



Evaluation FastFacts

from the Evaluation Center@HSRI



Volume 3, Issue 4

October 2004

This is one in a series of briefings on new and current mental health services evaluations, resources, and methods. We hope FastFacts will be a quick and easy way for you to learn important information in the field of evaluation. If you have any ideas on how FastFacts could be more useful to you, please contact Dow Wieman, Ph.D. at 617-876-0426 x2503 or dwieman@hsri.org.

Case Mix Adjustment in Behavioral Health Care

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What is case mix adjustment? Case mix adjustment (also known as risk adjustment) is a statistical method used in comparing groups on the basis of some factor of interest that determines a particular outcome. Case mix adjustment serves to isolate that factor from other characteristics that: a) also systematically influence the outcome in question; and b) vary from one group to another. In behavioral health, the groups may be consumers, individual providers, programs, agencies, regions, states or others. The factor of interest may be organizational type, relative efficiency, use of a particular form of treatment or others. Outcomes may be costs, service utilization, functioning, symptoms, satisfaction and many others.

As an example of a typical use of case mix adjustment, we may wish to compare provider organizations on the basis of actual or predicted costs of services provided. We would like to know which organizations are more effective at controlling costs, but

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we also know that the groups of patients served by the organizations differ from one to another in the average amount of services they require (because, for example, the groups differ in the proportion of people who have chronic illnesses or who are elderly), and we know that the relative amount of service needed by the respective groups has an effect on cost that is independent of efficiency.

Case mix adjustment typically uses regression analysis to measure and adjust (control) for the influence of these extraneous characteristics (variables) on the outcome. A case mix adjustment model, therefore, optimally controls for all variance in the outcome that is due to anything but the factor under consideration. The Evaluation Center@HSRI has recently produced a manual that explains this process, entitled “*A Toolkit for Conducting Case Mix Adjustment of Mental Health Performance Indicators.*” The Toolkit is described in more detail below.

Uses of case mix adjustment in behavioral health care. Case mix adjustment has three common applications in behavioral health care: actuarial analyses, services research, and performance measurement. The methods are the same in each case, but decisions about the kind of control variables to be included in the analysis and the results to be obtained from it may vary.

Behavioral health actuarial analysis uses case mix adjustment in the process of rate-setting for prospective payment (capitation), where it serves to establish an appropriate per-member rate for the population served by a risk-bearing provider organization (hence the term risk adjustment). Risk adjustment ideally addresses an important limitation of pure capitation: the “perverse incentive” for providers to attract healthy enrollees while avoiding those who are less healthy and therefore

more costly because they require more care (adverse selection). This is a powerful incentive especially in general health care, since one percent of those receiving care account for 25 percent of total health care costs; only a few enrollees in this category, therefore, would have a significant effect on the plan’s costs. Proper risk adjustment theoretically eliminates this incentive by establishing a higher per-member rate for less healthy enrollees, commensurate with the expected higher costs of their care. Presumably a sufficiently high risk-adjusted rate would even reverse the incentive structure, encouraging plans to compete for less-healthy but now more remunerative members. In contrast to the following two applications, therefore, the orientation of actuarial risk adjustment is primarily prospective, in that it serves primarily to predict service utilization.

Behavioral health services research uses case mix adjustment with quasi-experimental or observational research designs commonly used when random assignment to experimental and control groups is not possible. Random assignment ensures that the experimental and comparison groups are comparable in all respects likely to affect the outcome, except for the intervention received by the experimental group. Randomization is often not an option, however, due to policy, ethical or other considerations, especially in behavioral health services research. For example, many studies of the effects of managed behavioral health care have compared outcomes for groups of enrollees assigned, as a result of policy, to either capitated or fee for service payment systems. Inevitably these groups differ from one another in characteristics such as age or severity of illness that tend to influence outcomes. Accordingly, these studies typically use case mix adjustment to control for these differences in order to identify the effect of payment system alone.

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Behavioral health performance measurement uses case mix adjustment for purposes comparable to research, to “level the playing field” when comparing the outcomes for any two or more groups, such as enrollees or providers in different health care systems. The groups may be treatment agencies, consumers, providers, programs, regions, or states. Any time these groups are to be compared on performance indicators, case-mix adjustment must be considered. For the sake of illustration, the following descriptions assume that we are interested in comparing the performance of multiple mental health treatment agencies that constitute a larger treatment system, but it should be kept in mind that the comparison may be of other types of groups as well.

Differences in the applications of case mix adjustment. Practices in selecting and defining variables may vary somewhat depending on the particular application. For example, actuarial analysis, research and performance measurement may all include diagnosis as an adjustor, but the “grouper,” i.e. the algorithm by which diagnoses are categorized is likely to vary. For actuarial purposes, diagnoses are clustered according to comparable costs, whereas in performance measurement clusters are determined according to clinical considerations. Research may employ one or the other depending on the purpose of the study.

Disparities. One important consideration in the case mix adjustment models used for these different purposes arises in connection with certain socio-demographic sub-groups, such as minorities, the elderly or the poor, for whom there may be concerns about disparities in care. An actuary would include this type of variable only if it were believed to impact cost. For example, the elderly would most likely occupy a distinct “risk category”

in a pharmacy benefits plans, or minorities if they were known to have higher health risks on average. Otherwise, actuarial case mix adjustment models would have no reason to include these variables.

In the case of research and performance measurement, however, the issue is more complicated. For example, a researcher testing an intervention by means of comparing non-randomized groups only one of which receives the intervention, would include race as a variable in the case mix adjustment analysis if it was believed that racial minorities are likely to have poorer outcomes from the intervention. Otherwise, the findings about the effect of the intervention would be biased if there were differences between the proportion of racial minorities in the two groups (in a negative direction if the experimental group had the higher proportion, and in a positive direction if the proportion were higher in the comparison group).

In performance measurement, on the other hand, poorer outcomes for minorities would signal the likelihood of quality problems such as barriers to access or lack of culturally competent services. In contrast to the research study of an intervention, therefore, a performance evaluation may find it undesirable to include race as a variable, as this would mask differences between groups in the quality of care they provide for minorities. To explore this possibility, the evaluator may wish to supplement the case-mix adjusted analysis with secondary analyses examining each group separately (stratification).

In short, the actuary, the researcher and the evaluator in the behavioral health field rely equally on case-mix adjustment as an essential tool, and use the same general methodology, despite some differences in their specific approach.

Further Information: The methods and appli-

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cations of case mix adjustment in behavioral health are explained and demonstrated in the aforementioned Evaluation Center publication, *“Toolkit for Conducting Case Mix Adjustment of Mental Health Performance Indicators”*, which provides a non-technical, hands-on introduction to the subject and a set of exercises using a simulated data set, both written by Dr. Michael Hendryx, a nationally recognized expert in the field. The first section provides a conceptual overview for mental health agency administrators, quality improvement managers, and anyone else with an interest in the topic and a basic appreciation of statistics, research methods and designs. The exercises and accompanying instruction are designed primarily for data analysts, data managers, or other persons who are directly responsible for the management and analysis of performance indicators in public or private mental health services settings and who are familiar with statistical analysis programming using either SAS or SPSS. The toolkit also includes an appendix by Dr. Brian Cuffel that presents a more technical discussion of hierarchical modeling in the context of case mix adjustment for provider profiling. The Toolkit may be ordered in hardcopy or electronic (PDF) form at www.tecathsri.org. For an online interactive introduction, go to

<http://hsri.breezecentral.com/p53954313/>

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