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ELECTRONICALLY TRANSMITTED
Jason Furman, Ph.D., Chairman
Sandra E. Black, Ph.D., Member
Jay C. Shambaugh, Ph.D., Member
Council of Economic Advisers
1650 Pennsylvania Ave., NW
Washington, DC 20502

Re: Request That the Council of Economic Advisers Publish a Document Explaining, *Inter Alia*, That Reducing the Frequency of an Adverse Outcome Tends to Increase (a) Relative Differences in Experiencing the Outcome and (b) the Proportion Disadvantaged Groups Make Up of Persons Experiencing the Outcome

Dear Chairman Furman and Council Members Black and Shambaugh:

This is a request that the Council of Economic Advisers (CEA) publish an Issue Brief or other document discussing the patterns by which standard measures of differences between outcome rates tend to be systematically affected by the frequency of an outcome, with a special focus on clarifying for the benefit of federal law enforcement agencies that relaxing standards or otherwise reducing the frequency of an adverse outcome tends to increase (a) relative racial and other demographic differences in rates of experiencing the outcome and (b) the proportion disadvantaged groups make up of persons experiencing the outcome.

The request is similar to requests made in letters of October 8, 2015 and September 8, 2015, to the American Statistical Association[1] (ASA letter) and the Chief Data Scientist of the White House Office of Science and Technology Policy (CDS letter). Those letters, among other things, urged the recipients to explain to the Department of Justice (DOJ) and other federal agencies that the belief underlying many federal civil rights enforcement policies that reducing the frequency of an outcome will tend to reduce standard measures of disproportionality in

[1] To facilitate consideration of issues raised in letters such as this I include links to referenced materials in electronic copies of the letters. Electronic copies are available by means of the Institutional Correspondence subpage of the Measuring Health Disparities page of jpscanlan.com and recent ones are posted on the ASA Connect portion of the American Statistical Association website. In this case, electronic copies of the letter are being emailed to the addressees.

experiencing the outcome is patently incorrect. This letter is prompted is prompted by my reading the December 2015 CEA Issue Brief titled "Fines, Fees and Bail, Payments in the Criminal Justice System that Disproportionately Impact the Poor." The Issue Brief came to my attention as a result of its mention in the March 14, 2016 Dear Colleague letter of the DOJ's Civil Rights Division regarding the reform of state and local fine and fee practices. The CEA Issue Brief mentions (at 2) the DOJ's March 4, 2015 report on the disparate impact of the police and court practices of Ferguson, Missouri.

A key premise of the DOJ's Ferguson report is that over policing and unjustifiably harsh court procedures of the city of Ferguson caused African Americans to make up a much higher proportion of persons experiencing adverse interactions with the police and the courts than the 67 percent they make up of the city's population. As I explained recently with regard to the DOJ's February 10, 2016 suit against Ferguson, which is based on the same premise, the premise is the opposite of reality. See "Things DoJ doesn't know about racial disparities in Ferguson," *The Hill* (Feb. 22, 2016). Reducing the frequency of any outcome will tend to increase, not decrease, the proportions groups most susceptible to the outcome make up of persons experiencing it. A more complete explanation of the issue in the context of the facts pertinent to Ferguson, Missouri, may be found in my March 9, 2015 letter to the Department of Justice and City of Ferguson, Missouri, which is mentioned at various places in the ASA and CDS letters.

The principal interpretive problem in the DOJ's Ferguson report lies in the failure to recognize the statistical pattern whereby the rarer an outcome the greater tends to be the relative difference between rates at which advantaged and disadvantaged groups experience it and the smaller tends to be the relative difference between rates at which such group avoid the outcome, as well as the corollary pattern whereby the rarer an outcome the larger the proportion groups most susceptible to the outcome make up of both persons experiencing the outcome and persons failing to experience the outcome. The patterns are illustrated in Table 1 below, which replicates Table 1 of the ASA letter (at 11).

