

Misunderstood Issues in the Measurement of Demographic Differences

Upstate New York 2021 Statistics Conference

Rochester, NY

April 24, 2021

James P. Scanlan

Attorney at Law

Washington, DC

jps@jpscanlan.com

Full annotated presentation with active links available on **PRESENTATIONS** subpage of **PUBLICATIONS** page of jpscanlan.com.

Key Point of Presentation

- There exists a near universal belief, which is promoted by many arms of government and countless social scientists, that generally reducing adverse outcomes regarding criminal justice, school discipline, or lending will tend to reduce
 - (a) relative differences in rates of experiencing the outcomes, and
 - (b) the proportion disadvantaged groups make up of persons experiencing the outcomes.
- In fact, generally reducing any outcome tends to **increase, not reduce**, (a) and (b) for the outcome.
- That is, focusing solely on (a), while reducing any outcome tends to reduce relative differences in rates of avoiding the outcome (i.e., experiencing the opposite outcome), it tends to increase relative differences in rates of experiencing the outcome itself.

Some of the adverse consequences of leading the public to believe that reducing an adverse outcome will tend to reduce (a) and (b) for the outcome when in fact the opposite is the case:

- When measures of racial disparity increase in the face of policies that the government and social scientists lead the public to believe should reduce the measures, observers who attribute disparities to a form of racism will reasonably believe racism must be increasing.
- Entities and individual actors (including police, schools, and lenders) that generally reduce adverse outcomes increase the chances that they will be accused of discrimination.

The Larger Problem in Analyses of Demographic Differences

- The misunderstanding just described is but part of a larger problem in analyses of demographic differences resulting from the failure of statisticians and others to understand patterns by which standard measures of differences involving outcome rates tend to be affected by the prevalence of an outcome.
- As a result of that failure, data analysts universally fail to address the key issue of
 - the extent to which is an observed pattern is solely a function of the changing prevalence of an outcome over time or the comparative prevalence of the outcome in different settings, and
 - the extent to which the pattern reflects something else (such as the effect of a policy on differences in the circumstances of advantaged and disadvantaged groups, changes in the degree of racial bias in a particular setting, or the comparative degree of bias in different settings).

Illustration with Test Score Data

The pattern by which relative differences in rates of experiencing and avoiding an outcome tend to be affected by the prevalence of an outcome can be easily illustrated with normally distributed test score data.

Such data show that lowering cutoffs (or improving test performance) and thus making test passage more common and test failure less common:

reduces relative difference in test passage (the increasing outcome), but

increases relative differences in test failure (the decreasing outcome).

Table 1. Illustration of effect of lowering test cutoff on relative difference between pass rates of advantaged group (AG) and disadvantaged group (DG).

| Cutoff | (1) AG Pass Rate | (2) DG Pass Rate | (3) | (4) | (5) AG/DG Pass Ratio |
|---------------|---------------------------------|---------------------------------|------------|------------|---|
| High | 80% | 63% | | | 1.27 |
| Low | 95% | 87% | | | 1.09 |

With the higher cutoff, AG's pass rate is 1.27 times (27% higher than) DG's pass rate.

With the lower cutoff, AG's pass rate is only 1.09 times (9% higher than) DG's pass rate.

That lowering cutoffs tends to reduce relative differences between pass rates of higher- and lower-scoring groups is well known in civil rights circles and is the reason why lowering cutoffs is deemed to reduce the disparate impact of a test on which some groups outperform others.

