Education Policy Brief

Using Data to Address Equity Issues in Special Education

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The use of data is an integral step in educating our students. Attending to data concerning educational inequity has become an increased priority in federal legislation. No Child Left Behind mandates that educational data be disaggregated to ensure that all student subgroups are meeting performance standards. The reauthorized Individuals with Disabilities Education Act (IDEA, 2004) has significantly increased the focus on equity in special education by requiring corporations with racial/ethnic disproportionality in special education to allocate 15% of their special education funds for early intervening services. Thus, there is no longer really a choice about whether or not to investigate and address disproportionate representation in special education.

Yet, these new mandates also provide an opportunity. Disaggregating data by race/ethnicity provides schools and school corporations with a powerful tool for describing inequity and addressing its causes. If inequities become apparent, schools are better positioned to engage in discussions about the factors that contribute to these inequities and to develop appropriate modifications to the educational environment to achieve equity across subgroups. In short, the use of data can be a powerful first step in recognizing and addressing inequity.

The increased use of data, from collection, to organization, to analysis, can seem daunting. Yet this does not have to be the case. Conventions for approaching disproportionality data have been established making the analysis and interpretation of disproportionality data more straightforward. This brief will outline those conventions and provide some tools to determine the most effective ways of collecting, organizing, and presenting disproportionality data. These tools, and the experience of Indiana school corporations which have used their own data as a guide for change, provide a road map for describing and understanding patterns of disproportionality. It also lays the groundwork for formulating actions that address disproportionality at the local level.

A Hypothetical Example

The Eastport Community School Corporation (ECSC) is a hypothetical near-urban corporation situated outside a major Midwestern metropolitan area. With the new federal regulations concerning the consequences of disproportionality, administrators wanted to get a head start to determine if there are problems and find ways to address any problems that exist. Eastport's experience in this process will provide a guide through the data collection procedure.

Step 1: What Do We Need to Know?

The whole process begins by determining what one needs to know. Identifying a set of clear and specific questions from the start will provide a strong foundation for understanding the results and a guide for continuing to move forward when problems arise. An initial question is, "Does minority disproportionality in special education exist in our school corporation?" Many other questions might be asked as well. For instance, some corporations might ask if African American students are over-represented in certain disability categories and under-represented in other categories. Or they may ask whether a group is under- or over-represented in certain placement settings, or over-represented in disciplinary outcomes, such as suspension or expulsion.

At Eastport, the special education director, Dr. Smith, wished to get a head start on assessing whether disproportionality existed in her corporation. Deciding that

> **What is Disproportionality in Special Education?**
>
> *Disproportionality exists when a specific group is over- or under-represented in a specific category or area. The Individuals with Disabilities Education Improvement Act (IDEA) entitles all individuals with disabilities to a free and appropriate public education, and mandates nondiscriminatory assessment, identification, and placement of children with disabilities.*

The
EQUITY | PROJECT

she must act, she thought of three questions requiring responses in order to address concerns about special education equity. First, is there disproportionality in special education in her corporation? Second, in what disability categories does disproportionality occur? And finally, is there disproportionality in the placement of students with disabilities in various educational settings (e.g., general education, self-contained class)?

Step 2: What Data Should We Collect?

Once guiding questions had been generated, it was time to collect the data. In order to conduct the analyses necessary to determine whether disproportionality exists, one needs certain information about enrollment and the students in the categories being investigated, specifically:

- The total number of students enrolled in the corporation
- The total number of each racial/ethnic group enrolled in the corporation
- The total number of students in the category under investigation (e.g., overall special education enrollment)
- The total number of students from each racial/ethnic group in the category under investigation

Dr. Smith began the process at Eastport by checking the corporation website to get the total number of students enrolled in the corporation, as well as the total numbers of each racial/ethnic group enrolled in the corporation. With these data, she put together Table 1 with the four areas of data needed to begin calculating disproportionality. For purposes of illustration, we will focus only on data with respect to disproportionality in overall special education enrollment. The same analytic strategies can be applied if one is exploring disproportionate representation in a specific disability category or educational setting.

Step 3: How Do We Calculate Measures of Disproportionality?

How does one know whether these numbers indicate racial/ethnic disproportionality? Three measures of disproportionality are widely used in the field of special education. These are the composition index, the risk index, and the relative risk ratio.

