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December 4, 2013

The Honorable Patrick T. McHenry  
Chairman  
The Honorable Al Green  
Ranking Member  
Oversight and Investigations Subcommittee of the  
House Committee on Financial Services  
2129 Rayburn House Office Building  
Washington, DC 20515

Re: Misunderstandings of Statistics Underlying Federal Fair Lending Enforcement  
Based on the Disparate Impact Theory

Dear Congressmen McHenry and Green:

The letter is to bring to the attention of the Oversight and Investigations Subcommittee an important issue involving the application of the disparate impact theory in the enforcement of fair lending laws that went unaddressed in the Subcommittee's hearing of November 19, 2013.

For more than nineteen years federal agencies responsible for monitoring fair lending laws have been encouraging lenders to relax lending criteria and otherwise reduce the frequency of adverse lending outcomes. Those agencies have done so based on the view that reducing the frequency of adverse lending outcomes will tend to reduce relative (percentage) differences between rates at which different demographic groups experience those outcomes. Exactly the opposite is the case. While reducing the frequency of adverse lending outcomes will tend to reduce relative differences in the corresponding favorable outcomes, it will tend to increase relative differences in adverse outcomes. For example, test score data demonstrate that lowering test cutoffs will tend to increase relative differences in failure rates of advantaged and disadvantaged groups at the same time that it reduces relative differences in pass rates of such groups; income and credit score data demonstrate that lowering an income or credit score requirement will tend to increase relative differences between rates at which advantaged and disadvantaged groups fail to meet the requirement at the same time that it reduces relative differences in rates at which such groups meet the requirement. But, unaware that reducing the frequency of adverse outcomes tends to increase relative differences in rates of experiencing those outcomes, regulators have consistently monitored the fairness of lender practices on the basis of relative differences in adverse outcomes. Thus, by responding to encouragements to reduce the frequency of adverse lending

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outcomes, lenders increase the likelihood that the federal government will sue them for discrimination.

I enclose two articles explaining the relevant statistical pattern as it bears on fair lending enforcement. The first is a recent article in the American Statistical Association membership magazine, [\*Misunderstanding of Statistics Leads to Misguided Law Enforcement Policies\*](#),<sup>1</sup> Amstat News (Dec. 2012), which discusses the pattern in the context of the large settlements of lending discrimination suits brought by the Department of Justice against Countrywide Financial Corp. and Wells Fargo Bank. Other recent articles concerning federal regulators' failure to understand the described statistical pattern as it bears on fair lending issues include [\*"Disparate Impact": Regulators Need a Lesson in Statistics\*](#), American Banker (June 5, 2012) and [\*The Lending Industry's Conundrum\*](#), National Law Journal (Apr. 2, 2012). A recent treatment of the statistical pattern as it bears on the way the Departments of Justice and Education encourage public schools to relax discipline standards without recognizing that doing so tends to increase relative differences in discipline rates (also a subject of the enclosed Amstat News article) may be found in [\*The Paradox of Lowering Standards\*](#), Baltimore Sun (Aug. 5, 2013).

The second enclosed article, [\*When Statistics Lie\*](#), Legal Times (Jan. 1, 1996), concerns a putative class action brought against NationsBank in 1995 in the United States District Court for the District of Columbia. The suit was principally based on a study showing NationsBank to have the largest relative difference between rejection rates of black and white mortgage applicants among large lenders in the Washington, D.C. area. The article explains that, as commonly occurs when a lender has comparatively large relative differences in mortgage rejection rates, NationsBank had comparatively small relative differences between black and white mortgage approval rates. The article also explains that the various things that the complaint in the case suggests that the defendant should have done to cause the approval of the loans of the named plaintiffs were of a nature that, if applied generally, would tend to increase the relative difference in mortgage rejection rates on which the suit was based. As explained in the fair lending articles in the preceding paragraph, the same may be said of the various things that the complaints in the cases against Countrywide Financial and Wells Fargo Bank suggest that the defendants should have done to reduce the frequency of the adverse lending outcomes that were at issue in those cases. That is, while such actions would have tended to reduce relative differences in favorable outcomes, they would have tended to increase the relative differences in the adverse outcomes on which the suits were based.<sup>2</sup>

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<sup>1</sup> To facilitate consideration of the issues raised in letters such as this I make available electronic copies of the letters on the Institutional Correspondence subpage of the Measuring Health Disparities page of [jpscanlan.com](http://jpscanlan.com). Underlinings in this letter reflect links to the underlined material in such a copy of the letter. If the letter is corrected after it is first posted on the website, such fact will be noted on the final page.