Table 2. Illustration of effect of lowering test cutoff on relative difference between pass rates and relative difference between failure rates of advantaged group (AG) and disadvantaged group (DG).

| Cutoff | (1) AG Pass Rate | (2) DG Pass Rate | (3) AG Fail Rate | (4) DG Fail Rate | (5) AG/DG Pass Ratio | (6) DG/AG Fail Ratio |
|---------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---|---|
| High | 80% | 63% | 20% | 37% | 1.27 | 1.85 |
| Low | 95% | 87% | 5% | 13% | 1.09 | 2.60 |

With the higher cutoff, DG's failure rate is 1.85 times (85% greater than) AG's failure rate. With the lower cutoff, DG's failure rate is 2.60 times (160% greater than) AG's failure rate. *That lowering cutoffs tends to increase relative differences in failure rates of higher- and lower-scoring groups is known by almost no one.*

Table 3 . Illustration of lowering test cutoff on relative difference between pass rates and relative difference between failure rates of advantaged group (AG) and disadvantaged group (DG) and proportions DG makes up of persons who pass the test and persons who fail the test (where DG makes up 50% of test takers).

| Cutoff | (1) AG Pass Rate | (2) DG Pass Rate | (3) AG Fail Rate | (4) DG Fail Rate | (5) AG/DG Pass Ratio | (6) DG/AG Fail Ratio | (7) DG Prop of Pass | (8) 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 green and red columns show that lowering the cutoff *increases* the proportion DG makes up of *both* persons who pass the test and persons who fail the test. That *reduces* all measures of difference between the proportion DG makes up of test takers and persons who pass the test and *increases* all measures of difference between the proportion DG makes up of test takers and persons who fail the test.

Basic Innumeracy of Government Agencies

Agencies like the Departments of Education and Justice that promote the belief that reducing adverse criminal justice, school discipline, or borrowing outcomes tends to reduce relative racial and other differences in rates of experiencing the outcomes *have not reasoned that*, although reducing test failure tends to increase relative differences in failure rates, there are reasons why generally reducing other adverse outcomes would tend to reduce relative differences in rates of experiencing those outcomes.

Rather, despite decades of dealing with racial and other differences in test outcomes, the agencies remain unaware even that lowering a test cutoff will tend to increase relative differences in failure rates.*

* See [CUNY ISLG Equality Indicators](#) subpage and other subpages of the [Educational Disparities](#) page of [jpscanlan.com](#) regarding the way person and entities measuring proficiency disparities in terms of relative differences in achieving proficiency or relative differences in failing to achieve proficiency show no awareness that it is even possible for the two measures to change in opposite directions as quality of education or proficiency standards change, much less that this tends to occur systematically.

Table 4. Illustration of effects of lowering an income requirement on relative racial differences in meeting the requirement (blue) and relative racial differences in failing to meet the requirement (red).

| Income | (1) Perc of Wh Abv | (2) Perc of Bl Abv | (3) Perc of Wh Bel | (4) Perc of Bl Bel | (5) Wh/Bl Abv Ratio | (6) Bl/Wh Bel Ratio |
|---------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|------------------------------------|------------------------------------|
| \$100,000 | 27.0% | 12.1% | 73.0% | 87.9% | 2.23 | 1.20 |
| \$85,000 | 34.6% | 17.3% | 65.4% | 82.7% | 2.00 | 1.26 |
| \$75,000 | 41.1% | 22.7% | 58.9% | 77.3% | 1.81 | 1.31 |
| \$60,000 | 52.5% | 31.3% | 47.5% | 68.7% | 1.68 | 1.45 |
| \$50,000 | 61.0% | 39.2% | 39.0% | 60.8% | 1.56 | 1.56 |

Moving down the rows, the blue and red columns show that lowering an income requirement for securing a loan (or anything else) tends to *reduce* relative racial differences in meeting the requirement but *increase* relative racial differences in failing to meet the requirement.

