

**COMMISSION ON EVIDENCE-BASED POLICYMAKING COMMENTS,
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Submitted by:

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These comments are a follow-up to comments submitted on November 14, 2016. The earlier comments are available here:

[http://www.jpscanlan.com/images/Comments_of_J_Scanlan_for_Comm_on_Evidence-Based_Policymaking_Nov. 14, 2016 .pdf](http://www.jpscanlan.com/images/Comments_of_J_Scanlan_for_Comm_on_Evidence-Based_Policymaking_Nov.14,2016.pdf)

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These comments are a follow-up to my [Comments for the Commission on Evidence-Based Policymaking](#)¹ submitted on November 14, 2016. The instant comments discuss two recent matters that illustrate points in the earlier comments regarding (a) the failure of persons analyzing demographic differences in outcome rates to understand that relative differences in adverse outcomes and relative differences in the corresponding favorable outcomes commonly yield opposite conclusions about the comparative size of racial and other demographic differences at different points in time, among different populations/subpopulations, and with regard to different conditions and (b) the failure of federal government agencies, including the Departments of Education and Health and Human Services, to understand that reducing adverse outcomes tend to increase, not decrease, relative demographic differences in rates of experiencing those outcomes and the proportions groups most susceptible to the outcomes make up of persons experiencing them.

A. The Failure of the Scientific Community to Understand That Relative Differences in Mortality and Relative Differences in Survival Commonly Yield Opposite Conclusions About the Comparative Size of Demographic Disparities

At page 17 of the earlier comments, after presenting a number of examples of the pattern whereby the rarer an outcome the greater tends to be the relative difference in experiencing it and the smaller tends to be the relative difference in avoiding it, I stated:

With only minor exception, the above patterns are utterly unknown in the law and the social and medical sciences. In fact, particularly with regard to infant and cancer outcomes, researchers will often refer to survival and mortality interchangeably, often stating they are examining relative differences in the former while in fact examining relative differences in the latter. They do so without recognizing the possibility, much less the likelihood, that the two relative differences will provide opposite results as to whether some demographic disparity is increasing or decreasing over time or is larger in one setting than another or with regard to one condition than another. See the [Mortality and Survival](#) page of [jpscanlan.com](#).

A useful illustration of the failure of understanding in this area may be found in a study in the June 20, 2016 issue of the *Journal of Clinical Oncology* by Holowatyj *et al.* titled [“Racial/Ethnic Disparities in Survival Among Patients With Young-Onset Colorectal Cancer.”](#)² The study was highlighted in a May 25, 2016 article on the National Cancer Institute (NCI) website by NCI staff titled [“Survival Disparities Identified in Young African Americans with Colorectal Cancer.”](#) The study was funded by Wayne State University and arms of the National Institutes of Health including the NCI.

¹ To facilitate consideration of issues raised in documents such as this I include links to referenced materials in electronic copies of the documents. An electronic copy of this document is available by means of the Measurement Letters page of [jpscanlan.com](#).

² Holowatyj AN, Ruterbusch JJ, Rozek L, et al. Racial/ethnic disparities in survival among patients with young-onset colorectal cancer. *J Clin Oncol* 34(18):2148-2156, 2012.

Notwithstanding the titles of the study and the NCI article describing it, the study analyzed racial/ethnic differences in cancer outcomes in terms of relative differences in mortality rather than relative differences in survival. And, as with probably every other published study of demographic differences in cancer outcomes – regardless of the measure employed – it did so without showing any understanding that whether one in fact analyzed relative differences in mortality or relative difference in survival could yield opposite conclusions about a demographic disparity much less that this would commonly be the case when overall outcome rates vary substantially.

The failure of understanding affected much the Holowatyj study's analysis. A variation on a near universal misunderstanding regarding the effects of generally reducing mortality on relative differences in mortality may be found in the study's first paragraph. After noting recent reductions in cancer mortality, the study states (at 2148): "However, racial disparities in survival rates have grown more pronounced." (Citations omitted).

The earlier comments and their references discuss the widespread notion that general reductions in mortality should reduce relative differences in mortality. The comments explain that, in fact, while general reductions in mortality will tend to reduce relative differences in survival, they will tend to increase relative differences in mortality (as is repeatedly observed in reality). In the case of the Holowatyj study, the word "however" in the quoted language suggests an expectation that general reductions in mortality should reduce relative differences in survival.³ This is a correct expectation. But it would be an incorrect expectation as to the relative difference in mortality that the Holowatyj study in fact employs to measure racial disparities in cancer outcomes and that the references the Holowatyj study cites as showing increased disparities in survival also employed.

The Holowatyj study (at 2151) describes as novel a finding that racial differences in survival were most pronounced for among individuals with stage II and stage III cancers given that prior studies have found the greatest survival disparities among individuals with advanced stage cancers. Such finding was also highlighted in the NCI article.

I have not examined what the other studies in fact measured. But what the Holowatyj study in fact found – i.e., larger relative differences in mortality (not survival) for less advanced cancers – is precisely what one should expect in the circumstances given the higher overall survival (and lower overall mortality) among persons with less advanced cancers. In fact, the Holowatyj study's Figure 1 (at 2153) appears to show that, as one ought to expect in the circumstances, the relative difference in survival is larger for stage IV cancer for the less advanced cancers.

