (61.2%), with Hispanic teachers at 21.1%. This was a sharp contrast to the student population, which was 54.9% Hispanic and 22.4% White. Likewise, the Texas teacher workforce was predominantly White (58.4%), with Hispanic teachers at 27.6%—a contrast to 54.9% Hispanic students and 22.4% White students. The continuous growth of students of color has raised concerns over the progress of diversifying the teacher workforce to address the teacher-student racial gap.

Figure 2

The Teacher-Student Racial Gap in California and Texas (2018–2019 school year)
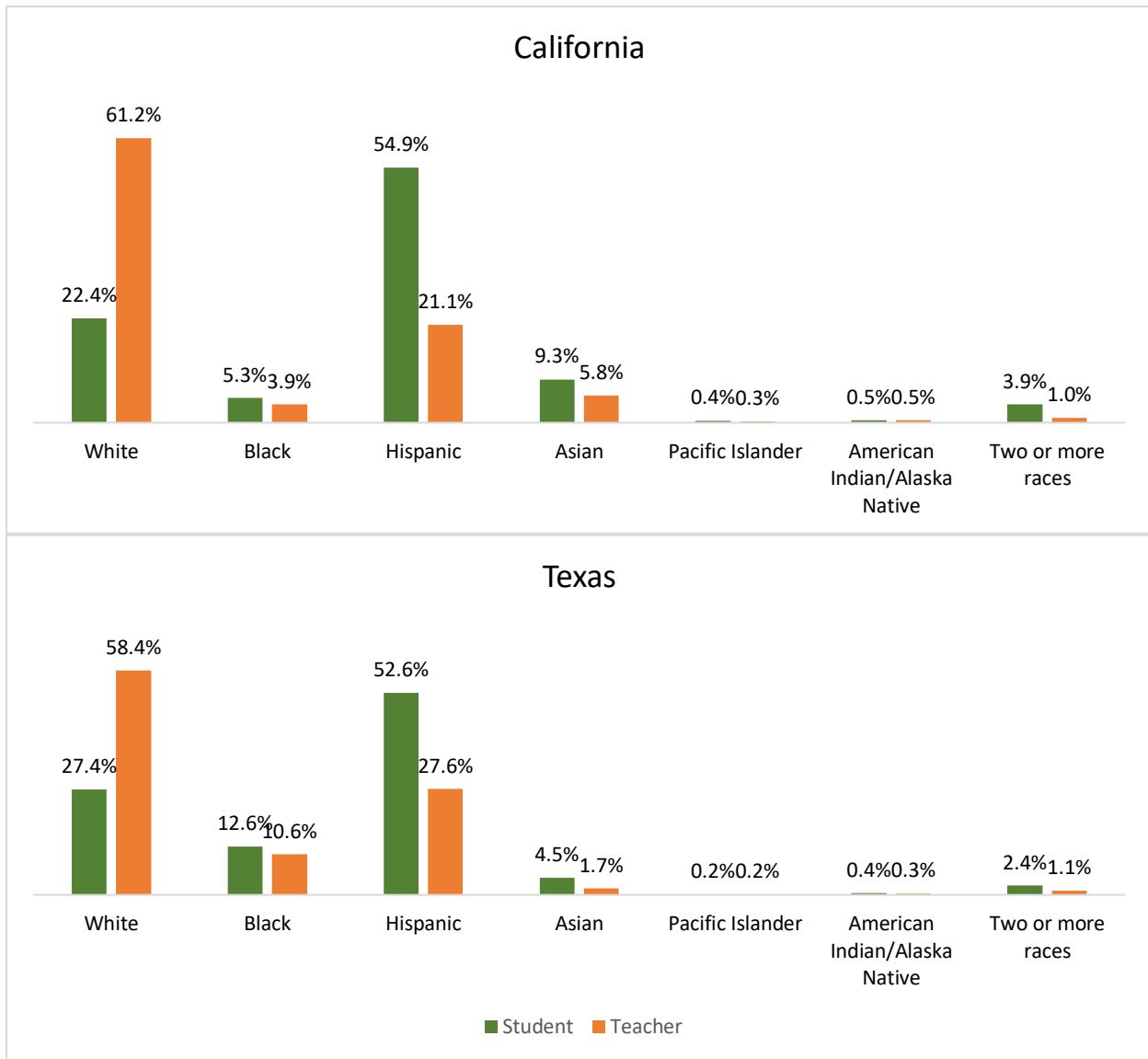
The Impact of a Racially Diverse Teacher Workforce

Diversifying the teacher workforce has been a well-documented strategy to close the opportunity gap of students of color (Bates & Glick, 2013; Bristol & Martin-Fernandez, 2019; Egalite et al., 2015). A growing body of literature suggests that promoting teacher racial diversity can contribute to closing the opportunity gap for three reasons (Egalite & Kisida, 2018). First, teacher-student racial congruence can expose students to racially similar role models. Racially similar teachers could serve as role models, motivating students to achieve academic success (Villegas et al., 2012). This is partly because exposure to a positive role model is essential to develop students' self-efficacy—the students' belief that they, particularly students of color, can successfully take actions to accomplish certain tasks or achieve goals (Bandura, 1993). Self-efficacy can be developed via different approaches, one of which is having a positive role model. To that end, a racially similar

teacher can help to affirm students' racial identity as one worthy of academic excellence, inspiring students to believe that they themselves can follow the examples of their racially congruent teachers (Cohen et al., 2006). Indeed, Black students who were taught by Black teachers had higher self-efficacy and had a substantially higher passing rate for the high school graduation exams (Pitts, 2007).

Second, a racially diverse teacher workforce can enhance teachers' expectations and assessments of student learning (Dee, 2004, 2005; Douglas et al., 2008; Grooms et al., 2021; Irizarry, 2015; McGrady & Reynolds, 2013; Oates, 2009). Teachers' racial background interacts with their students' racial background in a way that may influence how teachers place expectations on and assess student behavior and learning (Downey & Pribesh, 2004; Grooms et al., 2021). Influenced by stereotypes such as the association of Blackness with violence (Eberhardt, 2020), teachers may bring their own stereotypes as they teach and assess student learning. On the one hand, White teachers in the United States were more likely to perceive Black students as displaying disruptive behaviors in a classroom environment than White students, leading to disproportionately higher rates of suspension, expulsion, or other disciplinary responses to student misbehavior (Chin et al., 2020; Gregory et al., 2010). On the other hand, teachers of color had more positive perceptions of the students of color they taught (Dee, 2005; Gershenson et al., 2016; McGrady & Reynolds, 2013). For example, Black students taught by Black teachers were three times more likely to be referred to gifted services than Black students without Black teachers (Grissom & Redding, 2015).