Composition Index. The composition index describes the percentage of students in special education represented by a given group. For instance, African Americans might represent 25% of all students served in special education. To interpret this composition index, we compare it to the composition index for African American students enrolled in the corporation. If, for example, African American students represent only 10% of total corporation enrollment, it seems apparent that African American students are over-represented in special education. The composition index answers the question: *Are there more students from a given group in special education than we would expect, given their proportion in the school corporation's enrollment?*

Dr. Smith used the numbers from the basic data in Table 1 to calculate composition indices for her corporation. Table 2 shows the composition index for each racial/ethnic category in ECSC. In order to determine percentage of total enrollment in the corporation, Dr. Smith took the total number of students in each

group and divided it by the total number of students in the corporation. In Dr. Smith's corporation, the composition of African American students was 3,000 out of 10,000 total students or 30%. Determining the composition index of African American students in special education follows the same approach. There were 910 African American students in special education out of 2,000 total students in special education, resulting in a composition index for African American students of 46%. The fact that 46% of those in special education in ECSC were African American, while African American students represent only 30% of total enrollment, suggests that disproportionality is likely.[1]

The composition index is the most intuitive measure of disproportionality, and often the one that school corporations turn to first. But there are some shortcomings to the use of the composition index. First, it does not allow for a direct comparison across groups. More importantly, it is not well-suited for situations in which a given group represents a high proportion of the total enrollment. In areas where one group represents over 90% of the total enrollment, the composition index becomes less and less meaningful, due to the ceiling of 100% in percentages. As a result, the field is increasingly coming to the consensus that other measures should be used either in conjunction with or instead of the composition index. These are the *risk index* or the *risk ratio.*

TABLE 1. Demographic Data for Sample School District

Racial / Ethnic Group	Enrollment	Students in Special Education
White	5,600	870
African American	3,000	910
Hispanic	1,000	150
Multi-Racial	300	60
Asian	100	10
Total	10,000	2,000

Below are the methods of calculation for the most commonly used measures of disproportionality:

The **composition index** describes the percentage of students in special education represented by a given group. For the category of overall disproportionality in special education enrollment*, the formula for calculating this index is:

$$\frac{\text{Number of Students in Group X in Special Education}}{\text{Total Number of Students in Special Education}}$$

The **risk index** is the percentage of a given racial/ethnic group that is served in special education. The formula for calculating this index for overall special education representation is:

$$\frac{\text{Number of students in Group X in Special Education}}{\text{Total Enrollment of Students in Group X}}$$

The **risk ratio** is a comparison of the risk indexes of different groups. When calculating a group's relative risk, their risk index is divided by the risk index selected for comparison, such as all other groups combined. The formula for this calculation for overall special education representation is:

$$\frac{\text{Risk of Group X in Special Education}}{\text{Risk of All Other Groups in Special Education}}$$

*In order to answer question of whether disproportionality is present, one must compare the composition index of a group in a particular category (e.g., African American students in special education/Total number of students in special education) to the composition index of that group in the general enrollment (e.g., African American student enrollment/Total Student enrollment).

Risk Index and Risk Ratio. The risk index is the percentage of a given racial/ethnic group that is served in special education. Thus, for instance, we might find that 6% of all Latino students in a school corporation are served in special education. The question asked by the risk index is: *What is the risk that students of a given racial/ethnic group will be served in special education?*

In and of itself, however, the risk index is not particularly meaningful — again, it is all relative to other groups in special education. So the risk index is compared to the risk index for another group or to all other student groups combined in what is called the risk ratio.[2] If one finds that, on average, the risk for other students being in special education is in general 3% (that is, for other groups, only 3% of the students in the corporation are in special education), one divides 6% by 3% and concludes that Latino students are 2 times as likely as other students to be served in special education. Risk ratios of 1.0 indicate precise proportionality, risk ratios greater than 1.0 indicate over-representation in special education, while risk ratios less than 1.0 indicate under-representation. The question addressed by the risk ratio is: *How much more or less likely are students in a given racial/ethnic category than other students to be served in special education?*

To calculate these two measures, Dr. Smith used the same data represented in Table 1. First, she calculated the risk indices for African American students and all other groups combined. Then Dr. Smith used these indices to determine the risk ratio for African American students in ECSC (see Table 3).

