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BY ELECTRONIC MAIL

The Honorable Eric H. Holder, Jr., Attorney General
Vanita Gupta, Acting Assistant Attorney General for Civil Rights
United States Department of Justice
950 Pennsylvania Avenue, NW
Washington, DC 20530-0001

The Honorable James Knowles III, Mayor
Thomas Jackson, Chief of Police
City of Ferguson
110 Church Street
Ferguson, MO 63135

Re: Misunderstandings of Statistics in the Department of Justice's *Investigation of the Ferguson Police Department* (Mar. 4, 2015)

Dear Attorney General Holder, Acting Assistant Attorney General Gupta, Mayor Knowles, and Chief Jackson:

On occasion I write to institutions or organizations whose activities involve the interpretation of data on demographic differences in the law or the social or medical sciences alerting them to ways in which their interpretations are undermined by the failure to understand patterns by which standard measures of differences between favorable or adverse outcome rates of advantaged and disadvantaged groups – or differences between the proportion a group comprises of persons potentially experiencing an outcome and the proportion it comprises of persons actually experiencing the outcome – tend to be systematically affected by the overall frequency of an outcome. Recipients of prior letters involving measurement issues discussed in this letter include Robert Wood Johnson Foundation (Apr. 8, 2009),[1] National Quality Forum (Oct. 22, 2009), Institute of Medicine (June 1, 2010), The Commonwealth Fund (June 1, 2010), United States Department of Education (Apr. 18, 2012), United States Department of Justice (Apr. 23, 2012), Board of Governors or the Federal Reserve System (Mar. 4, 2013), Harvard

[1] To facilitate consideration of issues raised in letters such as this I include links to referenced materials in electronic copies of the letters. All such letters may be found by means of the Institutional Correspondence subpage of the Measuring Health Disparities page of jpscanlan.com.

University (Oct. 9, 2012), Harvard Medical School, Massachusetts General Hospital, et al. (Oct. 26, 2012), Senate Committee on Health, Education, Labor and Pensions (Apr. 1, 2013), Mailman School of Public Health of Columbia University (May 24, 2013), Investigations and Oversight Subcommittee of House Finance Committee (Dec. 4, 2013), Education Trust (April 30, 2014), Annie E. Casey Foundation (May 13, 2014), Institute of Medicine II (May 28, 2014), IDEA Data Center (Aug. 11, 2014), Education Law Center (Aug. 14, 2014), Financial Markets and Community Investment Program, Government Accountability Office (Sept. 9, 2014), Wisconsin Council on Families and Children's Race to Equity Project (Dec. 23, 2014), Portland, Oregon Board of Education (Feb. 25, 2015), and Vermont Senate Committee on Education (Feb. 26, 2015). An amicus curiae brief I filed on November 17, 2014, in *Texas Department of Housing and Community Development, et al. v. The Inclusive Communities Project, Inc*., Sup. Ct. No. 13-1371, might be deemed a similar communication to the United States Supreme Court.

This letter is in some respects a follow-up to the April 23, 2012 letter to the Department of Justice mentioned above (which was sent to Attorney General Eric H. Holder, Jr. and Assistant Attorney General for Civil Rights Thomas Perez). The earlier letter discussed the pattern inherent in the shapes of other than highly irregular risk distributions whereby the rarer an outcome, the greater tends to be the relative difference between rates at which advantaged and disadvantaged groups experience the outcome and the smaller tends to be the relative difference between rates at which such groups avoid the outcome, as well as the failure of the Department of Justice and other agencies of the United States Government to understand the pattern or its bearing on the enforcement of federal civil rights laws. One implication of the pattern is that reducing the frequency of an adverse outcome, while tending to reduce relative differences between rates at which advantaged and disadvantaged groups avoid the outcome, tends to increase relative differences between rates at which such groups experience the outcome. Thus, the letter explained, contrary to the belief of federal enforcement agencies that reducing the frequency of adverse outcomes in mortgage lending, school discipline, and other contexts will tend to reduce relative demographic differences in rates of experiencing such outcomes, reducing the frequency of the outcomes tends to increase those differences.