Table 5. Illustration of effect of lowering a credit score requirement on relative racial differences in meeting the requirement (blue) and relative racial differences in failing to meet the requirement (red).

| Score | (1) Perc of Wh Abv | (2) Perc of Bl Abv | (3) Perc of Wh Bel | (4) Perc of Bl Bel | (5) W/B Abv Ratio | (6) B/W Bel Ratio |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|
| 740 | 46.80% | 19.50% | 53.20% | 80.50% | 2.40 | 1.51 |
| 720 | 57.77% | 27.01% | 42.23% | 72.99% | 2.14 | 1.73 |
| 700 | 67.83% | 35.67% | 32.17% | 64.33% | 1.90 | 2.00 |
| 680 | 76.73% | 45.42% | 23.27% | 54.58% | 1.69 | 2.35 |
| 660 | 83.90% | 55.70% | 16.10% | 44.30% | 1.51 | 2.75 |

Moving down the rows, the blue and red columns show that lowering a credit score requirement for securing a loan (or anything else) tends to *reduce* relative racial differences in meeting the requirement and *increase* relative racial differences in failing to meet the requirement.

Longstanding Mistaken Beliefs About Lending and Foreclosure Disparities

Despite the patterns shown in Table 4 and 5, for decades federal agencies enforcing fair lending laws have proceeded on the belief that relaxing standards would tend to reduce relative racial differences in loan rejection rates. They also mistakenly believe that generally reducing foreclosure/evictions will tend to reduce, rather than increase, relative racial differences in foreclosures/evictions.*

*See the April 2021 proposed rule of the Consumer Financial Protection Bureau titled [“**Protections for Borrowers Affected by the COVID-19 Emergency Under the Real Estate Settlement Procedures Act \(RESPA\), Regulation X**”](#) that reflects this mistaken belief.

Table 6. Illustration of effect of relaxing standards for favorable outcomes (e.g., diversion, pretrial release) on relative racial differences in favorable outcomes and relative racial differences in corresponding adverse outcomes (based on recidivism risk score data in ProPublica Study of COMPAS Algorithm) (ordered by lowest risk level to highest risk level).

| Risk Level | (1) Perc of Wh Below (Fav) | (2) Perc of BI Below (Fav) | (3) Perc of Wh Above (Adv) | (4) Perc of BI Above (Adv) | (5) Wh/BI Below Ratio (Fav) | (6) BI/Wh Above Ratio (Adv) |
|-------------------|---|---|---|---|--|--|
| 1 | 29.01% | 11.47% | 70.99% | 88.53% | 2.53 | 1.25 |
| 2 | 44.32% | 22.44% | 55.68% | 77.56% | 1.98 | 1.39 |
| 3 | 55.46% | 31.93% | 44.54% | 68.07% | 1.74 | 1.53 |
| 4 | 67.14% | 42.61% | 32.86% | 57.39% | 1.58 | 1.75 |
| 5 | 76.64% | 52.86% | 23.36% | 47.14% | 1.45 | 2.02 |
| 6 | 84.25% | 62.75% | 15.75% | 37.25% | 1.34 | 2.36 |
| 7 | 89.41% | 73.53% | 10.59% | 26.47% | 1.22 | 2.50 |
| 8 | 94.02% | 83.06% | 5.98% | 16.94% | 1.13 | 2.83 |
| 9 | 97.56% | 92.95% | 2.44% | 7.05% | 1.05 | 2.88 |

For explanations of the derivation of the recidivism score data underlying the preceding table, see [Recidivism Illustration](#) subpage of the [Scanlan's Rule](#) page of [jpscanlan.com](#). See also the [Algorithm Fairness](#) page of [jpscanlan.com](#) regarding some misunderstood issues concerning the ways cut scores and other factors affect measures of algorithm fairness.

Illustrations with Varied Types of Continuous or Categorical Data

Data on things like blood pressure, folate level, body mass index all show that generally reducing the adverse outcome associated with the indicator will tend to *reduce* relative racial differences in rates of avoiding the outcome but *increase* relative racial differences in rates of experiencing the adverse outcome itself.

Relative racial differences in favorable outcomes tends to *increase with age* while relative differences in the corresponding adverse outcomes tend to *decrease with age*.*

* See the [Collected Illustrations](#) subpage of the [Scanlan's Rule](#) page of jpscanlan.com.

