

RISK ADJUSTMENT

A Special Report



*A Key to
Changing
Incentives in*

*the Health
Insurance
Market*



*Produced for The Robert Wood Johnson Foundation's
Changes in Health Care Financing and
Organization (HCFO) Program*

Written and Published by Alpha Center

RISK ADJUSTMENT

in the Health Insurance Market Credits

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Written by:

Carole Lee

Deborah Rogal

Program Director:

Anne K. Gauthier

Designed by:

Bremmer & Goris

Communications, Inc.

Special thanks to :

Gerard Anderson, Arlene Ash,
Nancy Barrand, John Bertko,
Bruce Bowen, Allen Dobson, Tony
Dreyfus, Daniel Dunn, Lynn
Etheredge, Jinnet Fowles, Terri
Gibbs, Mark Hornbrook, Sandra
Hunt, David Knutson, Richard
Kronick, James Lubitz, Harold
Luft, Carolyn Madden, Michael
Rothman, Karen Shore, Virginia
Weslowski, Judith Whang, and
Chuck Zebowski

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INTRODUCTION

For the last several decades, health services researchers and policymakers have been working to develop accurate and feasible methods for measuring risk variation in the health care market and compensating health plans appropriately for the health risk their enrollees represent. In the current competitive and voluntary health insurance market, health plans have an incentive to attract only the healthiest enrollees, and devise methods to exclude sicker or higher risk enrollees. They gain more by competing on the basis of risk selection practices than they do by competing on the basis of efficiency and quality.

A potential method for solving the problems of risk selection is risk adjustment. As noted in this special report, risk adjustment is a corrective tool designed to reorient the current incentive structure of the insurance market. The goal of any risk adjustment mechanism is to reduce both the negative financial consequences for plans that enroll high-risk users and the positive financial consequences for plans that enroll low-risk users. Essentially, effective risk adjusters would make it possible to compensate insurance plans according to the health risk they take on. There are many approaches to risk adjustment, each with its own positive and negative attributes.

This report frames the development and testing of risk assessment and risk adjustment tools in the context of state and federal health insurance reform efforts that have sought to deal with risk segmentation by eliminating various underwriting practices based on the health of enrollees. It then provides a substantial review of the latest risk assessment and risk adjustment work being done, and describes the limited evaluative work that has been completed in this area.

Much has been accomplished in terms of developing, evaluating, refining, and implementing new risk assessment tools and risk adjustment systems for a variety of populations. From here, further progress will require testing existing methods in “real world” settings. To the extent that broader adoption of risk adjustment is deemed desirable, many implementation issues need to be addressed. Alternatively, employers, health plans, and policymakers will need to identify different approaches for dealing with the problems of risk segmentation in the health care market. In any case, it is clear that communication among researchers, health plan representatives, employers, and policymakers must be enhanced, and further demonstrations and comparative analyses of risk assessment and risk adjustment tools must be conducted. It is our hope that this special report will provide some common understanding of the current state-of-the-field and provide a useful resource for those who are continuing to pursue answers to the many remaining questions.

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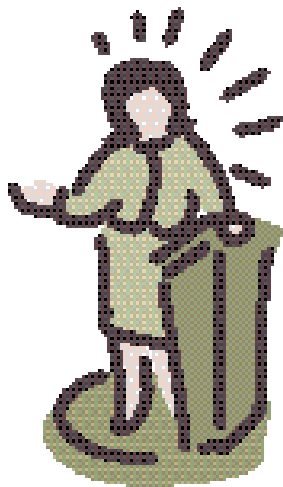


FOREWORD

Risk

segmentation in the health care market is a major issue that needs to be addressed as policymakers seek ways to increase health insurance coverage and improve the efficiency of the market, while maintaining our current voluntary health insurance system. To that end many researchers, employers, health plan representatives, and policymakers have sought strategies that provide incentives for health plans to compete for enrollees by offering better quality and efficiency, rather than by selecting healthier individuals. Such strategies could replace methods of risk selection or cherry picking, which many insurers use to avoid the sick and so leave some of the most vulnerable members of our society without financial access to health care.

Under its *Changes in Health Care Financing and Organization* (HCFO) initiative, The Robert Wood Johnson Foundation has supported several projects to develop and/or test risk assessment and risk adjustment mechanisms for various populations in a variety of settings. Additional work in these areas has also been supported by other health services research philanthropies, by many states, and within the federal government. Several meetings comprising researchers and other key players in the health care market have also been conducted under the HCFO initiative. A meeting was held in October 1994. Papers were commissioned and panels addressed a range of topics including: 1) the definition of risk selection and its impact on the insurance market; 2) the options for eliminating or alleviating risk selection practices; 3) the impact of risk selection on the availability of coverage and access to care for vulnerable populations; and 4) issues that would arise as various risk adjustment mechanisms were implemented.



In February 1996, a smaller meeting, with specific “off-the-record” discussions, was held. Participants included researchers who were developing particular risk assessment and risk adjustment measures; health plan, state, and federal representatives who were applying those measures in the “real world;” and individuals who were evaluating the impact of various tools for addressing risk variation. Meeting participants were asked to step back from their own particular perspectives and vested interests in order to help move the field forward.