<sup>2</sup> The 1996 Legal Times article suggests that case against NationsBank was likely to yield a very large recovery for the plaintiffs. Because the plaintiffs failed to file a timely motion for class certification, however, the court denied class certification.

Graphical and tabular illustrations of the statistical pattern whereby reducing the frequency of an outcome tends to increase relative differences in experiencing it while decreasing relative differences in avoiding it may be found in my [Can We Actually Measure Health Disparities?](#), *Chance* (Spring 2006) and [Divining Difference](#), *Chance* (Spring 1994), and, with a particular focus on disparate impact issues, in my letters of April 23, 2012, April 1, 2013, and May 4, 2013, explaining these issues to the [Department of Justice](#), the [Senate Committee on Health, Education, Labor and Pensions](#), and the [Board of Governors of the Federal Reserve System](#).<sup>3</sup>

More extensive graphical and tabular illustrations of the described patterns (and patterns by which other standard measures of differences between outcome rates tend to be systematically affected by the frequency of an outcome) using a wide variety of data may be found in my November 2013 presentation at the Federal Committee on Statistical Methodology 2013 Research Conference, *Measuring Health and Healthcare Disparities* ([FCSM Presentation](#), [FCSM Paper](#)); my September 2013 Faculty Workshop at the University of Kansas School of Law, *The Mismeasure of Discrimination* ([UKSL Presentation](#), [UKSL Paper](#)); and my October 2012 Applied Statistics Workshop at Harvard University's Institute for Quantitative Social Science, *The Mismeasure of Group Differences in the Law and the Social and Medical Sciences*. Graphical illustrations of a more conceptual nature may be found in Peter Lambert and Subbu Subramanian, [Disparities in Socio-Economic Outcomes: Some Positive Propositions and their Normative Implications](#), Society for the Study of Economic Inequality Working Paper Series, (ECINEQ WP 2012 – 281).

The above references, however, merely suggests the scope of the problems in analyses of demographic differences in the law and the social and medical sciences arising from the failure to understand the patterns by which standard measures of differences in outcome rates tend to be systematically affected by the frequency of an outcome. Even though published income data make evident that declines in poverty will tend to increase relative differences in poverty rates while decreasing relative difference in rates of avoiding poverty (and that increases in poverty will tend to decrease relative differences in poverty rates while increasing relative differences in rates of avoiding poverty), researcher study changes in relative differences in poverty rates without the least recognition of such patterns. Health disparities researchers refer to relative differences in mortality and relative differences in survival interchangeably, often examining one while purporting to examine the other, and without any understanding that the two relative differences tend to change in opposite directions. Healthcare disparities researchers commonly draw opposite conclusions about changes in healthcare disparities depending on whether they examine relative differences in receipt of appropriate care or relative differences in non-receipt of appropriate care, without evidencing awareness that there even exist two relative differences. In a host of areas, including fair lending analyses, observers find significance in findings that relative differences in adverse outcomes are comparatively large within advantaged subpopulations, invariably while failing to understand that adverse outcomes tend to be large within advantaged subpopulations simply because such outcomes are rare in such subpopulations

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<sup>3</sup> The responses of the Department of Justice and Federal Reserve Board are discussed in the [Holder/Perez Letter](#) and the [Federal Reserve Letter](#) subpages of the [Lending Disparities](#) page of [jpscanlan.com](#).

and without noticing that relative differences in the corresponding favorable outcomes are comparatively small within the advantaged subpopulations. See my *Race and Mortality Revisited*, Society (May/June 2014) (in press), [The Misinterpretation of Health Inequalities in the United Kingdom](#), British Society for Populations Studies Conference 2006, [Race and Mortality](#), Society (Jan/Feb 2000), [The Perils of Provocative Statistics](#), Public Interest (Winter 1991), and an October 9, 2012 letter to [Harvard University](#) written in conjunction with the Applied Statistics Workshop mentioned in the preceding paragraph. See also the materials collected on the [Measuring Health Disparities](#), [Scanlan's Rule](#), [Mortality and Survival](#), [Immunization Disparities](#), [Discipline Disparities](#), [Educational Disparities](#), and [Feminization of Poverty](#) pages (and their subpages) of [jpscanlan.com](#)