Table 7. Illustration of effects of prevalence of any favorable and corresponding adverse outcome on relative differences between rates at which advantaged group (AG) and disadvantaged group (DG) experience the favorable and corresponding adverse outcomes

| Row | (1) AG Fav Rate | (2) DG Fav Rate | (3) AG Adv Rate | (4) DG Adv Rate | (5) AG/DG Fav Ratio | (6) DG/AG Adv Ratio |
|------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|------------------------------------|------------------------------------|
| 1 | 80% | 63% | 20% | 37% | 1.27 | 1.85 |
| 2 | 95% | 87% | 5% | 13% | 1.09 | 2.60 |

| Row | (1) AG Fav Rate | (2) DG Fav Rate | (3) AG Adv Rate | (4) DG Adv Rate | (5) AG/DG Fav Ratio | (6) DG/AG Adv Ratio |
|-----|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|
| 1 | 80% | 63% | 20% | 37% | 1.27 | 1.85 |
| 2 | 95% | 87% | 5% | 13% | 1.09 | 2.60 |

Where the values in the table involve various favorable and corresponding adverse outcomes, other things being equal, we should expect actors below to show values in columns (5) and (6) that are more like those in Row 2 than Row 1 than those for other actors, where:

- regarding subjectively graded exams, teacher who are more lenient graders or simply better teachers;
- regarding school discipline, teachers who are more lenient disciplinarians or simply better at maintaining order without resort to disciplinary actions;
- regarding use of force in making arrests, officers who are more circumspect in the use of force or simply better skilled in de-escalation techniques;
- regarding lending, loan officers who allow loan applicants greater opportunity to demonstrate their ability to pay a loan;
- regarding foreclosures/evictions, lenders/landlords who are more lenient with respect to missed mortgage and rental payments.

| Row | (1) AG Fav Rate | (2) DG Fav Rate | (3) AG Adv Rate | (4) DG Adv Rate | (5) AG/DG Fav Ratio | (6) DG/AG Adv Ratio |
|-----|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------|---------------------------|
| 1 | 80% | 63% | 20% | 37% | 1.27 | 1.85 |
| 2 | 95% | 87% | 5% | 13% | 1.09 | 2.60 |

Regarding the extent to which a pattern of difference in conduct rates by different demographic groups like that reflected in Row 1 might explain a pattern of differences in punishment (and non-punishment) rates for such groups like that in Row 2, see “[The Misunderstood Relationship Between Racial Differences in Conduct and Racial Differences in School Discipline and Criminal Justice Outcomes,](#)” Federalist Society Blog (Dec. 20, 2017).

Key Things to Remember (1)

- The increase in the relative difference in an adverse outcome resulting from a decrease in the outcome does not mean that disparity has increased in any meaningful sense.
- Rather, the general decrease merely increases one unsound measure of disparity at the same time that it reduces another unsound measure of disparity.

Key Things to Remember (2)

- Where bias plays a role in a disparity, reducing bias reduces all measures of racial disparity.
- But it is impossible to determine whether bias is increasing or decreasing without understanding the way the measure employed to quantify bias is being affected by general changes in the prevalence of an outcome.
- It is also impossible to draw sound inferences about processes, including regarding the likelihood of bias, based on the comparative size of a measure of disparity in different settings without understanding the way the measure tends to be affected by the prevalence of an outcome in the settings examined. See especially the discussion at 335-336 and 339-341 of [“Race and Mortality Revisited,”](#) *Society* (July/Aug. 2014).

Readings (1)

Short works on patterns by which relative differences tend to be affected by the prevalence of an outcome and failure to understand them:

- [“Misunderstanding of Statistics Leads to Misguided Law Enforcement Policies,”](#) *Amstat News* (Dec. 2012)*
- [“The Paradox of Lowering Standards,”](#) *Baltimore Sun* (Aug. 5, 2013)*
- [“Things DoJ doesn’t know about racial disparities in Ferguson,”](#) *The Hill* (Feb. 22, 2016).
- [“The misunderstood effects of the Baltimore police consent decree,”](#) *The Daily Record* (Feb. 15, 2018)
- [“Maryland Discipline Study Shows Usual – But Misunderstood – Effects of Policies on Measures of Racial Disparity,”](#) *Gunpowder Gazette* (Dec. 16, 2019)