Table 1. Illustration of effects on relative differences in pass and fail rates of lowering a cutoff from a point where 80% of AG passes to a point where 95% of AG passes, with proportions DG comprises of persons who pass and of persons who fail (when mean scores differ by approximately half a standard deviation and DG comprises 50% of test takers)

Cutoff	AG Pass	DG Pass	AG Fail	DG Fail	AG/DG Pass Ratio	DG/AG Fail Ratio	DG Prop of Pass	DG Prop of Fail
High	80%	63%	20%	37%	1.27	1.85	44%	65%
Low	95%	87%	5%	13%	1.09	2.60	48%	72%

The table shows how lowering a test cutoff, and thereby generally reducing failure rates while generally increasing pass rates, tends to increase the relative differences between the rates that an advantaged group (AG) and a disadvantaged group (DG) fail a test while reducing the

relative difference between the rates at which the groups pass the test.[2] It also shows, in the final two columns, that lowering the cutoff increases the proportion DG makes up of (a) persons who fail the test and (b) persons who pass the test.

A useful illustration of the pattern by which relative differences tend to change as the frequency of an outcome changes may be found in data from Table 1 (at 2) of a July 2015 CEA Issue Brief Titled "Mapping the Digital Divide." Table 2 below presents information from the portion of Table 1 of the CEA Issue Brief regarding (a) comparisons of internet access in households headed by blacks with internet access in households headed by whites and (b) comparisons of internet access in households headed by persons having less than a high school education with households headed by persons having at least a bachelor's degree. The table shows that, as overall rates of internet access increased between 2001 and 2013, the ratio of the advantaged group's rate of access to the disadvantaged group's rate of access decreased while the ratio of the disadvantaged group's rate of lack of access to the advantaged group's rate of lack of access increased. Similarly, putting aside implications of compositional changes (which, in any case, would not be substantial enough to affect the patterns), regardless of the size of each group, the proportion DG makes up of the combined AG and DG populations with access, and the proportion DG makes up of the combined AG and DG populations without access, would have increased.

Table 2. Patterns of changes in rates of internet access between 2001 and 2013 for certain advantaged groups (AGs) and disadvantaged groups (DGs) with ratio of AG rate of access to DG rate of access and ratio of DG rate of lack of access to AG rate of lack of access

Year	Comparison	AG Access Rt	DG Access Rt	AG/DG Access Ratio	DG/AG No Access Ratio
2001	White/Black	56.0%	31.0%	1.81	1.57
2013	White/Black	77.4%	61.3%	1.26	1.71
2001	Degree/<High School	75.3%	40.4%	1.86	2.41
2013	Degree/<High School	90.1%	62.9%	1.43	3.75

Thus, observers relying on relative differences in favorable outcomes would find that the disparities decreased, while observers relying on relative differences in the corresponding adverse outcomes would find that the disparities increased. [3] Similarly, observers comparing the

[2] While I refer to patterns of relative differences, I commonly illustrate those patterns by means of rate ratios. Since I use the larger figure in each numerator, the relative difference is the rate ratio minus one for both outcomes.

[3] Discussing information it its Table 1, the "Digital Divide" Issue Brief (at 3) regarded (a) the disparity between internet access of black and white households to have decreased on the basis of a 30.3 percentage point increase in the black rate compared to a 21.4 percent increase in the white rate and (b) the disparity between internet access of households where the head has less than a high school education and households where the head has at least a college degree to have decreased based on a 26.3 percentage point increase for the former compared with 14.8 percentage point increase for the latter. The brief, however, did not consider the pattern by which absolute differences between rates (and the corresponding differences between percentage point changes in each group's rate) tend to be affected by the frequency of the outcome. Using the method described in the ASA letter and references discussed *infra*, one may determine that the racial gap decreased from .65 to .56 standard deviations estimated

proportion DG comprises of the combined AG and DG population with the proportion DG comprise of the combined AG and DG population with access would find a decreased disparity; observers comparing the proportion DG comprises of the combined AG and DG population with the proportion DG comprises of the combined AG and DG population without access would find an increased disparity.

More comprehensive discussions of the pattern by which the two relative differences tend to be affected by the frequency of an outcome (or the corollaries to those patterns) – as well as the patterns by which absolute differences between rates and differences measured by odds ratios tend to be affected by the frequency of an outcome – may be found in the ASA letter, as well as in my "Race and Mortality Revisited," *Society* (July/Aug. 2014);[4] "The Perverse Enforcement of Fair Lending Laws," *Mortgage Banking* (May 2014); "Measuring Health and Healthcare Disparities," Federal Committee on Statistical Methodology 2013 Research Conference (Nov. 2013) (2013 FCSM paper); "The Mismeasure of Discrimination," Faculty Workshop, University of Kansas School of Law (Sept. 2013); and my *amicus curiae* brief in *Texas Department of Housing and Community Affairs et al. v. The Inclusive Communities Project, Inc*., Sup. Ct. No. 13-1371 (Nov. 2014). Many tabular and graphical illustrations of the pertinent patterns, with actual and hypothetical data, may be found in recent methods workshops given at American universities.[5] A March 12, 2016 letter to the City of Madison, Wisconsin (at 8) discusses recent reportage that substantial decline in arrests in Madison between 2005 and 2014 was accompanied by an increase in the proportion African Americans made up of persons arrested.