Third, a racially diverse teacher workforce can deepen a meaningful understanding of students' racial and cultural backgrounds. Not all negative stereotypes held by teachers are ill-intentioned. Many stereotypes influence people's judgment at an unconscious level, partly shaped by their upbringings, and their social and cultural environments (Eberhardt, 2020; Wang, 2021a). As a result, a racially diverse teacher workforce may be less vulnerable than the predominantly White teacher workforce to be influenced by biases that operate underneath the threshold of consciousness. With a shared racial and cultural understanding, racially congruent teachers are well-positioned to deliver instruction and interact with students in a culturally sensitive manner (Cherng & Halpin, 2016).

Policies on Teacher-Student Racial Diversity

From the existing literature, teacher-student racial diversity has mostly been primarily treated as a goal. The extant literature mainly focused on the benefits of teacher-student racial diversity and the consequences of lacking teacher racial diversity. However, the literature did not venture into workable practices of how to racially diversify the teacher workforce. One reason lies with the concern over making and imposing explicit race-conscious policies. Title VII of the Civil Rights Act of 1964 prohibits employers from granting preferential treatment to any group because of race or color. School districts as employers may have been deliberately vague, staying away from race-conscious policies of hiring and retaining teachers from a particular racial group. This explains why policymakers focused more on the goal of teacher-student diversity but were cautious about making any race-conscious policies. Some well-intentioned policies on increasing teacher racial diversity have produced unintended consequences, such as violating the Equal Protection Clause of the Fourteenth Amendment of the U.S. Constitution. In fact, some districts' racial-conscious policies have been ruled by courts as unconstitutional. For example, Cincinnati Public Schools had a "staff racial balance" policy to address the staff racial composition at schools. According to the policy, teachers were removed from their current position in a school, also known as "surplussed," based on decreased student enrollment or a change in program offerings at that school. The District Court concluded that the staff racial balance policy was unconstitutional because the district violated a

White teacher's equal protection rights when the district "surplussed" teachers based on their race (*Perrea v. Cincinnati Public Schools*, 2010).

Moreover, the U.S. Supreme Court held that public school districts could *not* impose race-conscious policies of teacher hiring and retention unless the districts have sufficient evidence to justify there has been prior discrimination, and the policies must be narrowly tailored to serve compelling interests (*Wygant v. Jackson Board of Education*, 1986). Justice Lewis Powell argued in the Supreme Court's majority opinion that "public employers, including public schools, also must act in accordance with a 'core purpose of the Fourteenth Amendment,' which is to 'do away with all governmentally imposed discriminations based on race'" (*Wygant v. Jackson Board of Education*, 1986). Given potential discriminatory practices, teacher-student racial diversity was less a precise blueprint for action than a goal that was rife with ambiguity in the extant literature. To fill the void in the literature, this study seeks to investigate publicly available documents at the federal, state, and district levels to examine how education agencies have been translating the goal of teacher-student racial diversity into workable policies.

Defining the Teacher-Student Racial Diversity

The teacher-student racial diversity in this study refers primarily to Black and Hispanic populations. The two populations became our analytical focus because of the large gaps of teacher-student racial gap. As shown in Figure 1, in 2017–2018, 15.2% of students in public K-12 schools were Black, whereas only 6.7% of teachers were Black. The gap was even wider among the Hispanic population, where 26.8% of students in public K-12 schools were Hispanic, but only 9.3% of teachers were Hispanic. We acknowledge that Black and Hispanic populations are not the only racial categories in a nation as racially diverse as the United States. However, given the large teacher-student racial gap, coupled with the substantial racial disparities in educational attainment facing the Black and Hispanic populations, this study focused on teacher racial diversity related to the Black and Hispanic populations.

Of special note are the inconsistencies across the literature in terms of the usage of "Hispanic" and "Latino." Hispanic refers to people who speak Spanish and/or are descended from Spanish-speaking populations, whereas Latino refers to people who are from or descended from Latin America, such as Argentina, Brazil, Dominican Republic, Honduras, and Mexico (Fisher, 1996; Fraga & Garcia, 2010; Holden & Villars, 2012). The American Psychological Association recommended that the appropriate use of "Hispanic" and "Latino" should be subjective to the research participants' preference (American Psychological Association, 2020). In this study, we have chosen the term "Hispanic" to be consistent with the usage by the National Center for Education Statistics (National Center for Education Statistics, 2020).

Methods

To fulfill the study purpose of investigating to what extent and how teacher racial diversity has been discussed at the federal, state, and district levels, this study employed text mining methods to collect and analyze text data relevant to teacher racial diversity at the federal, state, and district levels. Text mining methods were chosen because they have been developed to automate the process of collecting and analyzing massive amounts of text data. To capitalize on the massive amount of publicly available documents on education policy, the research team decided to use text mining methods to collect and analyze publicly available documents related to teacher racial diversity at all three levels: federal, state, and district. Here we present detailed procedures of data collection, data sources, and data analysis.
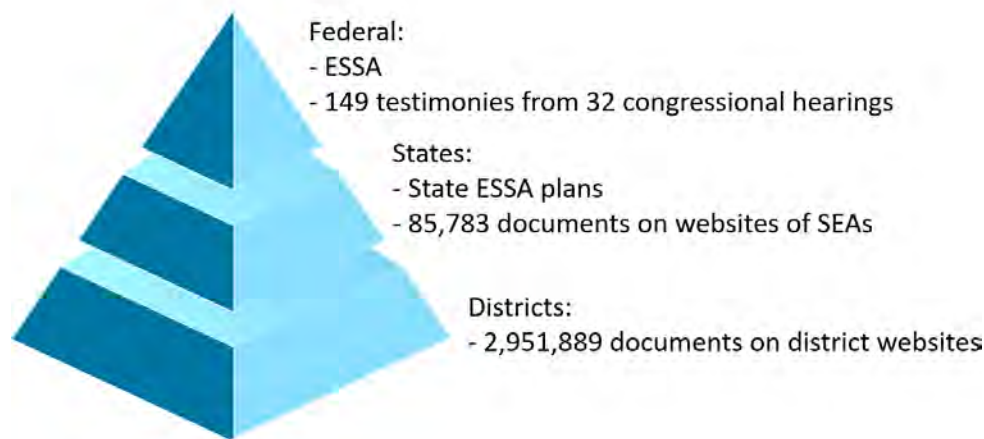
Data Collection