Somewhat longer works on patterns by which relative differences tend to be affected by the prevalence of an outcome and failure to understand them:

- [“Divining Difference,”](#) *Chance* (Fall 1994)
- [“Can We Actually Measure Health Disparities?,”](#) *Chance* (Spring 2006)*
- [“A Criminal Justice Reform Premise That Is Statistically Flawed,”](#) *Law360-Access to Justice* (Apr. 5, 2021)

* Asterisk indicates some attention given to pattern by which absolute differences (or odds ratios) tend to be affected by the prevalence of an outcome.

Readings (2)

Extended discussions of patterns by which relative differences tend to be affected by the prevalence of an outcome and failure to understand them:

- [“The Mismeasure of Discrimination,”](#) Faculty Workshop, University of Kansas School of Law (Sept. 20, 2013)
- [“Race and Mortality Revisited,”](#) *Society* (July/Aug. 2014)*
- [“The Perverse Enforcement of Fair Lending Laws,”](#) *Mortgage Banking* (May 2014)
- [Comments for Commission on Evidence-Based Policymaking](#) (Nov. 14, 2016)*
- [Amicus curiae](#) brief in *Texas Department of Housing and Community Development, et al. v. The Inclusive Communities Project, Inc.*, Supreme Court No. 13-1731 (Nov. 17, 2014)
- [“The Mismeasure of Health Disparities,”](#) *Journal of Public Health Management and Practice* (July/Aug. 2016)*
- [“Measuring Discipline Disparities,”](#) Written testimony for U.S. Commission on Civil Rights Briefing “The School to Prison Pipeline: The Intersection of Students of Color with Disabilities” (Dec. 8, 2017) (discussed further in penultimate slide)
- [Memorandum to HUD September 22, 2020 Expert Panel](#) (Sept. 19, 2020)* (discussed further in final slide)

* Asterisk indicates some attention to given to pattern by which absolute differences (or odds ratios) tend to be affected by the prevalence of an outcome.

Readings (3)

Fairly lengthy treatments of misunderstanding of misunderstandings of effects of reducing school discipline and criminal justice outcomes on measures of racial disparity:

- [“Mired in Numbers,”](#) *Legal Times* (Oct. 12, 1996).
- [“Things the President Doesn’t Know About Racial Disparities,”](#) Federalist Society Blog (Aug. 5, 2016).
- [“Compliance Nightmare Looms for Baltimore Police Department,”](#) Federalist Society Blog (Feb. 8, 2017).
- [“Racial Impact Statement Laws in New Jersey and Elsewhere,”](#) Federalist Society Blog (Mar. 20, 2017),
- [“The Government’s Uncertain Path to Numeracy,”](#) Federalist Society Blog (July 21, 2017).
- [“Innumeracy at the Department of Education and the Congressional Committees Overseeing It,”](#) Federalist Society Blog (Aug. 24, 2017).
- [“The Pernicious Misunderstanding of Effects or Policies on Racial Differences in Criminal Justice Outcomes,”](#) Federalist Society Blog (Oct. 12, 2017).
- [“United States Exports Its Most Profound Ignorance About Racial Disparities to the United Kingdom,”](#) Federalist Society Blog (Nov. 2, 2017).
- [“The Misunderstood Relationship Between Racial Differences in Conduct and Racial Differences in School Discipline and Criminal Justice Outcomes,”](#) Federalist Society Blog (Dec. 20, 2017).
- [“COPAA v. DeVos and the Government’s Continuing Numeracy Problem,”](#) Federalist Society Blog (Sept. 12, 2019).
- [“Usual, But Wholly Misunderstood, Effects of Policies on Measures of Racial Disparity Now Being Seen in Ferguson and the UK and Soon to Be Seen in Baltimore,”](#) Federalist Society Blog (Dec. 4, 2019).