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difference between the underlying means, and that the referenced educational gap decreased from 1.62 to 1.44 standard deviations.

[4] Table 7 of "Race and Mortality Revisited" (at 341) is based on data from the study referenced in the Issue Brief on fines and fees at page 4 (Pager, Devah. 2003. "The Mark of a Criminal Record." *American Journal of Sociology* 108(5): 937-975). The table shows that one will reach opposite conclusions about the comparative effects of a criminal record on white and black employment prospects depending on whether one examines relative differences in favorable outcomes (as the author did) or relative differences in adverse outcome. The table also shows that persons relying on percentage point effects, as CEA appears commonly to do, would reach an opposite conclusion from that of the author. The table also shows that, to the extent that the effects of a criminal record revealed in the subject study can be effectively measured, the effects on whites and blacks are approximately equal.

[5] See "The Mismeasure of Health Disparities in Massachusetts and Less Affluent Places," Department of Quantitative Health Sciences, University of Massachusetts Medical School (Nov. 18, 2015); "The Mismeasure of Discrimination," Center for Demographic and Social Analysis, University of California, Irvine (Jan. 20, 2015); "The Mismeasure of Demographic Differences in Outcome Rates" Public Sociology Association of George Mason University (Oct. 18, 2014); "Rethinking the Measurement of Demographic Differences in Outcome Rates," Maryland Population Research Center of the University of Maryland (Oct. 10, 2014); "The Mismeasure of Association: The Unsoundness of the Rate Ratio and Other Measures That Are Affected by the Prevalence of an Outcome," Minnesota Population Center and Division of Epidemiology and Community Health of the School of Public Health of the University of Minnesota (Sept. 5, 2014); "The Mismeasure of Group Differences in the Law and the Social and Medical Sciences," Institute for Quantitative Social Science at Harvard University (Oct. 17, 2012); "The Mismeasure of Group Differences in the Law and the Social and Medical Sciences," Department of Mathematics and Statistics of American University (Sept. 25, 2012).

That the DOJ is taking various actions against Ferguson, Missouri and presumably against other jurisdictions while mistakenly believing that reductions in the frequency of adverse interactions between a jurisdiction's police/courts and its citizens will tend to reduce the proportion racial minorities and other disadvantaged groups make up of persons experiencing those interactions is only one example of the perverse consequences of the federal government's misunderstanding of the effects of reducing adverse outcomes on measures of disproportionality. For at least two decades the government has encouraged lenders to relax mortgage lending standards in order to reduce relative racial differences in adverse borrower outcomes like rejection of mortgage loan applications. For at least several years, the government has encouraged public schools to relax discipline standards in order to reduce relative racial and other differences in adverse discipline outcomes like suspension and expulsion.[6] But, as explained above, relaxing standards and thereby generally reducing adverse outcomes, while tending to reduce relative differences in the corresponding favorable outcomes, tends to increase relative differences in the adverse outcomes. Unaware that reducing the frequency of an outcome tends to increase relative difference in rates of experiencing it, the government continues to monitor the fairness of lending and discipline practices on the basis of relative differences in adverse outcomes. Thus, by complying with government encouragements to relax standards, lenders and public schools increase the chances that the government will sue them for discrimination.

Relatively succinct discussion of these situations in the lending and school discipline contexts may be found in my "Things government doesn't know about racial disparities," *The Hill* (Jan. 28, 2014); "The Paradox of Lowering Standards," *Baltimore Sun* (Aug. 5, 2013); "Misunderstanding of Statistics Leads to Misguided Law Enforcement Policies," *Amstat News* (Dec. 2012); "'Disparate Impact': Regulators Need a Lesson in Statistics," *American Banker* (June 5, 2012); "Racial Differences in School Discipline Rates," *The Recorder* (June 22, 2012); and "The Lending Industry's Conundrum," *National Law Journal* (Apr. 2, 2012).