The meeting format was designed to stimulate an open exchange of ideas on a topic where a critical mass of information had been gathered. While this interchange was not expected to, and did not, lead to consensus, it did help the leading thinkers in the field to reach a common understanding of the current status of risk assessment and risk adjustment.


In addition, individuals left the meeting regenerated and with new ideas and thoughts about how to proceed with their own work. They also gained a clearer sense of the areas in which additional research was needed and topics on which to hold future discussions among the key players in the field.

One recommendation of that meeting was to prepare, for broader dissemination, a monograph that described the state-of-the-art of risk assessment and risk adjustment and outlined the next steps for addressing risk segmentation in the health care market. It is our hope that this special report, which draws on discussions from the meetings mentioned above, as well as on our knowledge of the ongoing research and demonstrations will serve as a useful resource to others who are interested in conducting research in this area, testing the existing risk assessment and risk adjustment mechanisms in “real world” settings, or developing and using other alternatives to address the problems of risk segmentation in the health care market.

Anne K. Gauthier
Program Director

Deborah L. Rogal
Deputy Director

RISK *A Special Report* ADJUSTMENT



As currently structured, the health insurance market rewards those health plans that manage to sell the largest percentage of their product to people who need it the least — and avoid those likely to use it the most. While profitable for the sellers and workable for the majority of healthy consumers, the situation diminishes the quality of the market and causes difficulty for people most in need of coverage.

While they have proven a challenge to correct, the market dynamics that hinder particular consumers' ability to find affordable insurance are not difficult to understand. They are rooted in certain realities that define the insurance market. First, health plans offer their products knowing that the health or sickness of the people they sell to will have a greater impact on their annual per capita costs than any changes they can make to improve the efficiency of health care delivery. In addition, plans realize that consumers will always have an information advantage regarding their own health status and the likelihood that they will need health care in the next several months.

To compensate for this information imbalance, health plans have developed models to predict how benefit designs and marketing strategies will influence the way people choose health plans in competitive markets. They have then used the information gained through the models to design benefit packages and pursue promotional strategies that maximize their appeal to healthy consumers. Their goal is to take advantage of the insurance industry statistics that consistently show that 35 percent of those who purchase health insurance policies will not file a claim over the next year, while 5 percent will account for more than 50 percent of all health expenditures in the same period.

From a pure profit perspective the approach, known as risk selection or selecting out bad risk, makes perfect sense. One market observer commented, "If I were a carrier in an unregulated market, I would insure only healthy people, drop them when they got sick and make a ton of money."

In reality, however, insurers' efforts to avoid high-risk enrollees can undermine the integrity of the market for all participants. When plans compete primarily on their ability to attract the healthiest pool of enrollees, efficient, high quality plans may be driven out of the market simply because they happen to end up with somewhat sicker

enrollees. In turn, the frail and chronically ill are not able to find affordable health coverage precisely because all parties know they will definitely need care in the near future.

Insurance Market Reflects Americans' Taste for Choice

Also contributing to the contrary dynamics of the insurance market are two characteristics that Americans value highly: 1) the purchase of health care is voluntary, and 2) consumers can choose among a range of benefit packages. Political realities suggest that voluntary participation and choice among plans will continue to define the market for the foreseeable future.

As long as people do not have to buy health coverage, insurance industry experience suggests that a certain percentage of healthy people will always opt to go without insurance until they get sick. And giving people unrestricted choice among plans can lead to an uneven distribution of expensive, high-risk enrollees if plans choose to differentiate themselves by advertising their skill in delivering high quality acute or chronic care. Plans, therefore, need some protection from insuring people just when they get sick and from attracting an unacceptably high percentage of expensive enrollees.

Risk Adjustment Has Potential to Reduce Risk Selection

Risk adjustment is a corrective tool that may help reorient the current incentive structure of the insurance market and reduce the negative consequences of enrolling high-risk users by somehow compensating insurance plans according to the health risk of the enrollees they take on. Risk adjustment offers a variety of approaches, including: 1) paying plans more or less

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according to their level of risk among enrollees and 2) taxing low-risk plans so as to raise their premiums and subsidizing high-risk plans so that they can reduce their premiums. The effectiveness of any approach will depend on accurate risk assessments, which measure the deviations of each individual's expected costs from the average cost and help determine which plans actually have higher risk. The greater the dispersion in risk across plans, the larger the re-distributive effect of any particular risk adjustment mechanism.

Although it may not be able to resolve all the economic challenges of risk, effective risk adjustment is considered a "crucial aspect of any plausible health insurance and health care reform proposals," says Harold S. Luft, Ph.D., director of the Institute for Health Policy of the University of San Francisco in his Spring 1995 *Inquiry* article, "Potential Methods to Reduce Risk Selection and Its Effects."

Recognizing both the complexity and potential of risk adjustment, this special report will examine briefly the ways insurance and other health care reforms have begun to re-structure the market, and it will explore the nature and challenges of risk adjustment in that context. In addition, it will look in some detail at several risk adjustment projects currently underway and consider what next steps are needed.

