Title: Dealing with Multivariate Outcomes in Studies for Causal Effects

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Abstract: Multivariate outcomes are common in studies for causal effects, but they are
often mis-analyzed. The critical reason leading to their misuse is that even in a
randomized experiment with only two treatment conditions, there are two potential
outcomes associated with each outcome variable, but these can never be jointly observed.
The resulting structure can therefore be very confusing, even to great statisticians such as
R. A. Fisher. Specific examples will be used to illustrate the issues using the concept of
"principal stratification" (Frangakis and Rubin, 2002, Biometrics).