

## **The Mismeasure of Discrimination**

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### **ABSTRACT**

There are four standard measures by which demographic differences in outcome rates are generally measured in the law and the social and medical sciences: (a) relative differences in a favorable outcome, (b) relative differences in the corresponding adverse outcome, (c) absolute differences between outcome rates, and (d) odds ratios. Those relying on these measures, however, have generally failed to recognize the ways the measures tend to be systematically affected by the prevalence of the outcome. For reasons inherent in the shapes of the underlying distributions of factors associated with the likelihood of experiencing an outcome, the rarer the outcome, the greater tends to be the relative difference in experiencing it and the smaller tends to be the relative difference in avoiding it. Thus, as the prevalence of an outcome changes, relative differences in favorable outcomes and relative differences in the corresponding adverse outcomes tend to change systematically in opposite directions. For example, relaxing mortgage lending criteria or public school discipline standards tends to increase relative differences in adverse lending and discipline outcomes while reducing relative differences in the corresponding favorable outcomes. Absolute differences between rates and odds ratios tend also to be affected by the prevalence of an outcome, though in a more complicated way than the two relative differences. Broadly, as uncommon outcomes become more common absolute differences tend to increase; as already common outcomes become even more common absolute differences tend to decrease. As the prevalence of an outcome changes, differences measured by odds ratios tend to change in the opposite direction of absolute differences. This paper explains these patterns and the way the failure to understand them undermines efforts to interpret data on group differences with respect to discrimination issues involving both disparate treatment and disparate impact. It also describes a method for appraising the differences in the circumstances of two groups reflected by a pair of outcome rates, or, put in a way more pertinent to discrimination issues, the strength of the forces causing the outcome rates to differ. The method involves deriving from a pair of outcome rates the difference between the means of the underlying distributions. The method is imperfect, but it is nevertheless greatly superior to the common reliance on a standard measure of difference between outcome rates without consideration of the way the measure is affected by the prevalence an outcome and without recognizing that a different standard measure would commonly yield a different conclusion as to the comparative size of differences in outcome rates in different settings. The paper also addresses certain related issues pertaining to statistical proof of discrimination.

The complete paper may be found [here](#).