The situation where compliance with government guidance increases the chances that the government will sue an entity for discrimination also exists in the context of the DOJ's actions regarding oversight of state and local law enforcement. The DOJ's Ferguson report, and other DOJ actions reflecting thinking similar to that in the report, are presumably causing many jurisdictions mistakenly to believe that generally reducing arrest rates will tend to reduce the measures of disparate impact that the DOJ employs. See, in addition to the above-mentioned March 12, 2016 letter to the City of Madison, Wisconsin, letters of March 5, 2016, and June 8, 2015 to City of Boulder, Colorado and City of Minneapolis, Minnesota (June 8, 2015).

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[6] The Departments of Education and Justice were the federal agencies initially promoting this mistaken notion. In December 2014, in a document titled "Policy Statement on Expulsion and Suspension Policies in Early Childhood Settings," the Department of Health and Human Services (HHS) also promoted that view (though with a focus on the proportion disadvantaged groups made up of persons who are suspended. HHS did so apparently unaware that a decade earlier the National Center for Health Statistics had recognized that the opposite was the case. See the August 24, 2015 letter to the Department of Health and Human Services and Department of Education.

As suggested in the ASA letter (at 36-40), the mistaken belief that reducing the frequency of adverse outcomes should reduce relative differences in rates of experiencing the outcome (or the associated proportions disadvantaged groups make up of persons experiencing the outcome) existed even before that belief became a key premise of federal civil rights law enforcement policy. The scientific community bears at least as much responsibility for the persistence of the belief as the federal government, which relies considerably on the scientific community for its understanding of such issues. But it is only the government that takes coercive actions based on the belief and that does so even as it misleads the public and covered entities with respect to the types of practices that increase or decrease the likelihood that the government will take such actions. Thus, the correcting of the government's mistaken understanding in this area ought to be a priority of an entity like CEA, as should be its own mastery of all the pertinent issues.

As reflected in the ASA letter as well "Race and Mortality Revisited" and other more comprehensive materials referenced in the first full paragraph on page 4 of this letter, there exist numerous issues regarding the soundness of analyses of demographic differences in outcome rates that CEA should address. These includes issues regarding health and healthcare disparities research, where vast federal resources are expended almost universally without consideration of the extent to which observed patterns are simply reflections of the effect of the prevalence of an outcome on the measure being employed and the extent to which such patterns indicate something meaningful about underlying processes. Given that CEA seems commonly to rely on absolute differences to measure demographic differences,[7] I call your particular attention to the discussion in "Race and Mortality Revisited" (at 337-39) regarding the mistaken understandings and anomalous consequences regarding pay-for-performance programs as a result of reliance on absolute differences to measure healthcare disparities. With regard to the general confusion about the measurement of health and healthcare disparities, in addition to "Race and Mortality Revisited" and the 2013 FCSM paper, see my July 1, 2015 letter to Agency for Healthcare Research and Quality (regarding the way the agency's confusion about measurement issues caused the 2010 report to list as among the largest reductions in healthcare disparities situations where the agency would find much larger disparities at the end of the period than the beginning of the period) and my March 8, 2016 letter to Stanford Center on Poverty and Inequality (at 6-8) (regarding the way recent action of the National Center for Health Statistics (NCHS), still virtually unknown within the federal health disparities research community, that effectively repudiates a decade of healthcare disparities research including that in the National Healthcare

[7] I have only perused a few CEA documents. But I note that while CEA seems commonly to absolute differences it also discusses relative effects. For example, at page 12 of the September 2015 report *Using Federal Data to Measure and Improve the Performance of U.S. Institutions of Higher Learning*, the report, while principally citing percentage point differences, notes that assistance in filling out certain forms caused a particularly large percentage increase in filing forms or enrolling in college for students from low-income families. Such patterns must be interpreted with recognition that a factor the affects an outcome rate will tend to cause a larger proportionate changes in the outcome rates for the groups with lower baseline rates for the outcome while causing a larger proportionate changes in the opposite outcome rate for other groups. See "Race and Mortality Revisited" at 339-340 and the ASA letter at 9-10. See also discussion *infra* regarding subgroup effects.

Disparities Reports that relied on earlier NCHS recommendations to measure healthcare disparities in terms of relative differences in adverse outcomes).