We collaborated with computer science researchers to develop a web crawler to automate the process of data collection. Web crawlers are computerized programs that start with a seed list of uniform resource locators (URLs) that are unique Internet addresses assigned to webpages. Next, we identified all the hyperlinks on those URLs, added those hyperlinks to the seed list, and identified all the hyperlinks on an updated seed list in an ongoing automated process (Masanes, 2006). In this study, the web crawler, developed using the Python programming language by the research team, first methodically scanned a website to identify hyperlinks of all documents in PDF format. Next, the web crawler automatically downloaded the PDF documents to our database. Specifically, the web crawler began collecting documents from the websites of state education agencies (SEAs) and school districts which were in the URL format. We collected the URLs of SEAs and school districts from the National Center for Education Statistics (NCES). Those URLs were the starting point for the web crawlers to begin collecting documents for this study.

Data Sources

We used publicly available documents posted on the websites of the U.S. Congress, SEAs, and school districts to identify to what extent and how teacher racial diversity has been discussed at the federal, state, and district levels. Figure 3 illustrates an overview of the data sources.

Figure 3
Overview of Data Sources

Federal:
- ESSA
- 149 testimonies from 32 congressional hearings

States:
- State ESSA plans
- 85,783 documents on websites of SEAs

Districts:
- 2,951,889 documents on district websites

At the federal level, we collected the text of Every Student Succeeds Act (ESSA) and all the documents from congressional hearings relevant to education since 2007. Congressional hearings are an important part of the policymaking process in the United States. They are used by members of Congress to "obtain information and opinions on proposed legislation, conduct an investigation, or evaluate/oversee the activities of a government department or the implementation of a Federal law" (U.S. Government Publishing Office, 2020, para. 1). They are also used by interest groups as an important platform to convey information (Laumann & Knoke, 1987). The information from those data sources offer a glimpse of how teacher-student racial diversity has been addressed by policymakers at the federal level. A search for all congressional hearings was conducted via the U.S. Government Printing Office (GPO) website, which made transcripts of the hearings after 2007 available for public records. Using the search term *education*, we first identified all hearings on

education during the 110th-116th sessions of the U.S. Congress from 2007 to the present. The hearings held prior to 2007 were unavailable on the U.S. GPO website. We identified a total of 11 hearings on education at the Senate Committee on Health, Education, Labor & Pensions and 21 hearings at the Education & Labor Committee at the House. From the 32 hearings, we identified a total of 149 testimonies—with 50 testimonies from the Senate and 99 testimonies from the House—that focused on education. The transcripts for these 149 testimonies and statements were retrieved manually from the GPO website and compiled as part of the dataset for analysis.

At the state level, we investigated two types of publicly available documents: (1) documents of state ESSA plans and (2) documents on the state education agencies' (SEAs) websites. Using the aforementioned web crawler to automate data collection, we collected 85,783 documents from 50 SEAs. We also identified 50 state ESSA plans on the SEA websites.

At the district level, we focused on publicly available documents on school district websites. Using the web crawler, our team successfully collected 2,951,889 documents posted on over 6,166 public school district websites, as highlighted in blue in Figure 4. According to NCES, there were over 13,000 school districts in the United States. However, 4,833 districts did not have their website information in the NCES database. This explains the large expansive white spaces in Figure 4, suggesting a dearth of data on many districts. Furthermore, we encountered three main technical challenges when crawling documents from the district websites to our database: (1) the websites had changed, (2) the websites were incorrectly reported to the U.S. Department of Education (e.g., ".org" instead of ".net"), and (3) the documents were hosted at a different domain that was linked to the original website. These technical issues inhibited our efforts in collecting data from all district websites.

Figure 4
Documents Collected from 6,166 Public School District Websites

Note: Documents collected from 6,166 public school district websites.

Data Analysis

The millions of documents collected at the federal, state, and district levels rendered manually coding text data appallingly labor-intensive, time-consuming, and potentially impractical

(Wang, 2016). Therefore, we developed algorithms to identify the documents that were related to teacher racial diversity to examine to what extent and how teacher diversity was discussed at multiple levels. To identify those relevant documents, we developed a list of co-occurring terms, including "educator & equity," "teacher & equity," "diversity & teacher," "diversity & educator," and "equal opportunity." Here, "&" means a co-occurrence of the two terms. By doing so, we identified the documents that included the co-occurring terms of "educator & equity," "teacher & equity," "diversity & teacher," and "diversity & educator." The terms were developed and refined by the research team through a trial-and-error process. Some terms, such as "Black" and "African American," guided us to the documents on Black students, but not on teacher racial diversity. Terms such as "educator equity" and "equal opportunity" were added to the list because we found that many documents with those terms addressed teacher racial diversity. Using the list of terms, we then developed the algorithms to calculate the occurrences of those terms in each document. This process was repeated for all the collected documents at the federal, state, and district levels.

On an open access website developed for this study, visitors or users can select a state or district from the map of the United States and find that the documents with a high frequency of the terms were placed at the top of the webpage for the state or district. After identifying the documents with a high frequency of the keywords, part of the research team then manually read the documents to identify specific practices of addressing teacher racial diversity at the federal, state, and district levels. To do so, four members of our research team first used the "search" function to identify specific text strings that contained the terms at least once in each of the documents. The team members then began the text string identification process with the documents placed at the top of the webpages, assuming those documents with the highest frequency of terms were more relevant to teacher racial diversity. Next, the four researchers manually read the text strings to decide whether they mentioned teacher racial diversity as a generic goal or spelled out specified practices. To capture how the goal of teacher racial diversity was translated into workable practices, the specific practices were then recorded, along with the origins of document (e.g., federal, states, and districts), in a shared file which all research team members had access to. To keep the coding process within a manageable yet comprehensive scale, each of the four team members responsible for identifying the text string coded the documents independently—without an overlap. As a result, no inter-rater reliability was calculated. The research team met every week for seven months to report progress and share their findings. Table 1 presents the codes and themes generated over the data analytical process.