Beginning with total enrollment, Dr. Smith observed that 3,000 African American students were enrolled in the corporation, and of these, 910 had been

TABLE 2. Composition Indices in Sample School District

Racial/Ethnic Group	Enrollment	Composition of Enrollment	Students in Special Education	Composition of Special Education
White	5,600	56%	870	44%
African American	3,000	30%	910	46%
Hispanic	1,000	10%	150	7.5%
Multi-Racial	300	3%	60	3%
Asian	100	1%	10	0.5%
Total	10,000	100%	2,000	100%

TABLE 3. Risk Index and Risk Ratio in Sample School District

Racial/Ethnic Group	Enrollment	Students in Special Education	Risk of Special Education	Relative Risk of Special Education Compared to Other Groups
White	5,600	870	16%	0.6
African American	3,000	910	30%	1.9
Hispanic	1,000	150	15%	0.7
Multi-Racial	300	60	20%	1.0
Asian	100	10	10%	0.5
Total	10,000	2,000		

placed in special education. Therefore, the risk of being placed in special education for African American students is calculated as follows:

$$910 \div 3,000 = 0.30$$

This indicated that the risk of an African American student being placed in special education is 30%; that is, approximately 1 in every 3 African American students is in special education.

Next, Dr. Smith needed to calculate the risk of all other student groups in special education. She followed the same process, but first added the enrollment of each non-African American group together, then added together the special education placement of all other students.

So first, Dr. Smith calculated the all other enrollment by adding White (5,600), Hispanic (1,000), Multi-Racial (300), and Asian (100). Therefore, total All Other Enrollment equalled 7,000 students.

Next, Dr. Smith calculated the non-African American special education population by adding White (870), Hispanic (150), Multi-Racial (60), and Asian (10). Total All Other Special Ed enrollment equalled 1,090 students.

So, Dr. Smith could then calculate the risk for all other students, which is the total all other special education population, divided by the total all other student enrollment.

$$1090 \div 7000 = 0.16$$

Now Dr. Smith was able to calculate the risk ratio for African American students when compared to all other students. She did this by dividing the risk for African American students by the risk for all other students:

$$0.30 \div 0.16 = 1.9$$

This finding indicated that African American students are 1.9 times as likely to receive special education services as all the other students enrolled in ECSC.

National standards for disproportionality are still emerging; the most widely-accepted standard is that a risk ratio discrepancy of 1.5 times is a level at which we start being concerned about over-representation.[3] The precise definition of "significant disproportionality" is, however, left to individual states. Although the federal government has not defined a standard level for significant disproportionality, many states are defining a risk ratio between 2 and 2.5 times discrepant as an indicator of serious or significant disproportionality.

Graphing Disproportionality

Disproportionality data can be presented graphically, and many individuals find this approach to be more easily understood when interpreting disproportionality data. Figure 1 presents a graph of composition indices from ECSC. In this graph, it is important to compare the composition indices in special education to the composition indices for the corporation's enrollment, which is accomplished
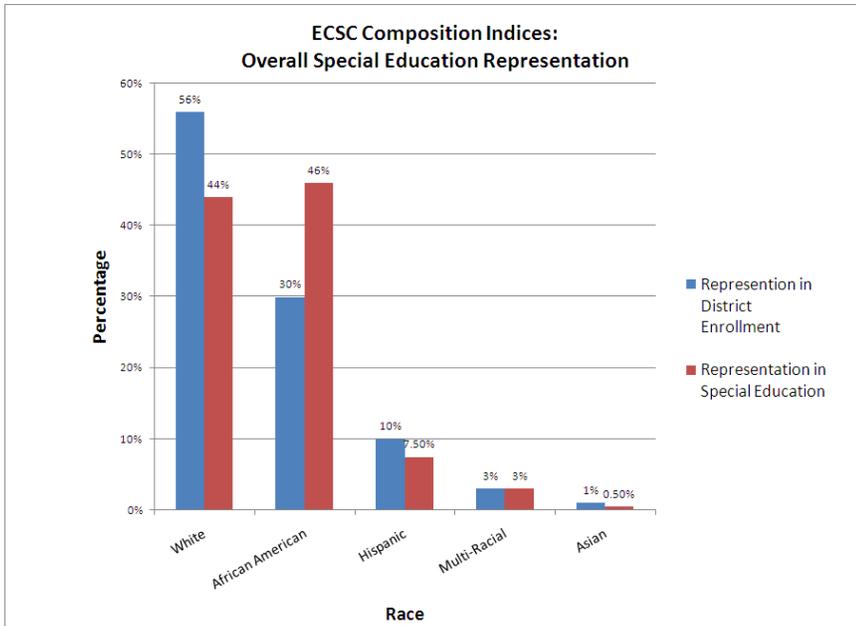
by grouping the corporation and special education bars according to race. In the graph, the blue bars represent the total enrollment in ECSC and the red bars represent special education enrollment. In Figure 1, White and Hispanic students appear to be underrepresented in special education in ECSC, while African-American students are over-represented.