Initial Efforts to Reform the Market for Health Insurance

Many states and the federal government have sought to restrict insurers' ability to turn away enrollees because of their health care needs by passing various insurance reforms in the individual and small group markets. The areas states have sought to regulate most closely include: denial of coverage to predictably high-risk policyholders; exclusions or waiting periods for pre-existing medical conditions, and medical underwriting and other rating practices that vary premiums based on characteristics of policyholders.

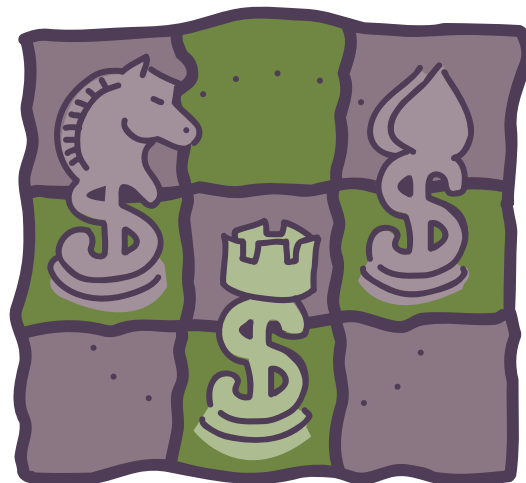
Most state-sponsored measures have focused on the small-group market because a substantial portion of the uninsured are employed by small businesses or are dependents of employees in small firms. Compared to the large-group business, which is easily experience rated and where high-cost enrollees can be readily balanced by the vast majority of low-cost enrollees, it is difficult to predict and appropriately pool risk in the small-group market. Moreover, the sensitivity of small employers to the price of insurance and their propensity to change plans or leave the market completely make it less sure that risk will even out over

time. Thus, plans that have covered the small-group market have sought to deny coverage to particular employees within a given group and to screen new enrollees on the basis of their medical records. The result for some employees has been either no available insurance or insurance that is unaffordable.

The absence of convenient mechanisms for pooling and pricing risk is an even greater problem in the individual market. As a result, many plans either do not participate in the individual market or offer policies only at prohibitively high premium rates. Some states, therefore, have expanded their reform efforts to the individual market despite a perception that the plans that serve that market are poised to leave it.

Reforms in both markets have made it harder for plans to refuse to provide coverage based on health status. Some states require plans to guarantee they will issue policies to all who want to buy them; some bar or limit pre-existing condition exclusions for people who lose or change their jobs. Others require a high-risk pool for all individuals otherwise denied coverage. Many mandate conversion policies that guarantee people who leave their jobs can continue to buy coverage, although coverage can be much less comprehensive and the price of continuation can average much greater than the enrollees' prior group plan.

Passed at the end of the 104th Congress, the Health Insurance Portability and Accountability Act of 1996 essentially provides a nationwide floor for reform in the small-group and individual insurance markets. The new federal law ensures that people who have had group insurance for at least 18 months can continue to buy insurance without waiting periods for pre-existing conditions when they move to another group plan or to an individual insurance plan. Many states have already gone beyond this new federal requirement, but only time will tell whether those states will be inclined to drop



back to the federal standards or maintain their more demanding regulations.

In the large-group market risk selection is also a serious concern although the dynamics are different. According to Henry Bachofer, executive director of the Center for Health Economic and Policy Research, several factors distinguish the large group market, typically made up of large private employers, purchasing alliances and state and national governments, from the small group and individual markets. First, greater homogeneity at the large group level means that differences in average cost per person within the group become smaller as the group gets larger. Also, greater stability in terms of both firm and employee turnover means the large group market has less volatile pools. In addition, there is an increased reliance on both self-funding and experience rating in the large-group market, and a large group can rely more on actual claims experience and a thorough analysis of claims when it sets premiums and determines whether to make adjustments in benefit design. There is also less concern about a few high users in the large group market because their risk can be spread across the group as a whole, and, finally, in the context of large groups, employer contributions usually make it less likely that people will buy coverage only when they need it.

The trend toward offering large-group members a broader choice of plans has resulted in distortions related to risk selection in the large group market. Because enrollees can be expected to choose one group over the other based on their intended use, employers have learned to avoid offering benefits and coverage that have been shown to attract high users.¹

Subtle Forms of Selection Continue Despite

Insurance Reforms

Despite efforts in all markets to require plans to accept risk they would have otherwise avoided, the financial incentives remain strong for plans to pursue healthy enrollees. As a result, health plans have developed more subtle forms of selection. While such actions may defy the intention of reforms, they are difficult to prohibit. For example, plans may choose to advertise in one magazine over another in the belief that readers of certain publications are healthier than others. They may also offer extra benefits, such as free health club benefits or access to exercise rooms to attract people who are better health risks.

Alternatively, plans might configure their staffs or provider networks in ways that minimize their appeal to people expected to be high users. Because one characteristic of high users is a disinclination to change

providers, plans can avoid such users by assembling a panel of physicians who are new to the area rather than recruiting well-established physicians with a sizeable patient base. Plans may also choose to limit the availability of certain specialists, including oncologists and cardiologists, who would attract people with serious health problems. Or they might provide gatekeeper physicians with incentives to limit their specialist referrals and so make their plan unattractive to people who want to see specialists. Clearly, if insurance regulation is inconsistent with the financial incentives, selection issues will be exacerbated.