Table 1
Codes and Themes

Document level	Document name	Codes	Examples	Themes
Federal	Teacher Equity: Effective Teachers for All Children	Teacher preparation, teachers of color	"Make greater efforts to attract people of color, especially men, into education"; "must 'grow our own' accomplished teachers"; "assure a steady supply of well-prepared, 'culturally competent' teachers for high-needs schools."	Attract people of color; educators with diverse roots; teachers with similar backgrounds as students; grow your own; culturally competent

Document level	Document name	Codes	Examples	Themes
Federal	Supporting America's Educators: The Importance of Quality Teachers and Leaders	Teacher recruitment, diverse teaching force	"Encourage multiple pathways into teaching and multiple providers of training in order to recruit the diverse teaching force that our country needs."	Recruitment of diverse teacher workforce
State	Massachusetts ESSA Plan 2017	Teacher preparation, teachers of color	"The Department has included recruiting a diverse cohort of educators as one of the criteria for [educator preparation] program review"	Recruitment of diverse teacher candidates
State	Delaware ESSA Plan Updated 2020	Teacher preparation, linguistically diverse	"Leverage the state's new Teacher Academy CTE pathway to develop a linguistically diverse teacher pipeline among current and former ELs."	Develop a linguistically diverse teacher pipeline
District	Anne Arundel County Public Schools, MD	Teacher preparation, teachers of color	"Seeks to hire diverse educators from numerous racial and ethnic backgrounds with a focus on African American & Hispanic/Latino teachers"	Recruitment of African American and Latino(a) teachers
District	Clark County School District, NV	Teacher preparation, teacher recruitment,	"Expanded partnerships with Historically Black Colleges HBC) and Hispanic-Serving Institutions (HSI) to increase the diverse applicant pool."	Partnership with HBCU and HSI; recruit racially diverse applicants.

Results

The results from the analysis of more than three million documents revealed different levels of attention paid to diversifying the teacher workforce at the federal, state, and district levels. More importantly, there was a wide variance at the state and district levels. The results for each of the over three million documents were displayed on the open access website developed for this study. Due to page limitation, it is impossible to report the results of each of the over three million documents here. Instead, we report to what extent and how teacher racial diversity was discussed at the federal level in 50 states and in the 100 largest school districts.

Federal Level

The analysis of the documents at the federal level showed that developing a racially diverse teacher workforce was not explicitly addressed at the federal level. Neither ESSA nor the congressional hearings specified how to improve teacher racial diversity. The need to recruit racially diverse teachers to reflect the diverse student population was advocated by many witnesses who testified at the hearings, including members of teachers' unions (e.g., the National Education Association; Van Roekel, 2009), teacher preparation programs (e.g., college of education at the University of Michigan; Ball, 2010), and school districts (e.g., Denver Public Schools; Boasberg, 2011). Despite the limited specific information on how to address teacher racial diversity, a term related to teacher diversity at the federal level was "cultural competency." Regarding on how to develop culturally competent teachers, the congressional hearing witnesses shared information about teacher residency programs with the legislators. According to ESSA, a teacher resident in a teacher residency program needs "(A) for not less than 1 academic year, teaches alongside an effective teacher, as determined by the State or local education agency, who is the teacher of record for the classroom" and "(B) receives concurrent instruction during the year" (ESSA, Sec. 2002, (5)). In some teacher residency programs, districts partnered with universities and nonprofit organizations to assure a steady supply of well-prepared, "culturally competent" teachers for high-needs schools (Van Roekel, 2009, p. 28). In other teacher residency programs, a "Grow Your Own" (GYO) method was used. The GYO method encouraged high school and college graduates to enter residency programs and teach at the schools they previously attended. In doing so, the teacher residency programs could better mirror the district student demographics and prepare teachers to be "culturally competent." It is worth noting that the teacher residency programs were presented at the hearings in the late 2000s and the early 2010s and were then codified in the ESSA in 2015.

Notably, as an indirect, albeit related, focus on teacher racial diversity at the federal level, cultural competency did not necessarily equate to a racially diverse teacher workforce. In the federal documents collected in this study, teachers' cultural competence appears to be used as a proxy for teacher racial diversity. However, it is unclear what cultures were included when evaluating cultural competency. Training teachers to be culturally competent is indeed important, as they could effectively teach, interact, and understand students from different racial backgrounds. While teachers from all racial backgrounds can be trained to be culturally competent, increasing teachers' cultural competency may not improve or change the racial makeup of the overall teacher workforce. The lack of reference on how to racially diversify the teacher workforce at the federal level signals the scant federal attention to teacher racial diversity. It appears that federal policymakers left the teacher racial diversity policies to the states and districts.

State Level

The documents at the state level offered more specifics on racially diversifying teachers than those at the federal level. In the state ESSA plans, there were 19 states that recognized the need to recruit and retain a racially diverse teacher workforce (DE, ID, IA, KY, MA, MS, MO, NE, NY, OH, OK, OR, PA, TN, VT, VA, UT, WA, WY). Figure 5 illustrates the percentage of documents on the SEA websites that included the terms related to teacher racial diversity. In those documents, some states were light on detail without specifically mentioning *how* to diversify the teacher workforce, whereas other states went further by providing specifics. Two SEAs set clear requirements and goals to diversify teachers. For example, the Mississippi Department of Education set a goal to increase the number of teachers of color from 53% to 67% by 2025 to better reflect the student population in school districts with a high percentage of students of color and a high teacher attrition rate (Mississippi Department of Education, 2018). The Massachusetts Department of

Elementary and Secondary Education (ESE) recognized that only 7% were teachers of color compared to 35% of students and urged that, "for schools to be able to hire a diverse staff, Educator Preparation programs *must* attract a more representative pool of teacher candidates" (Massachusetts Department of Elementary and Secondary Education, 2017, p. 79). In addition, the ESE made the recruitment of racially diverse educators as one of the criteria for program review.