Figure 2 presents a graph of risk ratios from ECSC. The red line represents a Risk Ratio of 1.0, that is, the level that indicates exact proportionality. Thus, all bars that extend above the red line represent over-representation, while those under the red line represent under-representation. Figure 2 compares across racial/ethnic groups by presenting the risk ratios for all racial/ethnic categories on one indicator — overall special education service. Alternately, to emphasize how one group's representation is distributed across disability categories, one might graph risk ratios for one group (e.g., Latino students) across disability categories in which disproportionality is present.

Practical Implications of Disproportionality

Federal regulations established under IDEA 2004 mandate that any corporation found to have significant disproportionality in special education will be required to spend the maximum amount of its special education funds (15% of

Figure 1. Understanding Disproportionality in ECSC: Composition Index

ECSC Composition Indices:
Overall Special Education Representation

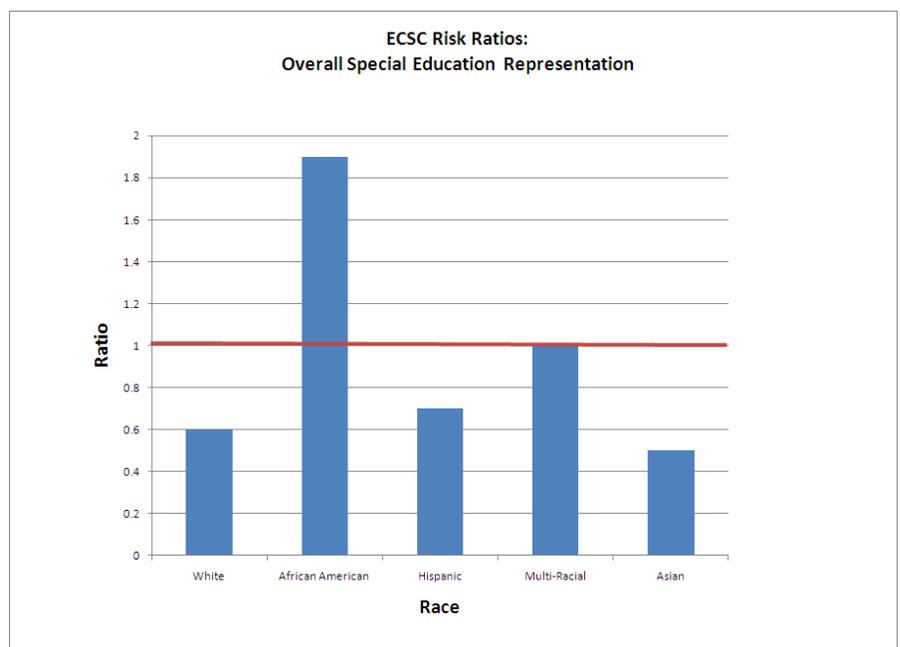special education funds) on early intervening services.

Indiana is currently in the process of making the disproportionality data for all school corporations available online through the World Wide Web. Corporations will be able to access all of their data on disproportionality in overall special education enrollment, disability categories, and placements at a central website.

Step 4: How Do We Interpret the Data?

The results of these types of analyses answer the question of whether disproportionality is present; they do not reveal why it occurs or what will be the best strategies and tactics for addressing the issue. Once the data are available in a form that can be understood, it is important to have a group review and discuss what the data mean and what actions should be taken, and a set of questions to encourage that consideration. Therefore, the next step for Dr. Smith was to assemble a team of teachers, administrators, and other concerned parties in the corporation to interpret the data, and discuss the implications of the data for future actions.

