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The Honorable Arne Duncan
Secretary of Education
The Honorable Russlynn H. Ali
Assistant Secretary of Education for Civil Rights
United States Department of Education
400 Maryland Avenue SW
Washington DC 20202

Re: Misunderstandings of the Relationship between Stringency of Public School Discipline Standards and Racial Differences in Discipline Rates

Dear Secretary Duncan and Assistant Secretary Ali:

On occasion I write to institutions whose missions involve the interpretation of data on demographic differences in the law and the social and medical sciences alerting those institutions to certain problems in their interpretations arising from the failure to recognize the ways that standard measures of differences between outcome rates tend to be systematically affected by the overall prevalence of an outcome. This letter is immediately prompted by the perceptions in the media that the large racial differences in public school discipline rates found in data released by the Department of Education's Office of Civil Rights in March 2012 are the consequence of stringent discipline policies in effect in recent decades. A similar perception apparently caused the Department of Education and the Department of Justice in July 2011 to jointly create the Supportive School Discipline Initiative to promote the exploration of more lenient alternatives to existing school discipline policies. Large racial differences in discipline rates, however, are not the consequence of stringent discipline standards. On the contrary, the more stringent the standard, the smaller will tend to be racial differences in discipline rates.

Inherent in the shapes of normal distributions of factors associated with experiencing an outcome is a pattern whereby the rarer an outcome, the greater tends to be the relative difference in experiencing it and the smaller tends to be the relative difference in avoiding it. Links to over 160 references explaining these and related patterns of relationships between the prevalence of an outcome and measures of differences between outcome rates in particular settings may be

found on the Measuring Health Disparities[1] page of jpscanlan.com. The nuances of the patterns are described on the Scanlan's Rule page of the same site. A number of articles explaining implications of the pattern may be found in the margin.[2]

The patterns whereby relative differences in experiencing an outcome and relative differences in avoiding the outcome are related to the prevalence of an outcome, including the pattern whereby the two relative differences tend to changes in opposite directions as the prevalence of an outcome changes, can be illustrated with any data set that allows one to examine various points on a continuum of factors associated with experiencing an outcome. Published income data, for example, show how reducing poverty will tend to increase relative differences in poverty rates while reducing relative differences in rates of avoiding poverty. National Health and Nutrition Survey (NHANES) data on systolic blood pressure show how generally reducing blood pressure will tend to increase relative differences in hypertension rates while reducing relative difference in rates of avoiding hypertension. NHANES data on folate level show how generally improving overall folate levels will tend to increase relative differences in rates of low folate while reducing relative differences in rates of adequate folate. See the Collected Illustrations sub-page of the Scanlan's Rule page.

Hypothetical data on test scores, however, may most usefully illustrate the patterns. This is particularly so because lowering of cutoffs has long been considered a means of reducing the discriminatory impact of employment and other tests on which some groups have lower average scores than others and because views about test cutoffs may in fact underlie beliefs of the Department of Education and the Department of Justice that more lenient discipline standards will reduce racial differences in discipline rates. Thus, consider a situation where at a particular cutoff pass rates are 80% for an advantaged group (AG) and 63% for a disadvantaged group (DG). AG's pass rate is 27% higher than DG's pass rate. If the cutoff is lowered to the point where 95% of AG passes the test, assuming normal test score distributions, DG's pass rate would be about 87%. AG's pass rate would then be only 9.2% higher than AG's pass rate. It is because the lowering cutoffs reduces relative differences in pass rates that the lowering of cutoffs is considered a means of reducing the discriminatory impact of tests.

But, whereas lowering cutoffs tends to reduce relative differences in pass rates, it tends to increase relative differences in failure rates. In the situation just posited, DG's failure rate (37%)

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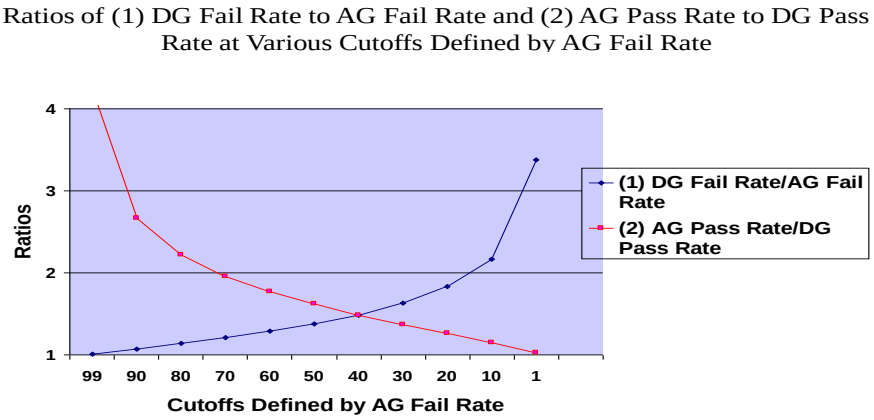
[1] To facilitate consideration of the issues raised in letters such as this I make available electronic copies of the letters on the Institutional Correspondence sub-page of the Measuring Health Disparities page of jpscanlan.com. Underlinings in this letter reflect links to the underlined material in an electronic copy of the letter maintained on the referenced Institutional Correspondence sub-page.