The extent of scholarly agreement with my descriptions of the patterns by which measures tend to be affected by the prevalence of an outcome is summarized in [Section E.7](#) of the [Measuring Health Disparities](#) page of [jpscanlan.com](#). Warranting particular note are the works between 2005 and 2009 in which statisticians of the National Center for Health Statistics (NCHS) recognized that determinations of whether health and healthcare disparities are increasing or decreasing would commonly turn on whether one examined relative differences in favorable outcomes or relative differences in the corresponding adverse outcomes.<sup>4</sup> There exists no plausible basis to contest that relaxing a standard will tend to increase relative differences in meeting it while reducing relative difference in avoiding it.

Federal officials involved in the enforcement of fair lending laws may reasonably maintain that they were previously unaware of the pattern by which the two relative differences tend to change in opposite directions as the frequency of an outcome changes. As reflected by the materials listed above, even among persons whose principal activities involve the interpretation of data on group differences, few recognize that it possible for the two relative differences to change in opposite directions as the frequency of an outcome changes, much less that they tend to do so systematically. On being confronted with such pattern, however, regulators cannot justify encouraging lenders to reduce adverse outcomes while monitoring lender practices on the basis of relative differences in such outcomes.

I will eventually write the Subcommittee a more comprehensive letter addressing a range of issues where misunderstanding of statistics undermines fair lending enforcement. One crucial such issue involves the problematic analysis of claims of discriminatory assignment of loans to subprime rather than prime status and discriminatory pricing of loans that were the subjects of

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<sup>4</sup> The NCHS did not, however, recognize that the pattern by which the two relative differences tend to be affected by the frequency of an outcome called into the question the utility of either of the two relative differences for quantifying the strength of the forces causing outcome rates of an advantaged and a disadvantaged group to differ. Instead, it simply recommended that all disparities be measured in terms of relative differences in adverse outcomes. The failure of NCHS to responsibly address issues arising from the ways measures tend to be affected by the frequency of an outcome has contributed substantially to the disarray in health and healthcare disparities research, where researchers continue to rely on a chosen measure, usually without recognizing that other measures would yield different conclusions, and invariably without recognizing the way that the chosen measure tends to be affected by the frequency of an outcome. See [FCSM Presentation](#) and [FCSM Paper](#).

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the Department of Justice's suits against Countrywide Financial and Wells Fargo Bank. Analyses of such claims are fundamentally unsound because they fail to examine the entire universe of persons seeking a desired outcome, an issue recently treated in Section F of the [UKSL Paper](#) and [Fair Lending Studies Paint Incomplete Picture](#), American Banker (April 24, 2013).<sup>5</sup>

For the present, I direct the Subcommittee to the treatment of various such issues in the [UKSL Paper](#) and the [Lending Disparities](#) and [Disparate Impact](#) pages (and their subpages) of [jpscanlan.com](#). I also direct the Subcommittee to the articles listed in Section A of the Appendix, which explain how the failure to understand the way that standard measures of differences between outcome rates tend to be affected by the frequency of an outcome undermines virtually all efforts to appraise group differences in outcome rates in the law and the social and medical sciences, including with respect to many matters that involve the expenditure of substantial federal resources.

Sincerely,

/s/ **James P. Scanlan**

James P. Scanlan

Appendix

Attachments

*[Corrections: On December 6, 2013, corrections were made to the online version of this letter concerning the names of the Subcommittee and the Chairman. Also, in the third line of note 4, "rate" was changed to "rate."]*

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<sup>5</sup> See also [Illusions of Job Segregation](#), *Public Interest* (Fall, 1988), and the articles pertaining to flawed employment discrimination analyses in Section B of the Appendix.