This is not to suggest that the data in Holowatyj study or its references will invariably comport with the patterns described in the earlier comments and their references.⁴ But only with

³ A similar suggestion may be found in the statement in the Discussion section (at 2151) that racial disparities in survival "have actually worsened since 2000." (Citations omitted.)

⁴ The study suggests that, contrary to the described patterns, the relative difference in mortality is greater for stage III than stage II cancer. That could reflect random variation of it could reflect something meaningful. Examples of

an understanding of those patterns will one be able to derive useful information, or draw sound inferences about processes and mechanisms, from such data.

The Holowatyj study, however, is merely symptomatic of the fact that in all likelihood not a single person analyzing racial differences in cancer outcomes – or funding, providing peer review of, or publishing analyses of such differences – is aware that relative differences in survival and relative differences mortality can (or typically will) yield opposite conclusions about directions of changes in disparities or regarding the comparative size of disparities as to different populations/subpopulations or as to different conditions.

But while research into disparities in cancer outcomes provides a striking example of the confusion in the analyses of demographic differences (like the extreme examples discussed at pages 34-35 of the initial comments), similar failures of understanding undermine virtually all analyses of demographic differences involving outcomes rates.

B. The Mistaken Belief That Generally Reducing Discipline Rates Will Tend to Reduce Relative Demographic Differences in Discipline Rates and the Proportions More Susceptible Groups Comprise of Persons Disciplined

A key point of Part I of the earlier comments involved the fact that federal civil rights enforcement policies regarding lending, school discipline, criminal justice, and employment are based on the mistaken premise that generally reducing the frequency of adverse outcomes would tend to reduce relative demographic differences in rates of experiencing those outcomes and the proportions groups more susceptible to those outcomes comprise of persons experiencing the outcomes. As explain in Part I and its references, exactly the opposite is the case. While reducing the frequency of an outcome tends to reduce relative differences in the corresponding favorable outcome, it tends to increase relative differences in rates of experiencing the outcome itself. Further, while reducing the frequency of an adverse outcome tends to increase the proportion groups more susceptible to the outcome make up of persons experiencing the corresponding favorable outcome (hence, reducing all measures of differences between the proportions such groups make up of persons potentially experiencing either outcome (the pool) and the proportions such groups make up of persons experiencing the favorable outcome), it tends also to increase the proportion such groups make up of persons experiencing the adverse outcome itself (hence, increasing all measures of differences between the proportions such groups make up of the pool and the proportions they make up of persons experiencing the adverse outcome).

The earlier comments also specifically recommended (at 46) that the Commission “recommend that Congress take all steps necessary to ensure that no federal law enforcement actions are based the belief that reducing the frequency of an adverse outcome tends to increase relative demographic differences in rates of experiencing the outcome or the proportion disadvantaged groups make up of persons experiencing those outcomes.”

observed patterns of relative differences in morality and survival with respect to different overall survival rate situations may be found in the [Mortality and Survival](#) page of [jpscanlan.com](#) and Tables 10 and 11 of “[Measuring Health and Healthcare Disparities](#),” Proceedings of the Federal Committee on Statistical Methodology 2013 Research Conference (March 2014)

A recent development highlighting this issue with regard to one of the areas where the misunderstanding of the effects of the prevalence of an outcome on disparity measures has some of its most pernicious consequence may be found in the August 2016 award of a \$1 million grant from the Department of Education (DOE) and the Department of Health and Human Services (HHS) to the Technical Assistance Center on Positive Behavioral Interventions and Supports (PBIS) to implement the Pyramid Equity Project. A document released by the Pyramid Equity Project in September 2016 titled “[The Pyramid Equity Project: Promoting Social Emotional Competence and Addressing Disproportionate Discipline in Early Childhood Programs](#)” (PEP fact sheet) reflects the belief, which has previously been expressed by DOE, HHS, and many other public and private entities, that generally reducing discipline rates will tend to reduce (a) relative differences between the discipline rates of groups with higher discipline rates and groups with lower discipline rates and (b) the proportions groups with higher discipline rates comprise of persons who are disciplined. The grant, which is focused on racial and gender disparities in preschool discipline, highlights both the failure to understand the effects of generally reducing discipline on measures of discipline disparities and the failure to recognize that racial disparities in preschool suspensions are seemingly large precisely because suspensions are rare in preschool. In fact, data cited in Pyramid Equity Project document suggest that a majority of school districts had no preschool suspensions.

The matter is explained more fully in a November 26, 2016 [letter](#) to the principal staff and consultants of the Pyramid Equity Project. The letter also urges the leadership of the Pyramid Equity Project to explain to the granting agencies that a central premise of the grant is the opposite of reality and to address with the funding agencies whether, in light of recognition of such fact, the agencies wish to reconsider the grant.

The suggestion that the Pyramid Equity Project address this issue with the funding agencies is entirely reasonable and involves actions that Pyramid Equity Project leadership, once understanding the statistical issues, ought to recognize as manifestly appropriate. It nevertheless warrants mention that there is something incongruous about a research regime where a citizen must explain to a federal grant recipient that a premise of the grant is false and urge the recipient to explain such fact to the granting agencies. Rather, federal agencies should understand these issues themselves before they issue grants. Thus, I suggest, there are compelling reasons for the Commission to follow the recommendation quoted above.

There are similarly compelling reasons for the Commission to follow the other recommendations set out at pages 45-46 of the earlier comments.