Figure 5
Documents on SES Websites That Included the Search Terms
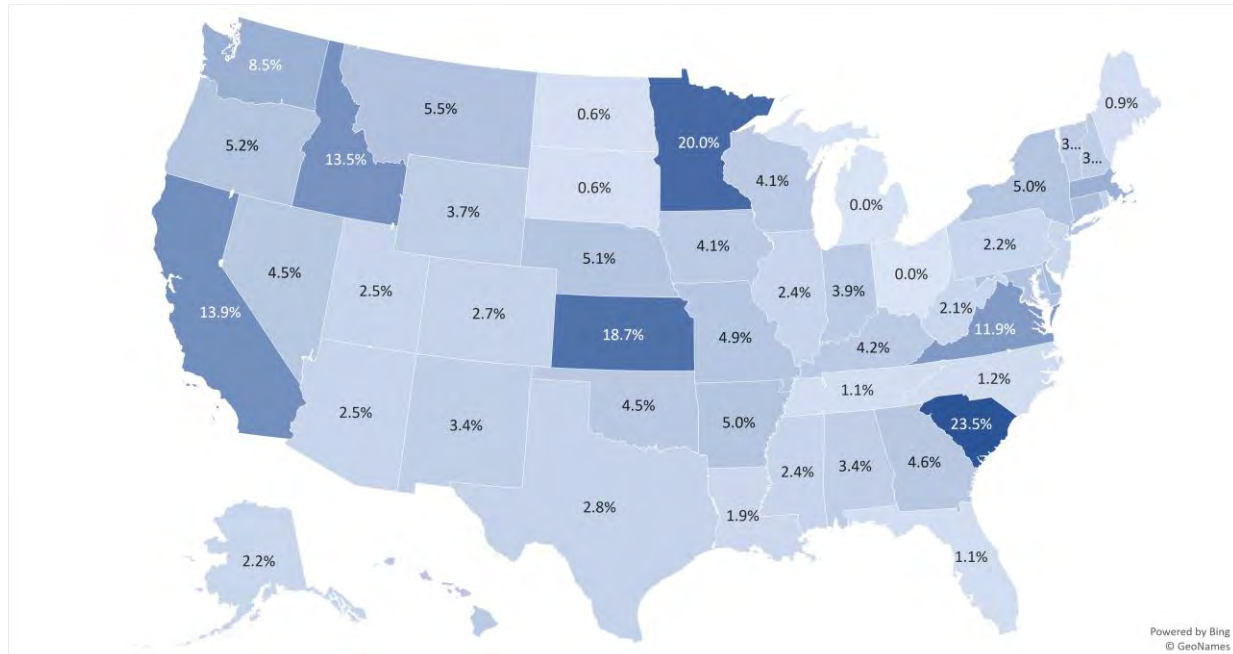
Note: Percentages of documents on SES websites that included the terms "educator & equity," "teacher & equity," "diversity & teacher," "diversity & educator," and "equal opportunity."

In comparison with setting clear requirements and goals, six states focused on supporting districts to racially diversify teachers. For example, in its ESSA Plan, the Tennessee Department of Education (TDOE) proposed a Teacher Pipeline/Diversity Project that provided a $100,000 investment in innovation grants for targeted school districts to develop plans to increase teacher racial diversity. TDOE also invited districts with the largest teacher-student racial gaps to apply for a planning grant. The main goal of the planning grants was to increase the representation of teachers of color in local schools. Moreover, TDOE proposed to implement teacher residency programs in high-need districts across the state as an effort to promote teacher racial diversity in Tennessee's urban districts (Tennessee Department of Education, 2018). In its state ESSA plan, Washington suggested that all teacher preparation programs in the state offer mentorship programs to teacher candidates of color. Furthermore, the Washington Professional Educator Standards Board offered guidance and statewide resources to school districts on how to develop and implement policies and programs that mentor, encourage, and support teachers of color (Washington State Board of Education, 2018). The Idaho State Department of Education recommended that districts support the full certification of teachers of color through available routes (Idaho State Department of Education, 2018). The Delaware Department of Education leveraged the state's Teacher Academy career and technical education pathway to develop a linguistically diverse teacher pipeline by recruiting current and former English learners in high schools (Delaware Department of Education,

2017). Missouri and Ohio created "Grow Your Own" programs where racially diverse high school graduates entered local teacher preparation programs and were mentored to teach within local school districts (Missouri Department of Elementary and Secondary Education, 2017; Ohio Department of Education, 2018).

Three states approached diversifying the teacher workforce by establishing partnership between districts and teacher preparation programs. For example, Virginia proposed the Teacher Equity Plan, in which districts partnered with universities to develop strategies to increase teacher pipelines in critical shortage areas and to increase teacher racial diversity (Virginia Department of Education, 2018). Texas built the "Best in Class Coalition" team that included not only districts and universities, but also businesses, government civic organizations, nonprofits, foundations, and community advocates that focused on teacher racial diversity (Texas Department of Education, 2018). The New York State Department of Education (NYSED) assisted districts and the Institute of Higher Education in developing comprehensive systems of educator support and development for teachers of color (New York State Department of Education, 2017).

Overall, our findings suggested that less than half of the states explicitly recognized the importance of teacher racial diversity. Acknowledging the existence and importance of a problem is usually the first step to addressing the problem. However, there is still a long way to build a racially diverse teacher workforce. Even among those states that acknowledged the need for teacher racial diversity, only a handful of them proposed clear requirements and goals, spelled out strategies, and introduced programs to promote teacher-student racial diversity. It appears that SEAs preferred to set the goal and general directions for increasing the percentage of teachers of color but left the details of how to achieve the goal for school districts to choose their own course of action.

District Devel

The district-level results of 6,166 districts are accessible on an open access website (Wang & Ji, 2020) developed for this study. Specifically, we examined all documents posted on the district websites and calculated the percentage of documents mentioning teacher diversity for each district. Given the page limit, it is impossible to delineate the results of 6,166 school districts. Therefore, we only focus on the top 10 districts with the highest percentage of documents mentioning teacher racial diversity (see Table 2) and to what extent and how the 100 largest school districts by student enrollment (see Figure 6) have racially diversified their teacher workforce. The top 10 districts ranged in location from remote towns (Putnam County School District, TN) to large cities (Los Angeles Unified School District, CA). The average percentage of Black students within the top 10 districts was 15.9%, with Chicago Public School District 299 having the largest percentage of Black students (30%). The average percentage of Hispanic students was 16.1%, with Los Angeles Unified School District having the largest percentage of Hispanic students (52%).

Notably, the 10 districts in Table 2 were among the 100 largest school districts by student enrollment. On average, the 100 largest districts had approximately 18.2% Black students and 23.8% Hispanic students, close to the average national level. However, there was a large variation in the percentages of Black and Hispanic students. Detroit Public Schools Community District had the highest percentage of Black students (83%), and Puerto Rico had the highest percentage of Hispanic students (100%). Although both districts had large percentages of Black or Hispanic students, the percentage of documents discussing teacher racial diversity was relatively low—1.18% at Detroit Public Schools Community District and 0.49% at the Puerto Rico Department of Education.