**Appendix to December 4, 2013 Letter to Chairman and Ranking Member of the  
Investigations and Oversight Subcommittee of the House Banking Committee  
Concerning Disparate Impact and Fair Lending**

**A. Articles Addressing Patterns by Which Standard Measures of Differences between  
Outcome Rates Tend to be Systematically Affected by the Frequency of an Outcome**

*Race and Mortality Revisited*, Society (May/June 2014) (in press)

*Measuring Health and Healthcare Disparities*, Proceeding of the Federal Committee on  
Statistical Methodology 2013 Research Conference (March 2014) (in press)

*The Perverse Enforcement of Fair Lending Laws*, Mortgage Banking (February 2014) (in press)

[\*The Paradox of Lowering Standards\*](#), Baltimore Sun (Aug. 5, 2013)

[\*Regulators Need Schooling on Measuring Lending Bias\*](#), American Banker (June 14, 2013)

[\*Fair Lending Studies Paint Incomplete Picture\*](#), American Banker (April 24, 2013)

[\*Misunderstanding of Statistics Leads to Misguided Law Enforcement Policies\*](#), Amstat News  
(Dec. 2012)

[\*Statistical Quirks Confound Lending Bias Claims\*](#), American Banker (Aug. 14, 2012)

[\*Racial Differences in School Discipline Rates\*](#), Recorder (June 22, 2012)

[\*“Disparate Impact”: Regulators Need a Lesson in Statistics\*](#), American Banker (June 5, 2012)

[\*“The Lending Industry’s Conundrum”\*](#), National Law Journal (Apr. 2, 2012)

[\*Can We Actually Measure Health Disparities?\*](#), Chance (Spring 2006)

[\*Statistical Proof of Discrimination\*](#),” Affirmative Action, An Encyclopedia (James A. Beckman  
ed.) Greenwood Press (2004)

[\*Understanding Racial Differences in Infant Mortality\*](#), PrenatalEd Update (October 2000):

[\*Race and Mortality\*](#), Society (Jan/Feb 2000) (reprinted in Current (Feb. 2000))

[\*Both Sides Misuse Data in the Credit Discrimination Debate\*](#), American Banker (July 22, 1998)

*Responsive Banks Hurt By Improper Data Interpretation*, Montgomery Journal (May 5, 1998)

[\*Perils of Using Statistics to Show Presence or Absence of Loan Bias\*](#), American Banker (Jan. 3,  
1997)

[Statistical Anomaly Penalizes Fair-Lending Effort](#), American Banker (Nov. 18, 1996)

[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)

[Bias Data Can Make the Good Look Bad](#), American Banker (Apr. 27, 1992)

[Comment on "McLanahan, Sorensen, and Watson's 'Sex Differences in Poverty, 1950-1980'"](#), Signs (Spring 1991)

[The Perils of Provocative Statistics](#), Public Interest (Winter 1991)

[An Issue of Numbers](#), National Law Journal (Mar. 5, 1990)

[The "Feminization of Poverty" is Misunderstood](#), Plain Dealer (Nov. 11, 1987) (reprinted in Current (May 1998) and Annual Editions: Social Problems 1988/89. Dushkin (1988))

## **B. Articles Addressing Unsoundness of Analyses That Fail to Examine Entire Universe of Persons Seeking an Outcome**

[Fair Lending Studies Paint Incomplete Picture](#), American Banker (April 24, 2013):

[Statistical Proof of Discrimination](#)," Affirmative Action, An Encyclopedia (James A. Beckman ed.) Greenwood Press (2004)

*Women Employees' Case against Publix, Built on Wrong Data, Doesn't Compute*, Miami Daily Business Review (Aug. 2, 1996)

[Multimillion-Dollar Settlements May Cause Employers to Avoid Hiring Women and Minorities for Less Desirable Jobs to Improve the Statistical Picture](#)," National Law Journal (Mar. 27, 1995)

[Unlucky Stores: Are They All Guilty of Discrimination?](#), San Francisco Daily Journal (Jan. 29, 1993)

*Indiscriminate Reading of Statistics Can 'Prove' Bias Where None Exists*, Manhattan Lawyer (Apr. 24, 1989)

[Are Bias Statistics Nonsense?](#), Legal Times (Apr. 17, 1989)

[Illusions of Job Segregation](#), Public Interest (Fall 1988)