

Mean-Variance Methods for Cost-Effectiveness Analysis

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Abstract

Treatment comparison has always been an important problem in health economics. One can compare two treatments' ability against a particular illness, but rarely are these comparisons 1-dimensional. Due to the finite nature of resources, cost is also an important comparison dimension. Here is where cost-effectiveness analysis comes into play. It attempts to unidimensionalize the problem and compare treatments in that domain. With the functions decreasing in cost and increasing in effectiveness, treatments that optimize said functions should be good candidates for use. The expectation of these unidimensional variables is usually the way treatments are chosen, primarily via the tool of expected utility, but while communal health systems seek to maximize the net benefit upon it's constituents, the story is much different when it comes to a single payer system, where decisions are more individualistic and are usually far more sensitive to risk. The purpose of this thesis is the exploration of Expected Utility and Mean-Variance to find functions of both mean and variance in order to make decisions that take both into account.

Keywords: Expected Utility, Mean-Variance