* Asterisk indicates some attention given to pattern by which absolute differences (or odds ratios) tend to be affected by the prevalence of an outcome.

Readings (4)

Letters to organizations whose activities are undermined by failure to understand the ways measures tend to be affected by the prevalence of an outcome (available along with many like letters on [Measurement Letters](#) page of [jpscanlan.com](#))

- [Federal Reserve Board](#) (March 4, 2013)
- [Harvard University](#) (Oct. 9, 2012)
- [Harvard University et al.](#) (Oct. 26, 2012)
- [Agency for Healthcare Research and Quality](#) (July 1, 2015)
- [American Statistical Association](#) (Oct. 8, 2015)
- [American Statistical Association](#) (July 25, 2016)
- [U.S. Department of Justice](#) (Apr. 13, 2017)
- [U.S. Departments of Education, Health and Human Services, and Justice](#) (July 17, 2017)
- [National Quality Forum](#) (Aug. 29, 2017)
- [Comptroller General of the United States](#) (Apr. 12, 2018)
- [Comptroller General of the United States](#) (Apr. 17, 2018)
- [Maryland State Department of Education](#) (June 26, 2018)
- [National Institute for Minority Health and Health Disparities](#) (July 6, 2018),
- [American Association for Cancer Research](#) (July 10, 2018)
- [Coalition for Juvenile Justice](#) (Nov. 27, 2018)
- [National Center for Juvenile Justice](#) (Nov. 19, 2018)
- [National Quality Forum](#) (Mar. 15, 2019)

Readings (5)

University methods workshops:

- “[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).
- “[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 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).
- “[Rethinking the Measurement of Demographic Differences in Outcome Rates](#),” Maryland Population Research Center of the University of Maryland (Oct. 10, 2014).
- “[The Mismeasure of Demographic Differences in Outcome Rates](#)” Public Sociology Association of George Mason University (Oct. 18, 2014).
- “[The Mismeasure of Discrimination](#),” Center for Demographic and Social Analysis, University of California, Irvine (Jan. 20, 2015).
- [The Mismeasure of Health Disparities in Massachusetts and Less Affluent Places](#),” Quantitative Methods Seminar, Department of Quantitative Health Sciences, University of Massachusetts Medical School (Nov. 18, 2015) ([Abstract](#)).

Readings (6)

Web pages:

The following web pages on jpscanlan.com and their 100 or so subpages discuss the issues addressed in this presentation often with examples of particular situations and particular misunderstandings: [Measuring Health Disparities](#), [Scanlan's Rule](#), [Algorithm Fairness](#), [Mortality and Survival](#), [Statistical Reasoning](#), [Immunization Disparities](#), [Educational Disparities](#), [Disparate Impact](#), [Discipline Disparities](#), [Lending Disparities](#), [Employment Discrimination](#), [Feminization of Poverty](#).

Pages or subpages warranting special attention:

- [Algorithm Fairness](#) page (discussing the way measures of algorithm fairness tend to be affected by the prevalence of an outcome and validity of the algorithm).
- [NHDR Measurement Issues](#) subpage of the [Measuring Health Disparities](#) (discussing the way the National Healthcare Disparities Reports highlight as some of the largest reductions in healthcare disparities over a particular period (based on reductions of absolute differences) situations where the reports also regard the disparities to be much larger at the end of the period than at the beginning of the period (based on relative differences in adverse outcomes)).

Readings (7)

Web pages (2):

- [Allegheny County \(PA\) Disparities](#), [Denver Disparities](#), [Massachusetts Disparities](#), [Oakland \(CA\) Disparities](#), and [Virginia Disparities](#), subpages of the page (discussing situations where, on the basis of the fact that general reductions in suspensions were accompanied by reductions in absolute racial differences between rates, researchers stated or suggested that relative racial differences in suspensions had decreased, when in fact they had increased).
- [Mortality and Survival](#) page (discussing the way that researchers, particularly with respect to cancer outcomes disparities research, discuss disparities in survival and mortality interchangeably and commonly report relative differences in mortality while discussing relative differences in survival, while invariably unaware that the two measures commonly yield opposite conclusions about such things as directions of changes in disparities over time or relationship between cancer treatability and relative differences in outcomes).