Impact of Changing Market Dynamics

In addition to insurance reforms, general trends in the health care market have focused on driving down costs and so encouraged the growth of managed care and capitated payments. In the process, they have intensified incentives for both efficiency and selection and have introduced potentially problematic dynamics into the market. Because capitated payments are generally set in advance at a negotiated amount, they motivate providers to deliver care efficiently and plans to attract people whose costs will not exceed the amount paid to the plan for care.

As the movement toward managed care has attempted to eliminate waste, it has also prompted providers to begin to try to take over the role of the insurer through a variety of risk-bearing structures that put providers in direct contracting relationships with policyholders, such as integrated physician associations and physician hospital organizations. While risk-bearing providers have the advantage of being closer to enrollees and may be in a better position to assess the extent of the risk they are likely to face, they might also find themselves having to decide that some people represent too much risk for them to take them on. “I see this as a brewing problem,” says Alice Rosenblatt, chief actuary for Wellpoint Health Systems in California. “We don’t want providers denying care because they are taking on risk responsibility.”

*From a
pure profit
perspective
risk
selection
makes
perfect
sense.*

RISK ADJUSTMENT

Risk Adjustment Could Change Incentives for Risk Selection, But Challenges Loom

As efforts continue to increase the influence of competition in the health care marketplace, and as insurance reforms require that plans exclude fewer people or limit the amount they can charge higher-risk purchasers, providers, plans and consumers all gain an increasing interest in finding ways to shift the basis of profit-making from avoiding risk to delivering the most desirable product at the most appropriate price. Implemented well, risk adjustment could reduce the motivation for those selling health coverage to be choosy about who buys their product. Effective risk adjusters would likely take different forms, depending on market location and type (large group, small group or individual). But in general, they would allow health plans to be compensated in part according to the amount of risk that each assumes, so that plans that attract an above average number of high-risk enrollees, would be paid for the cost of caring for more expensive enrollees without those enrollees or their employers having to contribute more on their behalf. In the same period, plans that attract a low amount of risk would pay into the risk adjustment system.

The initial challenge in developing a risk adjustment mechanism lies in finding ways of measuring or assessing risk to project accurately who falls into the category of higher risk and how much their expenses will exceed those of the average enrollee. Such projections require sizeable amounts of data and significant analysis. In the Spring 1995 edition of *Inquiry*, Katherine Swartz, Ph.D., of the Harvard School of Public Health, summarizes a conclusion often

drawn about the challenges of gathering sufficient information to make risk adjustment work: “The data needs to create close-to-perfect risk adjustments are daunting. They obviously involve an enormous amount of effort and tax revenues to obtain data that are difficult to observe or measure.”

Reiterating the data challenge, Stanley Jones, director of the Health Insurance Reform Project at George Washington University, notes that any risk adjuster “has to be good enough that plans are not able to get better data and game the system. Plans have the actual book of business and simply have the

researchers outgunned,” he says. And they are not going to stop using their own information to their advantage and participate in a risk-adjusted system unless they are convinced that competitors cannot game the adjusters better and gain a competitive advantage.

Some believe gaming is less of an issue because plans tend to use simple, intuitive models to guide their strategic plans. From this perspective, the primary gaming issue is fraudulent upcoding, which should be relatively easy to prohibit through rigorous auditing. In addition, the conflict between researchers and plans is seen as minimal because researchers’ risk models can be useful to plans for internal management purposes.

Care Delivery for Affected Populations is Also an Issue

As noted earlier, in the current structure of the health care system, health plans can find it financially unrewarding to develop a reputation for serving high-risk enrollees well. As a result, plans have not sought to build networks of providers with particular strengths in caring for people with high-risk conditions. If risk adjustment can make carriers willing to attract high-risk populations by paying more for those enrollees, the question of how to care for such populations most efficiently will become important.

Will it be more cost effective to concentrate high-risk enrollees in specialty practices and so develop extensive expertise for each of several high-risk conditions? Or will the whole health care system be strengthened and quality of care improved if comprehensive primary care practices are given financial incentives to treat the higher risk patients?

Once plans begin to accept higher cost enrollees — along with the agreed-upon higher level of compensation — the ever-present potential for fraud and abuse will escalate, and monitoring will be necessary to ensure that people actually receive appropriate care. Some researchers suggest that disenrollment rates could serve as one indicator of a plan’s failure to serve high-risk patients adequately. The departure of a disproportionate number of high-risk enrollees from certain plans could prompt a review to find out if plans are underserving their high-risk enrollees or somehow making them think they would be treated better elsewhere. Where such activity is found, a system of penalties could be applied.

Another approach that has been proposed to encourage plans to maintain their less desirable populations would be to institute a capitation system that motivates plans to cultivate loyal enrollees by paying less in the first year — even undercompensating — and then paying higher capitation rates in the following years.

High quality plans can be driven out of the market simply because they end up with somewhat sicker enrollees.

Clearly, no single tool — especially a financial one — will be powerful enough to solve all the problems risk brings to the system, but in conjunction with other tools and reforms, well-designed risk adjustment mechanisms could help make plans less cautious about the risk involved in covering high cost enrollees. The solutions will likely vary depending on the population being served, but done well, risk adjustment could be used actually to motivate plans to seek out high-risk enrollees.