At the ECSC, Dr. Smith shared her findings from this initial investigation with other administrators in the corporation in order to start generating explanations for why disproportionality exists and ways to address the problems found. Although a finding that African Americans were 1.9 times as likely as all other student groups combined to be in special education did not indicate significant disproportionality, the ECSC administration decided that

risk ratios for African American students above 1.5 times discrepant were sufficiently high to warrant action. They decided to assemble a corporation-wide team to interpret the results and determine what the next steps would be in understanding the data, disseminating the results, and making appropriate changes to policies, practices, and procedures. (Please refer to a previous briefing paper on the LEAD process [Ritter & Skiba, 2006] for further information on assembling such a team.)

If a school corporation is to be successful in addressing the areas identified in IDEA 2004, it is important for the team to ask the right questions of the data. As the newly constituted corporation team begins to examine the corporation disproportionality data, Dr. Smith might well put the following questions before them in the areas of overall disability, specific disability categories, and placement.

Overall Disability

- What is the risk index for specific racial/ethnic groups in terms of overall special education identification in our corporation? What is the risk index for all other students in our corporation?

Figure 2. Understanding Disproportionality in ECSC: Risk Ratio

ECSC Risk Ratios:
Overall Special Education Representation

- How do these compare? That is, how do the two risk indices compare? The comparison of one to the other is the risk ratio.

- Do our risk ratios for specific groups indicate an area of concern of overall disproportionality? Are there any groups with significant disproportionality?

Disability Categories

- What is the risk index for specific racial/ethnic groups in specific disability categories (e.g., emotional disability, mild mental disability) in our corporation? What is the risk index for all students in our corporation in those disability categories?

- How do these compare? That is, what is the risk ratio of different racial/ethnic groups in specific disability categories as compared to all other students?

- Do our risk ratios for specific groups indicate any areas of concern in specific disability categories? Are there any groups with significant disproportionality in specific disability categories?

Placement in Settings (Educational Environments)

- What is the risk index for various racial/ethnic groups in specific settings or educational environments (e.g., general education classroom, self-contained classroom) in our corporation? What is the risk index for all students in our corporation in those settings?

- How do these compare? That is, what is the risk ratio of specific racial/ethnic groups in different educational settings as compared to all other students?

- Do our risk ratios for specific groups indicate any areas of concern in terms of placements in educational settings? Are there any groups with significant disproportionality in different educational settings?

These questions led the ECSC team to a better understanding of the patterns of disproportionality in the corporation. Using these questions as a guide, the team found no evidence of disproportionality in overall special education enrollment (i.e., all disability categories combined), but some problems in certain special education disability categories. For instance, they found that African American students were being labeled MiMD at a rate 3.14 times the rate of all of their peers. Dr. Smith and her team then used these findings to begin exploring how the referral process and the culture of the school might contribute to these outcomes.

The questions outlined in this section can lead the corporation team to a better understanding of the patterns of disproportionality in the corporation. Once there is a common understanding, the team may wish to explore more sophisticated questions. How do patterns of disproportionality vary by school-do some schools exhibit consistently higher rates of disproportionality? What might be responsible for the patterns of disproportionality that are observed? What other types of racial/ethnic disparities might be present in our corporation? Further consideration of the larger picture of equity in education follows.

Minority Disproportionality is Not Just a Special Education Problem

When looking at equity in education, special education is only one of many areas that should be considered. Many other outcomes can also be approached with a method similar to the one described in the previous section. For instance, the corporation team can examine disproportionality in office referrals, suspension, expulsion, retention, advanced placement classes, gifted and talented programs, and drop-out or graduation rates. It is important to bear in mind that disproportionality in special education is not exclusively a special education problem. Inequity in special education is the result of complex forces throughout general and special education (Donovan & Cross, 2002). Thus, teams exploring disproportionality in special education will also want to examine many other measures of equity in the school corporation to understand how special education disproportionality fits within the larger picture of educational equity.

SUMMARY

The following key points have been made in this paper:

- NCLB and IDEA have greatly increased the emphasis on analyzing data on disproportionality, providing both a challenge and an opportunity.

- Data needed to answer the most basic questions include: 1) the total number of students enrolled in the corporation; 2) the total number of each racial/ethnic group enrolled in the corporation; 3) the total number of students in the category under investigation; and 4) the total number of students from each racial/ethnic group in the category.