Readings (8)

Treatments by others of patterns by which relative differences tend to be affected by the prevalence of an outcome:

- Lambert PJ, Subramanian S. [Disparities in Socio-Economic outcomes: Some positive propositions and their normative implications](#). Soc Choice Welf 2014;43:565-576),
- Lambert PJ, Subramanian S. [Group inequalities and “Scanlan’s Rule”: Two apparent conundrums and how we might address them](#). Working Paper 84/2014, Madras School of Economics (2014)).
- Thomas H, Hettmansperger TP. [Risk Ratios and Scanlan’s HRX](#). J Stat Distr and Appl 2017;4:27).
- Kiemele M. “[Data Science, Design of Experiments, and Predictive Analysis](#),” Tutorial at the 2019 SETE Conference, Sydney, Australia (Apr. 30, 2018) ([slides 18 and 19](#)) .
- Schield M. [Statistical Literacy: Scanlan’s Paradox](#). 2020 Joint Statistical Meetings.

Readings (9)

Treatments warranting brief discussion here:

“[Measuring Discipline Disparities](#),” Written testimony for U.S. Commission on Civil Rights Briefing “The School to Prison Pipeline: The Intersection of Students of Color with Disabilities” (Dec. 8, 2017):

In this testimony, I sought to explain to the U.S. Commission on Civil Rights that, contrary to the belief promoted by the Departments of Education and Justice, generally reducing school suspensions tended to increase, not reduce, relative racial differences in suspensions rates. The testimony is discussed at pages 145-46 of the Commission’s July 2019 report [Beyond Suspensions: Examining School Discipline Policies and Connections to the School-to-Prison Pipeline for Students of Color with Disabilities](#). While the matter may not be evident to most readers, the report in no way challenges my claim that reducing suspensions tends to increase relative racial differences in suspensions. Rather, solely on the basis of the fact that it is possible for reductions in suspensions to reduce absolute differences between rates at the same time that the reductions increase relative differences between rates, the Commission decided to continue to lead the public to believe that reducing suspensions would tend to reduce relative differences between rates. I have often pointed out that, not only is it possible for absolute racial differences in suspensions rates to decrease while relative differences increase, but that this will usually be the case. See “[The Paradox of Lowering Standards](#),” *Baltimore Sun* (Aug. 5, 2013), and [Relative Versus Absolute Differences in School Discipline](#) subpage of the [Discipline Disparities](#) page of [jpscanlan.com](#).

Readings (10)

Treatments warranting brief discussion here (2):

[Memorandum to HUD September 22, 2020 Expert Panel](#) (Sept. 19, 2020, updated Jan. 15, 2021):

This 47-page memorandum to co-panelists on a panel convened by the Department of Housing and Urban Development in September 2020 explains a range of problems in the analysis of demographic differences resulting from a failure to understand the patterns by which measures tend to be affected by the prevalence of an outcome. It gives special attention to certain topical issues, explaining, for example, that improvements in COVID-19 care will tend to increase relative racial differences in mortality of COVID-19 patients while reducing relative differences in survival of such patients; that relative racial differences in mortality from COVID-19 will be especially large, while relative differences in avoiding mortality from COVID-19 will be especially small, among young persons compared with older persons; that reductions in foreclosures/evictions arising from COVID-19 shutdowns will tend to increase relative racial differences in foreclosures/evictions while reducing relative differences in rates of avoiding foreclosures/evictions. The memorandum also discusses various misperceptions regarding policies on measures of racial disparity in criminal justice outcomes with a special focus on Minneapolis, Minnesota. In addition to two members of the U.S. Commission on Civil Rights, panelists included American Statistical Association President Robert Santos.