WHERE ARE WE NOW?

Since the late 1960's, many efforts have been undertaken to develop and test a variety of risk assessment mechanisms, especially for individual major medical insurance. The early risk assessment efforts were used primarily as a tool for health insurance underwriting and for the pricing of individual premiums.² As noted earlier, the first step in implementing a satisfactory risk adjustment system is developing an adequate risk assessment tool. Many of the risk assessment tools that have been developed over the last three decades are described in the Tools Box, which begins on page 10 of this report. While the risk assessment tools being developed and tested vary significantly, they all use some combination of demographic and/or health status data. Demographic models generally comprise some or all of the following variables: age, sex, family status, location, and welfare status. Measures of health status can include self-reported health (through surveys), diagnoses, and data reflecting prior utilization. Health status models also tend to include demographic variables as predictors of cost.

Risk adjustment is often discussed in terms of the actual transfer of payments from one health plan to another based on the relative health risk of the enrollees in the plans, but there are also many other ways in which such tools can be and are used. The Pacific Business Group on Health (PBGH) has used risk assessment tools on behalf of its member employees to evaluate and negotiate premium rates with health plans. In addition, an increasing number of states are attempting to use risk assessment tools to help set rates for Medicaid payments. The adjusted average per capita cost (AAPCC) reimbursement rate, which the Health Care Financing Administration (HCFA) uses to determine reimbursement under its Medicare Risk Contracts, is based simply on demographic data.

Risk assessment tools can also be used to help policymakers achieve certain social goals. For example, they can be used to provide evidence that “sicker” people are being denied coverage by certain

health plans or providers, leading to protective regulatory or legislative initiatives.

The following section of this report includes descriptions and evaluations of some of the more studied risk assessment tools, as well as a discussion of more recent advances in the development of risk assessment methods. Also reviewed are several demonstrations and applications where risk assessment and risk adjustment tools have been used in “real world” settings. The discussion of specific tools and projects is not exhaustive, but is designed to provide a broad perspective on the current state-of-the-art of risk adjustment. For those interested, a list of selected readings on risk assessment and risk adjustment begins on page 22 of this report.

Evaluations of Risk Assessment Tools

Mark Hornbrook and Michael Goodman^{3,4} tested the accuracy and stability of the RAND health survey, a 36-item health status questionnaire, in predicting future annual per capita medical care expense for populations of employed individuals and their spouses. This study was an examination of the value of self-reported functional status and well-being in predicting population-based health care needs for a random sample of employed adult health maintenance organization (HMO) members. The predictive ability of the RAND health survey was not examined for infants, children, or older persons. Hornbrook and Goodman also compared the performance of the RAND health survey with demographic risk assessment models; developed an accurate, feasible risk assessment model using both the RAND health survey and demographic factors, and tested the feasibility of using a subset of items for risk assessment purposes.

They found that models based on a subset of the self-reported RAND health survey scales provided better predictions than age and gender alone. In terms of administrative feasibility, Hornbrook and Goodman found that models using fewer questions from the survey had increased response rates. Single items were, however, less stable predictors than scales. In addition, they noted that mail health surveys have the advantage of standardized formats and administrative procedures, but are not designed to detect and assess vulnerable populations. They also cautioned that

Risk adjustment is a corrective tool that may help reorient the insurance market.

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The effectiveness of any risk adjustment approach will depend on accurate risk assessments.

surveyed individuals may be concerned about the confidentiality of revealing personal health care data, perhaps leading to lower response rates. To maximize response rates, sponsorship of such surveys should be considered carefully, realizing that people will likely be more comfortable with voluntary surveys carried out by university researchers than with mandatory employer-sponsored surveys. There is also some risk that employers or health plans will encourage their employees or members to report themselves as sicker than they really are in order to “game” the system. Hornbrook and Goodman

measures can be quite high.

In a study funded by the Society of Actuaries, Daniel Dunn and Alice Rosenblatt, led a group of researchers from Harvard University and Coopers and Lybrand in an evaluation of the relative performance of different health risk assessment methods and risk adjustment systems.⁶ The study was designed to compare the predictive accuracy of different risk assessment methods and to compare the different risk assessment methods based on other criteria, including administrative practicality, ability to resist manipulation and “gaming” by insurers, and incentives for efficiency. It also explored the potential for risk adjustment using a list of high-cost conditions.

The researchers developed a data set that included demographic characteristics, diagnoses, medical utilization, and expenditures for more than 4.5 million non-elderly individuals over a two-year period. The data, which included indemnity, preferred provider organizations, and HMO plans, were segregated into 19 pools. Using these data, the predictive accuracy of eight different risk assessment models⁷ was tested both prospectively and retrospectively for individuals, large random groups, and non-random groups. The researchers also simulated a risk adjustment transfer process to evaluate the feasibility of implementation and the incentives provided.