Since the earlier letter, I have published a number of articles regarding the failure of understanding in this area on the part of the Department of Justice and other federal agencies. In doing so, I have often stressed the following anomaly in federal civil rights enforcement. The federal government, by pressuring entities covered by federal civil rights laws to reduce adverse outcomes, while continuing to monitor the fairness of practices on the basis of relative differences in adverse outcomes, has created a situation where entities that accede to government pressures to reduce the frequency of adverse outcomes increase the chances that the government will sue them for discrimination. Recent items where I have described the anomaly fairly succinctly include "Things government doesn't know about racial disparities," *The Hill* (Jan. 28, 2014), "Misunderstanding of Statistics Leads to Misguided Law Enforcement Policies," *Amstat News* (Dec. 2012), and "'Disparate Impact': Regulators Need a Lesson in Statistics," *American Banker* (June 5, 2012). The anomaly and related matters are treated rather more elaborately in my recent "Race and Mortality Revisited," *Society* (July/Aug. 2014) (see especially pages 328, 341-43, 345), and "The Perverse Enforcement of Fair Lending Laws," *Mortgage Banking* (May

2014), as well as in the Supreme Court *amicus curiae* brief mentioned at the end of the first paragraph. [2]

I have also emphasized the anomaly, to varying degrees, in workshops on the measurement of demographic differences in outcomes rates given to students and faculty at various universities between September 2012 and January 2015.[3] Of particular pertinence to the subject of this letter are the paper given at the University of Kansas School of Law in September 2013 and the presentation given at the University of California, Irvine in January 2015, both of which are titled "The Mismeasure of Discrimination." These workshops, like the final three items mentioned in the preceding paragraph, also describe a method of measuring the difference in the circumstances of two group reflected by their outcome rates that is unaffected by the frequency of an outcome (a matter discussed at page 6 of the earlier Department of Justice letter).

Finally, I have created web pages discussing data showing that recent reductions in public school discipline rates have in fact been accompanied by increased relative racial/ethnic differences in discipline rates in the states of Connecticut, Maryland, Minnesota, and Rhode Island and the cities/counties of Los Angeles, Denver, St. Paul, Minneapolis, Beaverton (OR), Portland (OR), Montgomery County (MD), and Henrico County (VA). See also the DOE Equity Report subpage of the Discipline Disparities page of jpscanlan.com regarding a Department of Education study indicating that relative racial differences in expulsion rates are smaller in school districts with zero tolerance policies than in school districts without such policies.

The Department of Justice's March 4, 2015 report *Investigation of the Ferguson Police Department* finds Ferguson, Missouri's law enforcement practices to have a disparate impact on its African American citizens principally on the basis of the difference between the proportion African Americans comprise of the population of Ferguson and the proportion African Americans comprise of persons experiencing some adverse outcome in Ferguson's criminal justice system, including the traffic enforcement/adjudication component of that system. The report appears to attribute the magnitude of such differences in substantial part to what the Department regards as over policing regarding minor matters for purposes of increasing revenue,

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[2] A complete list of my publications on patterns by which measures tend to be affected by the frequency of an outcome may be found on the Bibliography subpage of the Scanlan's Rule page of jpscanlan.com.

[3] See "The Mismeasure of Group Differences in the Law and the Social and Medical Sciences," American University Department of Mathematics and Statistics Colloquium (Sept. 16, 2012), "The Mismeasure of Group Differences in the Law and the Social and Medical Sciences," Applied Statistics Workshop, Institute for Quantitative Social Science at Harvard University (Oct. 17, 2012), "The Mismeasure of Discrimination," Faculty Workshop, University of Kansas School of Law (Sept. 20, 2013), "The Mismeasure of Association: The Unsoundness of the Rate Ratio and Other Measures That Are Affected by the Prevalence of an Outcome," Methods Workshop, Minnesota Population Center and Division of Epidemiology and Community Health of the School of Public Health of the University of Minnesota (Sept. 5, 2014), "Rethinking the Measurement of Demographic Differences in Outcome Rates," Methods Workshop, Maryland Population Research Center of the University of Maryland, Oct. 10, 2014, "The Mismeasure of Demographic Differences in Outcome Rates," Methods Workshop, Public Sociology Association of George Mason University (Oct. 18, 2014, "The Mismeasure of Discrimination," Methods Workshop, Center for Demographic and Social Analysis, University of California, Irvine (Jan. 20, 2015).

as well as to what the Department regards as unduly harsh or arbitrary aspects of Ferguson court procedures.

Important implications of the report are that observed differences between these proportions are as large as they are because the frequency of adverse outcomes is so high and that reducing the frequency of such outcomes will tend to reduce those differences. In fact, however, the sizes of these differences are inversely, not directly, correlated with the frequency of the adverse outcomes.