Table 2
Top 10 Districts with the Highest Percentage of Documents Mentioning Teacher Diversity

Districts	Black students (%)	Hispanic students (%)	Number of documents mentioning teacher diversity (%)
Schenectady City School District (NY)	19	10	24 (16.67)
Los Angeles Unified School District (CA)	9	52	6,246 (9.38)
Howard County Public Schools (MD)	18	7	60 (8.33)
St. Vrain Valley School District RE 1J (CO)	1	20	37 (8.11)
Roanoke City Public Schools (VA)	28	6	43 (6.98)
Fauquier County Public Schools (VA)	8	8	98 (6.12)
Boston School District (MA)	23	19	1,646 (6.01)
Putnam County School District (TN)	2	6	50 (6.00)
Chicago Public School District 299 (IL)	30	29	1,476 (5.96)
Lexington-Richland School District 5 (SC)	21	4	1,394 (5.95)

Figure 6
Overview of the 100 Largest Districts (2018-2019 school year)
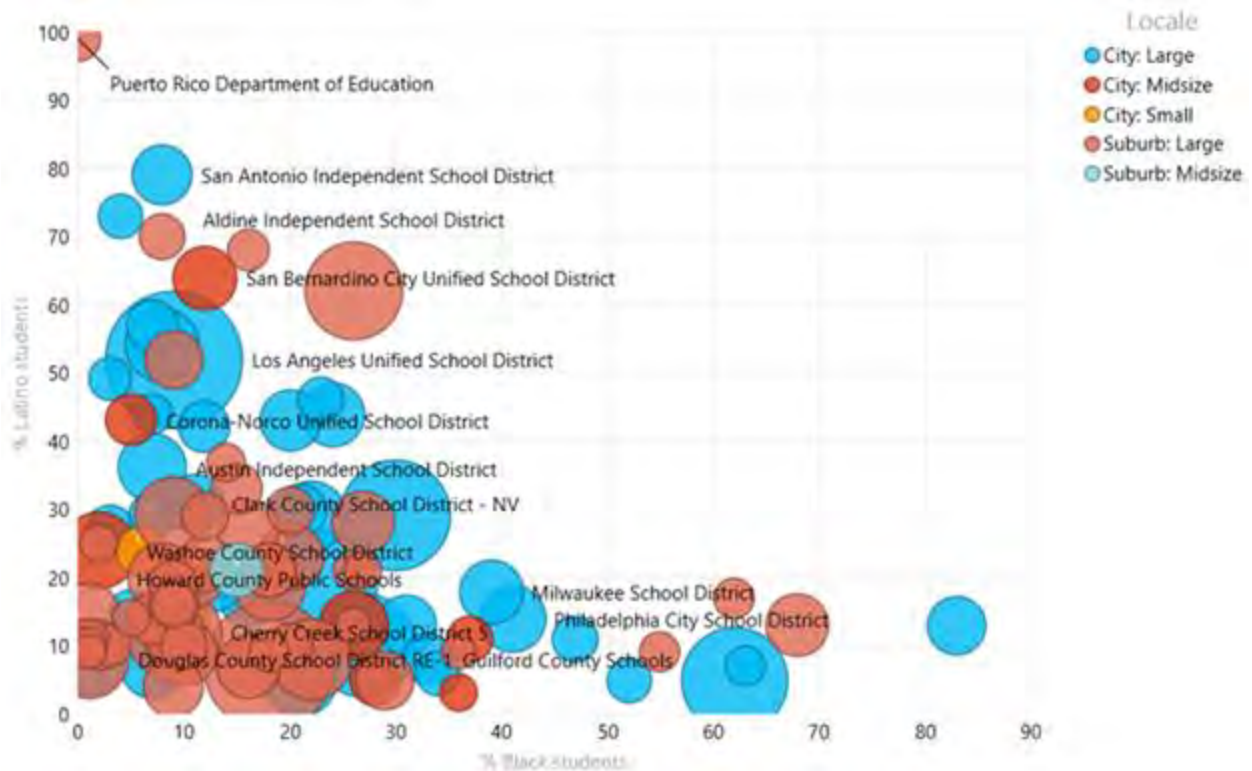
Note: x-axis indicates the percentages of Black students; the *y*-axis indicates the percentages of Hispanic students. The bubble size indicates the percentages of documents mentioning teacher diversity. The bubble colors indicate the locale of the districts. A large variation in the percentages of Black and Hispanic students existed among the 100 districts.

Among the 100 largest school districts, the following five districts, as shown in Table 2, have the highest percentage of documents pertaining to teacher diversity: Schenectady City School

District, NY (16.67%), Los Angeles Unified School District, CA (9.38%), Howard County Public Schools, MD (8.33%), St. Vrain Valley School District RE 1J, CO (8.11%), and Roanoke City Public Schools, VA (6.98%). The documents in those districts not only discussed the importance of teachers of color, but also mentioned their strategies to diversify the teacher workforce. For instance, the Schenectady City School District hired an Assistant District Director of Recruitment, Retention & Diversity with the goal to improve and grow a racially diverse teacher workforce (Schenectady City School District, 2018). The Los Angeles Unified School District and Howard County Public Schools utilized their human resources offices to recruit teachers of color, but in different ways. While the Los Angeles Unified School District recruited applicants from highly ranked institutions that have been known to effectively prepare educators to work with racially diverse learners (California Department of Education, n.d.), Howard County Public Schools attended job fairs and conventions that were catered to upcoming professional minorities (Howard County School System, 2009). These findings showed that school districts used a wide range of recruitment strategies to attract teachers of color as part of their commitment to increase teacher racial diversity in their districts.