The study found that the age-sex model had the lowest predictive accuracy but rated the highest on the other criteria. It was easy to administer, resistant to manipulation, and provided no incentives for unnecessary care. All diagnosis-based models provided predictions markedly superior to those based on age and sex, for both individual enrollees and non-random groups of enrollees selected due to previous high-cost conditions or previous low or high levels of expenditures. On the downside, however, diagnostic models also required extensive data collection and analysis prior to any transfer payments, and the researchers found that transfer payments based on models requiring ambulatory diagnoses were very sensitive to the quality of the ambulatory care data, which was often incomplete or of otherwise poor quality.

also note that if employers, payers, or health insurance purchasing cooperatives must conduct repeated large-scale population surveys, they might find that costs are unacceptably high. Therefore, efficiencies in survey design, administration, and use must be found.

In November 1994, researchers at Park Nicollet Medical Foundation (d.b.a. Institute for Research and Education Health System Minnesota) and Johns Hopkins University completed a project sponsored by the Physician Payment Review Commission (PPRC) that studied and compared the predictive accuracy and administrative feasibility, for risk-adjustment purposes, of alternative measures of health status.⁵

Researchers compared demographics alone, the RAND health survey, chronic conditions, and ambulatory diagnostic groups (ADGs) at both the individual and group level. They “tested” the measures on two sub-groups of enrollees and concluded that claims-based and self-reported measures of health status had comparable levels of predictive accuracy. The two types of data are also comparable in terms of their cost to obtain. The researchers note that claims-based measures of health status require that plans have an adequate database of diagnostic history, which is costly. Alternatively, the costs of surveying plan participants for the survey

TOOLS BOX

Adjusted Average per Capita Cost (AAPCC)¹

The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) authorizes prospective per capita payments to managed care organizations for Medicare enrollees at a rate equal to 95 percent of the AAPCC.



- Based on average Medicare payments per fee-for-service beneficiary in a county, adjusted for differences in input prices.
- Amount is adjusted for age, sex, welfare status, institutional status, and the basis for Medicare eligibility (age, disability, or end-stage renal disease) of the beneficiary.

Ambulatory Care Groups (ACGs)²

Developed by J. Weiner and colleagues at Johns Hopkins University.

- Designed initially as an ambulatory casemix measure for concurrent and retrospective use among the non-aged population, but has been used for predicting both ambulatory and total medical expenditures.



Recent Advances in the Development of Risk Assessment Methods

As noted above, many risk assessment tools have been under development for several decades. However, each of

them has been developed using a fairly narrow database, and therefore, predicts best for a specific population group or health care setting. In order to permit health plans and employers to predict risk across their entire populations and for the entire spectrum of health care utilization, there has been a perceived need to develop more sophisticated tools that would adequately predict risk in settings with mixed populations, inpatient and outpatient utilization, and multiple payer sources. To that end, researchers continue to refine and redesign the tools using a wide variety of databases. Some of the more recent and ongoing work in tool development is described below.

In a HCFA-supported project⁸, Hornbrook and Goodman, along with other researchers at Kaiser Permanente Center for Health Research, are developing and testing global risk assessment models (GRAM) for the entire population. GRAM is a demographic/ treated-morbidity risk model designed to predict risk for newborns and frail elderly, as well as all payer sources and employers, including Medicare, Medicaid, self-pay, and self-insured. The developers' goal is that GRAM will be a useful tool to identify within-plan cross-subsidies for various capitated payment sources, including Medicare, Medicaid, self-pay, Workers' Compensation and employer groups.

In order to develop GRAM, the researchers are using data from four large HMOs. They are classifying diseases according to five systems: 1) Kaiser Permanente Clinical-Behavioral Disease Classification System (developed by Hurtado & Greenlick); 2) Diagnostic Cost Groups (DGS);

3) ADG 4) Chronic Disease Scores (CDSs); and 5) Kaiser Permanente Ambulatory Prescription Groups. These models will be analyzed to identify similarities and differences in group definitions and to see which are the best predictors of future expenses. It is hoped that the GRAM will capture relative health status using diagnoses and demographics for all enrolled persons and that it can be used as the basis of a new payment system that adjusts for differences in risk selection among competing health plans. GRAM may also serve as the core of a new internal budgeting system that adjusts for differences in severity of illness among geographic regions across the service areas of large health plans.

In a recently published article⁹, researchers from Boston University, Health Economics Research, Inc., and Harvard Medical School concluded that Hierarchical Coexisting Conditions (HCC) models, which take into account multiple coexisting conditions, achieve greater explanatory power than DCG models. In addition, they found that prospective models for predicting risk for those with chronic conditions were nearly as accurate as concurrent models, and that all models predicted risk more accurately than the current AAPCC-based method of determining Medicare HMO payments. This HCFA-sponsored evaluation used 1991-92 data for a 5 percent Medicare sample to develop, estimate, and evaluate risk-adjustment models that use both inpatient and outpatient ambulatory claims as the basis for risk adjustment.

Relying on two previously developed diagnostic risk assessment tools – ACGs (Ambulatory Cost Groups)/ADGs and Payment Amount for Capitated System (PACS), researchers at The Johns Hopkins University and Lewin/VHI, Inc., developed and evaluated two new models — ADG-

Despite insurance market reforms, the financial incentives remain strong for plans to pursue healthy enrollees.

TOOLS BOX

- Diagnosis based measure where individuals are assigned to zero, one, or more of 34 ambulatory diagnostic groups (ADGs) based on the ICD-9 ambulatory and inpatient diagnoses recorded for them over a period of time.
- Collapses ADGs into 52 mutually exclusive ACGs based on an individual's

- constellation of ADGs, age, and gender.
- Both ACGs and ADGs have been used in risk assessment.