A corollary to the pattern whereby reducing the frequency of an outcome tends to increase relative differences between rates of experiencing the outcome is a pattern whereby reducing the frequency of an outcome tends to increase the proportion groups most susceptible to the outcome comprise of persons experiencing the outcome. The latter pattern, which is discussed in Section I.B of the recent Supreme Court *amicus curiae* brief (at 23-27), is illustrated in Table 1 of my "Divining Difference," *Chance* (Fall 1994), and Table 1 of my "Can We Actually Measure Health Disparities?," *Chance* (Spring 2006).[4] See also slides 17 and 18 of the applied statistics workshop at Harvard's Institute for Quantitative Social Science referenced in note 3. As with the pattern whereby reducing the frequency of an adverse outcome tends to increase relative differences in rates of experiencing the outcome, the existence of the pattern whereby reducing the frequency of an adverse outcome tends to increase the proportion more susceptible groups comprise of persons experiencing the outcome, though little known, [5] is hardly debatable. [6] Thus, for example, were the City of Ferguson to increase the number of court

[4] The Supreme Court *amicus curiae* brief discusses this pattern in the context of explaining the impossibility of quantifying the strength of the forces causing a disparity on the basis of comparisons between the proportion a group comprises of persons potentially experiencing an outcome and the proportion it comprises of persons experiencing the outcome (but without the actual outcome rates). See also slides 54 to 59 of the Irvine workshop, Section C of the Kansas Law paper (at 23-26), and pages 7-8 of the earlier letter to the Department of Justice.

[5] The failure to understand that reducing the frequency of an adverse outcome tends to cause disadvantaged groups to comprise larger proportions of persons experiencing the outcome than they previously did has long undermined efforts to analyze group differences in the social sciences, including with respect to such concepts as the "feminization of poverty," where researchers invariably have failed to recognize that reducing poverty, including that of female-headed families, tends to increase the proportion such families comprise of the poor (or that increases in poverty tend to have the opposite effect). See, in addition to the above-referenced "Race and Mortality Revisited" and "Divining Difference," my "Race and Mortality" *Society* (Jan./Feb. 2000) (reprinted in *Current* (Feb. 2000), "The Perils of Provocative Statistics," *Public Interest* (Winter 1991), and "The 'Feminization of Poverty' is Misunderstood," *Plain Dealer* (Nov 11, 1987) (reprinted in *Current* (May 1988) and *Annual Editions: Social Problems 1988/89*, Dushkin (1988)).

[6] Scholarly consensus with my thinking on this subject is discussed at page 343 of "Race and Mortality Revisited" and on the Consensus Subpage of the Scanlan's Rule page of jpscanlan.com. The section of "Race and Mortality Revisited" titled "Response of the National Center for Health Statistics to 'Race and Mortality'" (at 331-35) discusses the National Center for Health Statistics' recognition, beginning in 2004, that relative differences in a favorable outcome and relative difference in the corresponding adverse outcome tend to change in opposite directions as the frequency of an outcome changes, as well as the agency's misguided response to that recognition. See also my "Measuring Health and Healthcare Disparities," Proceedings of the Federal Committee on Statistical Methodology 2013 Research Conference (2014) (at 11-12, 26-27). Recent treatments by others of the patterns by which relative differences in experiencing and avoiding an outcome tend to be affected by the frequency of an outcome may be found in P. Lambert & S. Subramanian, "Disparities in socio-economic outcomes: some positive

appearances a person must miss in order to trigger issuance of an arrest warrant, that would almost certainly cause African Americans to comprise a larger proportion of persons for whom such warrants are issued than they currently do.

Hence, as with the Department's approach to enforcing laws prohibiting discrimination in lending and school discipline, a central premise of the Departments' approach to challenging the disparate impact of Ferguson's law enforcement practices is based on an understanding of statistics that is the exact opposite of reality.

The failure to understand patterns by which measures tend to be affected by the frequency of an outcome also undermines efforts to draw inferences about underlying process based on the perceived magnitude of a disparity or based on the comparative magnitude of observed differences. See generally the sections titled "Absolute Differences and the Value Judgment Fallacy" and "Illogical Premises and Unfounded Explanations" of "Race and Mortality Revisited" (at 337-41), the section titled "Identifying Disparate Treatment" in "The Perverse Enforcement of Fair Lending Laws" (at 92-93), note 14 of the Kansas Law paper (at 16), and pages 16, 27, 40-41 of the October 9, 2012 letter to Harvard University mentioned in the first paragraph.