Aside from the districts that had the largest percentage of documents discussing teacher diversity, there were other districts that highlighted how they recruited and retained a racially diverse pool of applicants. Take the New York City Department of Education (NYCDOE) for instance. NYCDOE had 22% Black students and 29% Hispanic students as of the 2018-19 school year. In its Diversity and Inclusion Annual Report & Strategic Plan, NYCDOE noted the efforts to proactively search for and recruit a racially diverse pool of teacher applicants from predominantly Black and Hispanic institutions and organizations. Specifically, to enlarge the pipeline of qualified teacher candidates, NYCDOE reached out to recruitment sources from 40 diverse institutions and organizations for referrals of qualified candidates across the country, such as the National LGBT Bar Association, the National Native American Law Students Association, the Columbia Latino/a Law Student Association, New York Muslim Law Students Association, and the National Black MBA Association. Although the funding source was not disclosed by the district, NYCDOE launched a fully funded Diversity Recruitment Pilot Program to cast a wide net to include potential candidates who were disabled, veterans, members of the military, women, minorities, and from the LGBT community. Furthermore, NYCDOE launched a national recruitment campaign to promote multiple pathways to enter the teaching profession at New York City Public Schools. NYCDOE also refined its online advertising and applicant messages to reflect more inclusion and feature people of different racial backgrounds. One example was the use of recruitment videos that were played on taxi televisions in more than 14,000 taxi cabs and social media accounts, such as NYCDOE's Facebook and Twitter accounts.

Districts with Similar Student Demographics but Different Approaches to Teacher Racial Diversity

As we zeroed in on districts with similar student demographics for Black and Hispanic students, we found that districts varied greatly in their approaches to addressing teacher racial diversity. Take Pinellas County Schools (FL) and Brevard County Public Schools (FL) for instance. Pinellas County Schools (10% Black students, 9% Hispanic students) included seven standards of attracting racially diverse teachers (e.g., rubrics, scale levels, reflection questions, and evidence logs) for schools to actively measure their progress on achieving each standard (Pinellas County Schools, 2012), whereas Brevard County Public Schools (10% Black students, 10% Hispanic students) had only one indicator to increase the number of teachers of color by 5% or to equal the percentage of students of color in the county (Brevard Public Schools, 2015).

Another example is a comparison between Richmond Public Schools (VA) and Richland County School District 2 (SC). The two districts had similar student demographics. Richmond Public Schools (48% Black, 7% Hispanic) sought to strengthen racially diverse teacher recruitment but was light on detail—without explicitly mentioning how to do so (Richmond Public Schools, 2019). By contrast, Richland County School District 2 (50% Black, 6% Hispanic) developed a Diversity & Multicultural Inclusion Plan that included utilizing a data-driven climate survey to evaluate teacher diversity, partnering with Historically Black Colleges and Universities, and creating a district-wide committee that encouraged every employee to serve as an ambassador for teachers of color (Richland County School District 2, 2016).

Likewise, both Fairfax County Public Schools (VA) and Plano Independent School District (TX) had 9% of Black students. Again, despite having similar student demographics, the two districts addressed teacher diversity differently. Fairfax County Public Schools (9% Black, 16% Hispanic) mentioned not only hiring and retaining racially diverse teachers, but also using data to analyze teacher exits to explore racial bias and determine factors that may cause teacher retention disparities (Fairfax County Public Schools, 2019). By contrast, Plano Independent School District (9% Black, 15% Hispanic) only developed strategic goals for hiring staff but did not specifically mention hiring racially diverse teachers (Plano Independent School District, 2019).

A similar pattern was found between District of Columbia Public Schools (47% Black, 11% Hispanic) and Cleveland Metropolitan School District, OH (50% Black, 11% Hispanic). District of Columbia Public Schools focused on staffing ratio by using staffing ratio formulas mandated by the Office for Civil Rights in D.C. and developing a goal to hire one English as a Second Language/Bilingual teacher for every 22 students (District of Columbia Public Schools, 2019). On the other hand, to recruit Hispanic teachers, Cleveland Metropolitan School District focused on hiring a senior-level official who was dedicated to the needs of the Hispanic community (Cleveland Metropolitan School District, 2013).

The findings here revealed that although those districts had similar student demographics, they may not necessarily use similar approaches to racially diversify their teacher workforce. While some districts developed only goals without stating details on how to achieve the goals, other districts demonstrated specific strategies to racially diversify their teacher workforce. Some districts actively implemented more inclusive techniques to increase teacher racial diversity, whereas others were passive in their approaches. The comparison and contrast of those districts with similar student demographics do not necessarily suggest which district's approach is superior to the others. Those differences may derive from how strong the relationships were between the districts and the Black and Hispanic communities. Nevertheless, the discernible differences do shed light on whether the districts' rhetoric stance matched their specific plans to racially diversify the teacher workforce.

Discussion

This study, for the first time, reveals to what extent and how diversifying teachers has been discussed at the federal, state, and district levels. Although the importance of having a racially diverse teacher workforce has long been agreed upon, we found that at the federal level, developing a racially diversified teacher workforce was not explicitly addressed. At the state level, there were some details that went beyond the rhetoric of increasing teacher racial diversity by setting requirements and goals, establishing partnerships between districts and teacher preparation programs, and supporting districts to racially diversify teachers. The documents at the district level offered the most detailed information on how to develop a racially diversified teacher workforce. Given the massive amounts of data collected in this study, we found that despite the prevalent

rhetoric of increasing teacher racial diversity, the detailed strategies and efforts were very limited in our dataset.

It is crucial to note that education agencies at the federal, state, and district levels mostly did not distinguish Hispanic from Black teachers in their documents on teacher recruitment and retention. In fact, the shortage of Hispanic teachers was more severe than Black teachers. The teacher-student racial gap for Hispanics was the biggest among all categories of people of color. For example, during the 2017–2018 school year, the teacher-student racial gap for Hispanics was a glaring 17.5 percentage-point gap, wider than the 8.5 percentage-point gap for Blacks (NCES, 2019). Such a wide gap indicates a critical need against the backdrop of the growing population of Hispanic students (Lara & Franquiz, 2015; Shapiro & Partelow, 2018; Singh, 2019). Therefore, more intensified efforts should focus on attracting Hispanics into the teaching profession.

Policy Recommendations

Education, by the U.S. Constitution, is a state and local matter. Since the Constitution framers were wary of expansive federal power, the federal government, according to the U.S. Constitution, has no authority to interfere with educational systems at the state and district levels. If federal policies on racially diversifying the teacher workforce are instituted, the policies have to use the lever of federal spending and funding. That is, federal policies are enforced by the U.S. Department of Education through the threat of withholding of federal funds unless states and districts meet the policy requirements. Such approaches have been used by the U.S. Department of Education to push the Common Core State Standards (Wang & Fikis, 2019) and respond to the Opt-Out movement—a grassroots movement, in which parents opt their children out of state standardized testing (Wang, 2021b). However, such heavy-handed approaches have met resistance from both states and school districts. Since public education systems are established by individual state constitutions, to achieve the goal of racially diversifying the teacher workforce, states and school districts should be the ones making considerable headway.