Chronic Disease Score (CDS)

Developed by M. Von Korff, D. Clark, and colleagues at Group Health Cooperative of Puget Sound.

- Designed to simulate disease severity and chronicity based on an individual's history of prescription drug use.
- Original CDS focused on chronic illness and management of chronic illness; revised CDS added more mental health drugs and some drugs related to management of symptoms rather than treatment of chronic disease.

RISK ADJUSTMENT

Implemented well, risk adjustment could reduce the motivation for health plans to be choosy about who buys their product.

HOSDOM (Hospital Dominant) and ADG-MDC (Major Diagnostic Categories) — for 624,000 randomly selected Medicare enrollees. Both models incorporate the same socio-demographic variables. The ADG-MDC model, however, uses only ambulatory ADGs, while the ADG-HOSDOM uses ADGs based on both inpatient and outpatient claims.¹⁰

The researchers found that both models were better predictors of risk than the AAPCC, which uses only demographic data. Researchers also considered gaming and administrative feasibility issues in their analysis of these models. They found that using diagnostic data rendered the models more susceptible to gaming by plans

and providers than did the use of demographic risk adjuster models, but this “code creep” could be addressed by reducing overall payment levels and/or implementing enforcement activities. The greater accuracy of these models, however, made them more resistant to plans’ efforts to draw off the healthiest available enrollees. The ADG-HOSDOM and ADG-MDC models also required more data than demographic risk adjuster models. The researchers intend to address further administrative and pragmatic issues (i.e., geographic adjustments, updating, rebasing, etc.) through the Medicare Choices demonstration currently underway.¹¹

Further research on the development of a diagnostic risk adjustment system for Medicaid has been supported by The Robert Wood Johnson Foundation, the Pew Charitable Trusts, the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, the National Institutes on Disability and Rehabilitation Research, and the U.S. Department of Education. Richard Kronick and Tony Dreyfus, along with colleagues from the University of California San

Diego, developed a system of diagnostic categories that Medicaid programs can use for adjusting capitation payments to health plans that enroll people with disabilities.¹²

The Disability Payment System (DPS) was designed to provide financial incentives so that health plans would provide quality services to people with disabilities. The DPS was developed using claims-based diagnostic data for Medicaid recipients with disabilities in Ohio and Missouri. In building the model, the researchers were careful to include incentives for serving people with greater health care needs. Once the model was developed, the researchers used it to analyze data from Medicaid programs in Colorado, Michigan, Missouri, New York, and Ohio, both prospectively and concurrently. Overall, they found that both the prospective and concurrent models resulted in higher-than-average expenditures being associated with those diagnoses that most clinicians would judge to be more serious. In addition, they found that diagnoses that are relatively more frequent in one state tend to be so in all states, with the exception of AIDS, which was significantly higher in New York than in any of the other states studied.

Each model also predicted accurate expenditures for subsets of the study population defined by age and gender. When categorizing by diagnostic subgroups, the demographic model under-predicts actual expenditures for persons with diagnoses and over-predicts expenditures for persons without diagnoses. The prospective DPS model is designed to predict accurately when recipients are divided into subsets based on prior-year diagnoses, and the diagnostic categories are the categories that are included in the model. The concurrent DPS model performed “reasonably well” when recipients were divided into groups based on diagnoses in the previous year, but slightly over-predicted actual expenditures for recipients who had no diagnosis in the previous year. In future work, these researchers plan to compare how the DPS and new versions of DCGs and ACGs perform in assessing risks for Medicaid recipients with disabilities. In particular, they are interested in ascertaining whether the DPS will be a better predictor for this population, since it was developed using data from a disabled population.

TOOLS BOX

- Disease categories are based on specific pharmacy use indicators, based on National Drug Code information from pharmacy claims, encounter databases, and clinical judgement.
- Individuals are assigned to one or more of 28 disease categories; individual can be assigned to a group based on one incidence (i.e., one prescription of one drug).

Diagnostic Cost Groups (DCGs)³

Developed by A. Ash, R. Ellis, and colleagues at Boston University.

- Designed to predict future medical need based on observed diagnoses for an individual.
- Cost categories are based on ICD-9-CM diagnosis codes, age, and gender. ICD-9 codes are grouped according to similarity

of predicted costs, rather than clinical similarity.

- Individuals are assigned to one mutually exclusive DCG.
- Initial DCG model used ICD-9 inpatient diagnoses for one year to model total expenditures in the next year. Subsequent DCG models incorporated both inpatient and ambulatory diagnoses.



Demonstrations and Applications of Risk Adjustment

Very few of the available risk assessment tools have been used in risk adjustment systems in “real world” settings. The following section outlines some of the major development and demonstration efforts currently underway, including the risk assessment tools being used in each case.

It is hoped that the demonstrations currently being developed or underway will provide public and private policymakers with insight not only about how well the various tools assess comparative risk, but also about the operational and political feasibility of implementing each one. As noted by Bruce Bowen, an executive consultant at Kaiser Foundation Health Plan, Inc., “the big picture question from the perspective of the health plan is how can risk adjustment payments from or to adjusting authorities be incorporated in the rate making process.”