For example, the report appears to find evidence of intentional discrimination in the fact that disparities increase at each stage in the criminal justice system. But it is to be expected that the group that is more susceptible to some outcome, for discriminatory or nondiscriminatory reasons, will be increasingly more susceptible – in relative terms – to each deeper level in the system, just as relative differences between rates at which advantaged and disadvantaged are very poor tend to be greater than relative difference between rates at which such groups are poor (as shown in Table 2 of "Race and Mortality Revisited" (at 330)). See my "Mired in Numbers," *Legal Times* (Oct. 12, 1996). One cannot draw inferences about the nature of processes on the basis of patterns that are to be expected regardless of the nature of the processes.[7]

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propositions and their normative implications," *Social Choice and Welfare* 2014;43(3):565-576; and P. Lambert & S. Subramanian, "Group inequalities and 'Scanlan's Rule': Two apparent conundrums and how we might address them," Working Paper 84/2014, Madras School of Economics (2014). While not necessarily agreeing with all my views, the authors fully recognize that reducing the frequency of an outcome will tend to increase relative differences between rates at which advantaged and disadvantaged groups experience the outcome. As indicated on the cover of the Supreme Court *amicus curiae* brief maintained on jpscanlan.com, Yale Law Professor Ian Ayres filed an *amicus curiae* brief in the same case criticizing aspects of my brief. But the Ayres brief says nothing whatever about the description in my brief of the patterns whereby reducing the frequency of an adverse outcome tends to (a) increase relative differences between rates of experiencing the outcome and (b) increase the proportion the most susceptible group comprises of persons experiencing the outcome. See my January 14, 2015 letter to Rachel J. Geman regarding, among other things, the failure of the Ayres brief to address such issues.

[7] The discussion at page 68 of the report concerning increasing disparities as the number of events increases raises an additional problem. For, even with a sound measure, it is not possible to interpret data on group difference based on the proportions of advantaged and disadvantaged groups that fall into various intermediate categories, as distinguished from the proportions of the groups that fall below or above certain levels. That is, for example, the method described in "Race and Mortality Revisited" (at 336-37) and the Supreme Court *amicus curiae* brief (at 18-20) would enable one to appraise educational outcome differences on the basis of the proportions of advantaged and disadvantaged groups that achieve (or fail to achieve) grades D or above, C or above, B or above, or A, but not on

The report also finds evidence of racial bias in the fact that African Americans comprise 72 percent of person stopped for speeding based on radar but 80 percent of persons stopped based on other methods. The implication is that the disparity is larger when stops are based on subjective methods than objective ones, thus reflecting the influence of bias on subjective decisions. But the interpretation is not sound statistically.

Assume for illustrative purposes that the radar stops are entirely objective and cause to be ticketed anyone exceeding the speed limit by 5 miles per hour when patrol cars are in the area (or where the radar is in the patrol car). Assume also that the fact that black drivers comprise 72 percent of speeders objectively identified by radar means that black drivers are somewhat more likely to exceed the speed limit by at least 5 miles per hours than persons of other races (that is, that black drivers comprise less than 72 percent of total drivers). Typically, the fact that drivers of a particular race comprise a higher proportion of persons exceeding the speed limit by 5 miles per hour than they comprise of all drivers would mean that such drivers comprise an even larger proportion of persons exceeding the speed limit by at least 10 miles per hour than they do of persons exceeding the speed limit by at least 5 miles per hour. Suppose, then, that whereas radar assessment will typically cause the stopping of all cars exceeding the speed limit to 5 miles hour when a patrol car is nearby, visual assessment of speed by officers will typically lead only to the stopping of cars exceeding the speed limit by 10 miles per hour. In such circumstances, irrespective of any bias on the part of officers stopping cars for speeding on the basis of visual assessment of speed, one would expect a group that comprises a higher proportion of drivers stopped on the basis of radar than it does of the total driver population to comprise an even higher proportion of persons stopped on the basis of visual assessment than it comprises of persons stopped on the basis of radar. Similarly, in circumstances where one group speeds more often than other groups, the higher the threshold officers set for stopping speeding drivers, the larger will tend to be the proportion the former group comprises of those stopped.[8]

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the basis of the proportions of the groups that achieve grades B, C, or D. See the Discipline Disparities page of jpscanlan.com and its Connecticut Disparities subpage. See also the Truncation Issues subpage of the Scanlan's Rule page and page 19 of the Supreme Court *amicus curiae* brief regarding related issues.