The Department of Education's mistaken belief that generally reducing discipline rates tends to decrease relative racial and other differences in discipline rates and the proportion racial minorities and other disadvantaged groups make up of disciplined students is not the only failure of understanding undermining the agency's performance of its varied missions. The general failure to understand patterns by which measure tends to be affected by the frequency of an outcome vitiates virtually everything the agency does regarding appraisals of demographic difference in educational outcomes. See the Educational Disparities page of jpscanlan.com (and its subpages) and the IDEA Data Center Disproportionality Guide subpage of the Discipline Disparities page of jpscanlan.com.

Similar points could be made regarding a great many federal agencies, including those whose mission involves providing guidance on analytical issues to other agencies. Further, while the above discussion pertains to demographic differences in outcome rates, the same issues apply with regard to analyses of differences between outcome rates of control subject and treated subject in clinical trials, with respect to identification of subgroup effects and the use of risk reductions observed in clinical trials to make treatment decisions in situations involving baseline rates different from those in the trials. See "Race and Mortality Revisited" (at 340), my Comment on FDA Proposed Subgroup Regulations (May 16, 2014), and Subgroup Effects subpage of the Scanlan's Rule page of jpscanlan.com. See also note 7 *supra*.

Apart from the references above, the essentially universal failure of understanding of the patterns by which measures of differences between outcome rates tend to be affected by the prevalence of an outcome, and of the implications of those patterns, is illustrated in letters of varying length to institutions or organizations regarding analyses of demographic or other differences that the institutions or organizations conduct or provide guidance on, or that pertain to activities of the institutions of organizations.[8] My cursory examination of materials produced

[8] A list of the letters, including those already mentioned in this letter, follows: Stanford Center on Poverty and Inequality (Mar. 8, 2016), City of Boulder, Colorado (Mar. 5, 2015), Houston Independent School District (Jan. 5, 2016), Boston Lawyers' Committee for Civil Rights and Economic Justice (Nov. 12, 2015), House Judiciary Committee (Oct. 19, 2015), American Statistical Association (Oct. 8, 2015), Chief Data Scientist of White House OSTP (Sept. 8, 2015), McKinney, Texas Independent School District (Aug. 31, 2015), Department of Health and Human Services and Department of Education (Aug. 24, 2015), Agency for Healthcare Research and Quality (July 1, 2015), City of Minneapolis, Minnesota (June 8, 2015), Texas Appleseed (Apr. 7, 2015), Senate Committee on Health, Education, Labor and Pensions (Mar. 20, 2015), United States Department of Justice and City of Ferguson, Missouri (Mar. 9, 2015), Vermont Senate Committee on Education (Feb. 26, 2015), Portland, Oregon Board of Education (Feb. 25, 2015), Wisconsin Council on Families and Children's Race to Equity Project (Dec. 23, 2014), Financial Markets and Community Investment Program, Government Accountability Office (Sept. 9, 2014), Education Law Center (Aug. 14, 2014), IDEA Data Center (Aug. 11, 2014), Institute of Medicine II (May 28, 2014), Annie E. Casey Foundation (May 13, 2014), Education Trust (April 30, 2014), Investigations and Oversight Subcommittee of House Finance Committee (Dec. 4, 2013), Mailman School of Public Health of Columbia University (May 24, 2013), Senate Committee on Health, Education, Labor and Pensions (Apr. 1, 2013), Federal Reserve Board (March 4, 2013), Harvard University et al. (Oct. 26, 2012), Harvard University (Oct. 9, 2012), United States Department of Justice (Apr. 23, 2012), United States Department of Education (Apr. 18, 2012), The

by the CEA suggest that its work suffers from the same failure of understanding, and, in any case, any CEA research that had reflected an understanding of these issues would likely have come to my attention.

Thus, I urge CEA to carefully consider the issues outlined above with a view toward determining steps CEA can take to promote comprehensive reform of analyses of differences in outcome rates by federal agencies. But I also urge CEA to consider the steps it can take immediately to advise federal civil rights enforcement agencies of the ways in which their policies are undermined by failure to understand that relaxing standards or otherwise reducing the frequency of adverse outcomes tends to increase, not decrease, relative differences in rates of experiencing the outcomes and the proportions disadvantaged groups make up of persons experiencing the outcomes.

Sincerely,

/s/ James P. Scanlan

James P. Scanlan

Commonwealth Fund (June 1, 2010), Institute of Medicine (June 1, 2010), National Quality Forum (Oct. 22, 2009), Robert Wood Johnson Foundation (Apr. 8, 2009).