# Tradeoffs Between Equity and Efficiency at the Heart of Population Health Science: A Public Health of Consequence, April 2019

**See also Sabbath et al., p. 618.**

Public health has moved squarely into an era when public health workers, correctly, aspire to meet targets that demonstrate our efforts. Imagine for a moment a health officer charged with improving colonoscopy screening rates in her municipality. Let us suppose that, overall, 50% of eligible adults in this municipality receive screening. The health officer considers the options and quickly concludes that the fastest way to improve colonoscopy screening rates is by investing in an assertive educational campaign delivered in primary care physician offices. Over the course of the year, patients are given written material encouraging them to receive a colonoscopy, and their doctors expressly encourage the screening. The approach works, and the municipality's colonoscopy rate increases to 60%. The rate increases, not surprisingly, among those who visit their primary care physicians, can read English fluently, and communicate well with their doctors. Among that group the rate, already at 70%, now rises to 90%. However, the rate among groups who do not have a regular source of care, currently at 30%, does not budge very much. Therefore, whereas the overall population colonoscopy rate has indeed increased by 10%, we have also widened the gap between health haves and health have-nots, from 40% to 60%.

This phenomenon—called the "inequality paradox,"[1] or the efficiency–equity tradeoff[2]—is the subject of an article by Sabbath et al. (p. 618) in this issue of *AJPH*. Sabbath et al. tested whether a comprehensive safe patient handling intervention, which had successfully reduced overall injury rates among hospital workers in a previous study, was differentially effective for high-wage workers versus low-wage workers. Using data from a cohort study at two large Boston area hospitals, they showed that the intervention decreased the population-level injury rate but that most improvements were in high-wage workers, widening the socioeconomic gap in injury. Although previous work in population health science has shown this tradeoff between improving equity and efficiency,[3–5] the topic has not received enough attention in population health science; so the Sabbath article is a welcome addition to the literature.

## WHEN EQUITY–EFFICIENCY TRADEOFFS HAPPEN

The use of the terms "equity" and "efficiency" in this context is borrowed from economics: efficiency is the maximization of the total economic output of a system, and equity is the extent to which there is even distribution of those outputs. There are several classical examples of this from the economics literature.[6] Adapting these ideas to population health science helps us see that there may be tension between improving the health of the overall population, which may widen health gaps, and narrowing health gaps, which may come at the cost of not improving population health as much we otherwise might. The idea matters to us in public health because it treats two concepts that are at the heart of our concerns: improving overall health and increasing health equity. We may, therefore, be forgiven for not particularly relishing the thought that these two concepts may be in competition; but, as shown by Sabbath et al., they frequently are. Fundamentally equity–efficiency tradeoffs arise in public health when the intervention of interest is more suitable for the group that has more resources (i.e., money or other financial assets or intangible resources like power and health care access). Efforts to improve population health will inevitably differentially favor the groups that are likely to already have better health, creating further gaps between health haves and health have-nots.

## EQUITY–EFFICIENCY TRADEOFFS

Any process that highlights tension between two core goals of population health—overall health and health equity—matters. Understanding and acknowledging that there are tradeoffs is a first step toward examining the values that inform what we do, and it is those values that ultimately—whether we are aware of them or not—result in policy and action. Once this concept is understood, it has three implications for our scholarship and practice.

First, the fact that the literature on the topic is sparse bespeaks, to some extent, willful blindness on our part about the problem. This calls for a redoubling of our empirical efforts to document the consequences of our actions. Sabbath et al. say this well when they note:

> Based on these findings, we urge other scholars to reanalyze data from successful interventions, as was done here, to test for the inequality paradox. If such disparities are detected, it will be an opportunity to revise approaches to intervention planning, implementation, and evaluation. Such revisions will ensure that we are not sacrificing health equity in the service of improving health at the population level. (p. 624)

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We agree.

Second, an appreciation of the concept, backed up by empirical analyses such as the one by Sabbath et al., alerts us to the challenge and helps structure our thinking, helping us at the outset to determine the outcomes that matter to us and that should inform our actions. Let's go back to our opening vignette. We suspect that most readers did not think anything was amiss with a health officer being charged with improving the colonoscopy screening rates in her municipality. However, it is that very target that inadvertently creates wider health gaps: if we are interested in minimizing inequity, the combined overall and intergroup achievements would have been the metrics of interest.

Third, this pushes those of us in population health to better communicate why we do what we do, to link the moral arguments that (implicitly or explicitly) inform much of our work to our actions. Doing so clarifies our thinking and educates the populations among whom we do our work about our goals for population health and for the world. AJPH

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Both authors contributed equally to this editorial.

## CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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