- The most widely-used measures of disproportionality include: 1) the composition index, the percentage of students in special education represented by a given group; 2) the risk index, the percentage of a given racial/ethnic group that is served in special education; and 3) the risk ratio, a comparison of the risk indices of different groups.

- Interpretation and planning for changes in policies, practices, and procedures is best addressed through a corporation-wide team that examines a set of questions pertaining to overall disproportionality, disproportionality in disability category, and disproportionality in setting.

- Disproportionality is not exclusively a special education issue. This approach to using data can be applied to many facets of education in which there may be racial/ethnic disparities, including discipline, achievement, and graduation rates.

Collecting, analyzing, and interpreting data can seem a daunting process. However, the desire to provide equitable educational opportunities to all students, as well as federal mandates, make the effective use of data a fact of life in today's schools. Data are a critical first step in addressing sources of inequity in education: in order to solve a problem, we must first be able to describe it. The pro-

cess described here, as well as the identification of appropriate measures to use when conducting analyses, provide a starting point for determining whether disproportionality is present in a corporation, and a basis to begin conversations on how to address it. Once data are available, educators are by nature and training excellent problem-solvers. Clear and accurate data of the type described here represent the first step in describing and understanding disproportionate representation in special education, and ultimately in addressing the complex issues of disproportionality at the local, state, and federal level.

END NOTES

1. A number of methods for judging the severity of discrepancies using the composition index have been suggested, but the most widely used method was suggested by Chinn and Hughes (1987). Chinn and Hughes suggested setting a confidence interval around the Composition Index (CI) of 10% of the subgroup's population estimate. In Dr. Smith's corporation, since African Americans constituted 30% of the population, the confidence interval is 10% of 30%, or 3%. Thus, we would not consider African-Americans to be disproportionate in special education in this corporation unless they represented less than 18% or more than 22% of the special education population (e.g., 20% +/- 2%). The 46% special education enrollment figure for African Americans in Dr. Smith's corporation clearly exceeds the maximum for proportionality, and thus the corporation exhibits over-representation of African-Americans in special education.

2. There has been some disagreement on the appropriate comparison group for calculating a risk ratio. Some have suggested that the appropriate comparison group is the risk index for White students, since that is the group that is most likely to be under-represented in special education while other groups are over-represented, and the group that has historically been the most advantaged in education. Using White as the comparison group, however, does not allow one to compute a risk ratio for White students. Thus both the federal government (Westat, 2005) and the state of Indiana use the composite index "all other students" as the appropriate compar-

ison for the risk index of a specific subpopulation.

3. There are situations in which a group of students may be under-represented in a given category or educational setting. The most important example is the under-representation of African American students in general education placements. Comparable risk ratios indicating underrepresentation are a risk ratio of 0.67 or less for concern about under-representation and a risk ratio of 0.50 or less as a level that would indicate significant under-representation.

AUTHORS

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About The Equity Project

The Equity Project is a consortium of projects dedicated to providing high quality data to educational decision-makers in order to better understand and address issues regarding educational equity and bridge the gap between research and practice. The Equity Project's mission is to provide evidence-based information specific to issues of school discipline, school violence, special education, and equality of educational opportunity for all students. Specifically, the Equity Project (a) provides data on these issues, (b) focuses on understanding the causes and conditions that create inequities, and (c) provides support and technical assistance to educational agencies seeking to create equitable school systems. The Equity Project supports educators and educational institutions in developing and maintaining safe, effective, and equitable learning opportunities for all students. The work of the Equity Project is guided by the following principles:

Disproportionality is a complex issue that will not respond to simplistic solutions.
- Although the fact of disproportionality has been well-documented, its causes and the paths to improvement are by no means fully understood. It is important, therefore, to refrain from assigning blame, but instead to work together to understand the data and its implications.

Data indicating disparity must be taken seriously.
- Data that reveal continuing disparities for certain groups are remarkably consistent, and deserve serious consideration. Examining local, state, and national data is an important first step in the process of understanding and remediating inequity.

Creating equitable school systems is a long-term process requiring long-term commitment.
- Problems of disproportionality and inequity in our nation and our schools were created over long periods of time and will not be resolved quickly. Thus a long-term institutional commitment is required that includes attention to difficult topics like race, and the ongoing integration of cultural competence as a key component in policy and practice.