In view of the findings, we offer five policy recommendations to racially diversify the teacher workforce at the state and district levels. Our policy recommendations are grounded in the research suggesting that teachers of color were likely to work in high-needs, high-poverty urban school districts (Ingersoll & May, 2011). For our first policy recommendation, we propose that education agencies at the state and district levels create incentives for Black and Hispanic teachers to work in high-needs, low-income school districts in addition to offering teacher preparation programs. For example, we found that some states have offered scholarships for students of color who were willing to teach in low-income neighborhoods after receiving their teaching certificates, such as the Minnesota Collaborative Urban and Greater Minnesota Educators of Color Program, the Kentucky Minority Educator Recruitment and Retention Scholarship, the Tennessee Minority Teaching Fellows Program, the Missouri Minority Teaching Scholarship, the Florida Fund for Minority Teachers, and the Teacher Education Assistance for College and Higher Education Grant Program (Carver-Thomas, 2018). Additionally, one school district gave a maximum of $8,000 incentive award to high-quality, racially diverse teachers in high-demand fields such as STEM with a preference to those willing to teach in high-needs schools (Norfolk City Public Schools, 2016). These examples demonstrate that districts have offered teachers of color increased financial support in the form of scholarships and monetary incentives to attract them to teach in high-needs, low-income school districts.

Second, we propose developing mentoring and support programs for Black and Hispanic teachers. In our study, we found that some districts provided 1:1 mentoring programs to Black and Hispanic teachers in their first year on the job and beyond, including many Grow Your Own programs. For instance, one school district in California with a high percentage of Hispanic,

bilingual students provided incentives for bilingual and English as a Second Language teachers to obtain micro-credentials in Early Literacy, STEAM, and English Language Learners to promote their retention (California Department of Education, 2017). Part of the mentoring and support programs was to offer free professional development and networking events. In Oregon, program coordinators provided bilingual teachers with information regarding scholarships, resume building, and networking events (Oregon Department of Education, 2019).

Third, building partnerships between districts and predominantly Black and Hispanic institutions and organizations can help diversify the teacher workforce. The New York City Department of Education and Richland County School District 2 recruited potential teacher candidates from predominantly Black, Hispanic, and Native American higher education institutions and professional organizations within the state (New York City Department of Education, 2017; Richland County School District 2, 2016). These programs were premised on the belief that when districts partnered with predominantly Black and Hispanic institutions and organizations, the number of teachers of color recruited would eventually increase, thereby closing the teacher-student racial gap.

The fourth policy recommendation is to develop Teacher Cadet Programs to increase the pipeline of racially diverse high school students entering the teaching profession. Teacher Cadet Programs were built based on partnerships between K-12 school systems and higher education institutions that provided a pathway to teacher certification for high school students. In Teacher Cadet Programs, some colleges and universities offered dual credit classes for high school students who took teaching courses. Our data revealed that Georgia, Michigan, North Carolina, Oregon, and South Carolina developed Teacher Cadet Programs. For example, Gaston County Schools in North Carolina partnered with the University of North Carolina-Charlotte to offer high school Teacher Cadet classes (Gaston County Schools, 2019). However, we did not find programs that specifically mentioned targeting students of color. Therefore, there is a need for more Teacher Cadet Programs to offer recruitment campaigns and incentives to students of color to create a more racially diverse pipeline of future teachers. Teacher Cadet Programs could also partner with pre-collegiate teacher recruitment programs that specifically target high school students of color.

The fifth policy recommendation is to increase the use of quantitative and qualitative data to promote teacher racial diversity. Both quantitative and qualitative data can be used to provide insights into current teacher experiences and working conditions, which may affect teacher recruitment in those school districts. Des Moines Public Schools collected qualitative data through focus groups with teachers of color to explore their working experience and how the district can improve hiring and working conditions for teachers of color (Des Moines Public Schools, 2016). The data from the focus groups were then presented to the Board of Education along with research about barriers to hiring teachers of color. Quantitative and qualitative data can also be used to increase retention rates of teachers of color and reveal the reasons teachers of color stayed working in the school districts and the reasons they might leave. Fairfax County Public Schools, which was previously mentioned, collected quantitative data from teacher exit surveys to determine factors that may cause racial bias and teacher retention disparities (Fairfax County Public Schools, 2019). Therefore, we urge education agencies at all levels to develop and implement data-driven approaches to increase teacher racial diversity.

Limitations and Suggestions for Future Inquiry

This study has at least three limitations. First, despite almost three million documents collected and analyzed in this study, there was still a large amount of missing data at the district level. They included documents of 4,833 districts that had incorrect or missing website information in the NCES database. Besides, we were unable to collect the data on teacher racial makeup at the district

level. Unlike the data on student racial demographics at the district level, NCES provided only the aggregated data on teacher racial makeup at the state and national levels. Moreover, not all districts made their teacher racial makeup data available to the public. This segment of missing data at the district level limited our capability to conduct a fine-grained analysis of the teacher-student racial congruence at the district level. As a result, our results and discussion of teacher racial diversity at the district level focused squarely on the percentages of student racial demographics and the percentages of district documents mentioning teacher racial diversity—without the context of teacher racial demographics at the district level. Given the missing data, we recommend that future researchers fill the void by collecting data on teacher racial composition and examining the teacher-student racial congruence of all school districts.

Second, the terms used to identify relevant documents may not be sufficiently comprehensive. The terms in this study were developed by the research team through a trial-and-error process, as detailed in the Data Analysis section. It is possible that the list of terms was not exhaustive in capturing all documents relevant to the policy of interest. Thus, we recommend that future researchers develop a more effective and efficient approach to identify relevant documents in a massive amount of text data.

Third, the data analyzed in the study did not offer sufficient evidence of how effective the practices adopted by the states and districts were to promote teacher racial diversity. The mere presence of those practices in the analyzed documents does not suggest the necessity of adopting and implementing those practices. In fact, recent empirical evidence suggested that the New York City Teaching Fellows failed to improve, "if not exacerbated" (Brantlinger et al., 2020, p. 26), teacher racial diversity. It is therefore recommended that future inquiries examine the effectiveness of the practices used by states and districts to promote teacher racial diversity.

Acknowledgements

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