[2] "The Lending Industry's Conundrum," *National Law Journal*, Apr. 2, 2012; "Can We Actually Measure Health Disparities?" *Chance* 2006 ;19(2) :47-51; "Race and Mortality," *Society* 2000;37(2):19-35 (reprinted in *Current* 2000 (Feb)); "Mired in Numbers," *Legal Times*, Oct. 12, 1996; "When Statistics Lie," *Legal Times*, Jan. 1, 1996; "Getting it Straight When Statistics Can Lie," *Legal Times*, Jun 28, 1993; "Divining Difference," *Chance* 1994;7(4):38-9,48; "The Perils of Provocative Statistics," *Public Interest* 102 (Winter, 1991), 3-14; "An Issue of Numbers," *National Law Journal*, Mar. 5, 1990.

was initially 1.85 times AG's failure rate (20%). With the lower cutoff, DG's failure rate (13%) would be 2.6 times AG's failure rate (5%).

The chart below, which like the numbers just cited is based on a situation where two groups have normally distributed test scores with means that differ by half a standard deviation, illustrates the situation where a cutoff at a point where almost everyone fails is serially lowered to a point where almost everyone passes. The figures on the x-axis are the failure rates for the advantaged group, which are used as benchmarks for overall prevalence of an outcome. The line with diamond marker (blue in the electronic version) represents the ratio of DG's failure rate to AG's failure rate. The line with the box marker (red in the electronic version of this letter) represents the ratio of AG's pass rate to DG's pass rate.[3] Thus, moving from the left to right, one observes that as test failure becomes less common, relative differences in failure rates increase while relative difference in pass rates decrease.



School discipline standards operate exactly like test cutoffs. Less stringent standards, like lower test cutoffs, while leading to smaller relative differences in rates of avoiding discipline, lead to larger relative differences in discipline rates. Thus, more lenient discipline standards than existing ones will tend to increase the relative differences in discipline rates that are causing the concern. The subject is treated more fully, including discussion of some of the Department's recently released data, on the Discipline Disparities page of jpscanlan.com. That page also explains a method for measuring differences in discipline or any other outcome that is unaffected by the overall prevalence of an outcome. Section D of the sub-page addresses a related matter that may be of concern to the Department. The section explains that the proportion minorities

[3] It is common to use the disadvantaged group's rate as the numerator in the ratio used to derive the relative difference in pass rates. I use the higher rate in each numerator for several reasons, including that the contrasting pattern of changes is easier to recognize when both rate ratios are above (or below) one. While the choice of numerator will affect how one describes the size of a relative difference (e.g., when rates are 80% and 60%, the former is 33% more than the latter while the latter is 25% less than the former), the choice of numerator is irrelevant to the points made here.

comprise of students disqualified from participation in intercollegiate athletics by National Collegiate Athletic Association academic eligibility standards will tend to be greater with less stringent standards than with more stringent standards.

As reflected by the discussion of test scores, similar issues are implicated in the appraisal of the size of racial differences in meeting academic proficiency standards in elementary and secondary schools and whether such differences are increasing or decreasing.[4] For example, as overall performance increases, relative differences in proficiency rates will tend to decrease while relative differences in rates of failing to achieve proficiency will tend to increase. This subject is addressed more fully on the Educational Disparities page of jpscanlan.com.

Other pages on jpscanlan.com also address measurement issues that may be of concern to the Department of Education. At this point, however, I call your attention solely to the Relative Versus Absolute sub-page of the Measuring Health Disparities page. I do so both because it has been suggested that the Department may be investigating the role of racial bias in observed racial differences in public school discipline rates and because, mainly in the health disparities literature, there exists a notion that various measures of differences between outcome rates may each capture an important reality even when they yield opposite conclusions as to whether, for example, a disparity is increasing or decreasing over time. The referenced sub-page, using as an example a situation where the question to be answered involves which of several employers is the most biased, demonstrates that such notion is unfounded. While the reality may be difficult to divine, there exists only one reality as to the comparative size of the difference in the status of demographic groups reflected by two or more pairs of rates of experiencing an outcome. That is so with regard any type of outcome and regardless of the nature of the forces driving the difference in outcome rates. But it is most obviously so when the force may be bias against a demographic group.

I hope that the Department will carefully consider the points made above and in the various references in carrying out its functions involving the monitoring of demographic differences in educational settings, both with respect to the particular matters addressed here and with respect to other matters where similar interpretive issues are implicated.

Best wishes,

/s/ James P. Scanlan

James P. Scanlan

[4] For clarity I note that the points made in this letter concern efforts to appraise the size of differences in outcome rates (i.e., binary variables). They do not pertain to efforts to appraise the size of differences in continuous variables save when continuous values are functions of dichotomies. See 2006 British Society for Population Studies presentation at 6-7 and Comment on Chandola BMJ 2007.