[8] Any additional level of review, circumspection, or increased stringency of criteria for causing/allowing interaction between law enforcement and members of the public (which increased stringency of criteria as far as law enforcement is concerned is the relaxing of standards as far as the public is concerned) will tend to increase the proportion groups most susceptible to such interaction comprise of persons experiencing it. To the extent that such review (*etc*.) diminishes any racial bias that may influence interaction decisions, or involves race-conscious action aimed at reducing differences between outcome rates irrespective of bias, such review (*etc*.) may counter to a degree the frequency-related forces described in "Race and Mortality Revisited" and other references. But while the aspects of such review (*etc*.) that can diminish the forces causing racial differences in outcome rates may sometimes be present, the frequency-related forces will invariably be present. See my "The Profiling Conundrum" (unpublished, 2001). Thus, we observe the increased relative differences in discipline rates in the jurisdictions referenced on page 3 *supra* notwithstanding that many of the administrators in those jurisdictions who were generally reducing discipline rates based on the mistaken belief that doing so would reduce relative demographic differences between discipline rates were presumably attempting to reduce demographic differences in outcome rates by other means as well.

The above discussion is not to suggest that the facts are such as I have posited. Rather, it is merely to illustrate that it is not possible to draw inferences about processes on the basis of the perceived comparative size of disparities without a sound understanding the way that various measures of disparity are affected by the frequency of an outcome.[9] And such understanding is not reflected in the analysis of particular disparities in the Department's report, just as it is not reflected in the reports' perception about the relationship between the frequency of an outcome and the proportion African Americans comprise of persons experiencing the outcome.

In continuing interactions between the Department of Justice and the City of Ferguson with respect to issues of either disparate impact or disparate treatment that the Department believes result from the City's practices, I hope that the Department and the City will proceed with a sound understanding of the ways measures of disparity are affected by the frequency of an outcome, as discussed in the various references mentioned above. Such understanding ought to include recognition of the problems in analyses of disparities based on the proportion a group comprises of persons potentially experiencing an outcome and the proportion it comprises of persons actually experiencing the outcome, as distinguished from analyses based on actual outcome rates of different demographic groups (the subject of Section I.B of the Supreme Court brief (at 23-27), Section C of the Kansas Law paper (at 23-26), slides 53-59 of the Irvine workshop, and pages 7-8 of the earlier letter to the Department of Justice). And, particularly before practices are changed, or other actions are taken, based on the perceptions reflected in the Department's report, such understanding must crucially include recognition that reducing the frequency of an outcome will tend to cause groups most susceptible to the outcome to comprise larger, not smaller, proportions of persons experiencing the outcome.

Finally, irrespective of issues involving the City of Ferguson, I hope the Department of Justice will carefully consider whether it can responsibly enforce civil rights laws in any context without thoroughly reexamining the manner in which it analyzes data on demographic differences. That the government commonly pressures entities covered by civil rights laws to do things that increase the chances that the government will accuse them of discrimination, and that this occurs solely because the government fails to understand such undeniable facts as that reducing a test score, income, or credit score requirement to achieve some favorable outcome tends to increase relative differences in failing to meet the requirement, is certainly a remarkable anomaly in a technologically advanced society. But the government's failures of understanding go well beyond this issue.

To be sure, as reflected at pages 343-45 of "Race and Mortality Revisited" and pages 26-34 of the Federal Committee on Statistical Methodology paper discussed in note 6 *supra*, the Department of Justice's failures of understanding respecting analyses of demographic differences in outcome rates may be no greater than that found at the world's leading research institutions. But, without excusing the failure of those institutions to reexamine their methods, I note that law enforcement agencies have a special responsibility to ensure that their actions have a sound scientific basis. And I suggest that the Department cannot fulfill that responsibility without

[9] In addition to the references cited in second paragraph at page 5, see the Offense Type Issues subpage of the Discipline Disparities page (respecting perception about the implication of larger relative racial differences in discipline rates for subjectively-identified than objectively-identified infractions).

mastering the all concepts described in the earlier letter and the materials referenced above, including the concepts that may have no bearing on the situation in Ferguson, Missouri.

Further, the facts that other federal agencies, Congress, the courts, state and local governments, as well as the public, do not understand that reducing the frequency of outcomes tends to increase relative differences between rates at which advantaged and disadvantaged groups experience the outcomes, and that the Department itself has substantially contributed to the failure of understanding of that matter, implies an obligation of the Department to fully educate itself on this and related matters, and, having done so, to take affirmative steps to correct the failures of understanding of such matters on the part of others.

Sincerely,

/s/ James P. Scanlan

James P. Scanlan