Use of Risk Adjustment Tools By Large Employers

PBGH has refined and is now testing four models to predict risk and assist in group negotiation and rate setting. PBGH is a nonprofit coalition of 33 public and private sector purchasers who collectively spend \$3 billion on health care each year. Eighteen of the PBGH members participate in the Negotiating Alliance, representing more than a half million California employees, their dependents and 40,000 Medicare-eligible retirees.¹³

Over the past three years, PBGH and its collaborators at the University of California at San Francisco and at Kaiser Permanente - Northwest have tested four models for predicting risk. One is based on demographics (age, sex, and family status) while another uses demographics and self-reported health status (obtained through a subset of questions from the RAND health survey). The third model is based on demographics and personnel-related variables such as education, salary level, and job classification. The final model identifies and isolates high-cost, relatively non-discretionary illnesses from a given risk pool. Researchers linked company personnel data,

survey responses, and actual claims data from two different types of health plans to test the predictive power of the various models.

One set of analyses compared the demographics-only model to the model with demographics and health status variables. Models with both demographics and health status variables explained more of the variation in health care expenditures than models with either demographics alone or health status alone. Both of the health status measures identified in the survey (physical functioning and perceived health status) were important predictors of health care expenditures.

A second set of analyses compared the demographics-only model to the model with demographics and personnel-related variables. Demographic variables were better predictors of health plan expenditures than personnel file variables, such as length of employment or salary. In addition, demographic information about the subscriber unit that has not traditionally been measured, e.g., marital status, and age and gender of children significantly improved the predictive power of the models. The best predictive power was achieved when subscriber units with a high-cost diagnosis were excluded from the analysis and the models re-estimated on the remaining population.

PBGH has applied its risk adjustment tools in several ways. Using a model including only demographic variables, PBGH has evaluated factors influencing HMO premiums, compared prices across companies, evaluated HMO bids, modeled scenarios for group negotiations and modeled the effects of risk adjusting employee

Currently, health plans can find a reputation for serving high-risk enrollees well financially unrewarding.

TOOLS BOX

Disability Payment System (DPS)

Developed by R. Kronick, T. Dreyfus, and colleagues at the University of California San Diego and Boston University.

- Designed to make reasonably accurate payments particular to the conditions of Medicaid recipients with disabilities, while being easily implemented by state Medicaid programs.

- Originally developed with claims data for several years for Medicaid recipients with disabilities in Ohio and Missouri.
- Consists of groups of ICD-9 diagnoses associated with elevated future costs.
- Considers single most serious diagnosis, as well as less serious diagnoses to improve accuracy.



Global Risk Assessment Models

(GRAM)⁴ *Developed by M. Hornbrook and colleagues at Kaiser Permanente.*

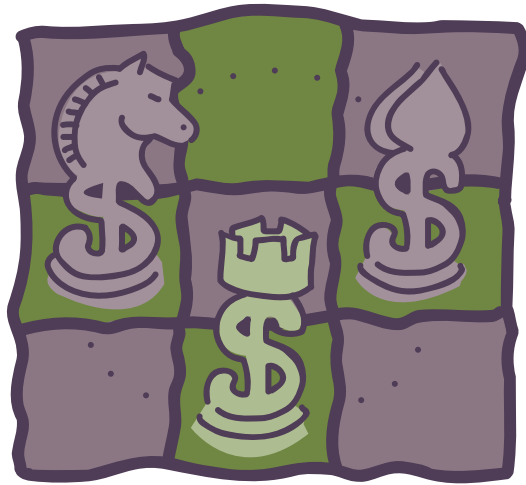
- Demographic and treated-morbidity model designed to incorporate newborns and frail elderly as well as all payer sources, including employers, Medicare, Medicaid, self-pay, and self-insured.

RISK ADJUSTMENT

contributions to health plan premiums. One surprising finding was that volume of health care services and price do not appear to be correlated, and demographic risk and price do not appear to be correlated.¹⁴

The comparison of prices across companies showed that employers with the same health plan can have very different prices both before and after adjusting for risk, and employers with the lowest risk in a plan do not necessarily have the lowest price in that plan. To evaluate HMO bids, researchers compared risk-adjusted bids for plan year 1995 and found that lowest priced plans do not necessarily provide the “best value” price, i.e., after benefit and risk adjustment, and all prices may be too high. This finding led researchers to conclude that risk-adjusted bids could be used to compare actual plan bids and set negotiation targets. PBGH developed model scenarios for group negotiations, comparing the effects of risk adjusting hypothetical 1995 prices and actual initial bids for 1995 prices. They found that risk adjustment did not increase the number of companies with savings, and this finding led the member employers to agree not to risk adjust for plan year 1995.

Again using the demographic risk model, PBGH analyzed its 1996 enrollment data and found that the relative risk across health plans and employers is narrowing. The range of risk across plans offered by an employer varied substantially in 1994 and 1995, but in 1996 the range narrowed to about 5 percent below or above average. Similarly, risk spreads in 1996 are not very wide across employers for any given plan. Most are within 5 percent of the average, but none is greater than 10 percent above or below average. Although PBGH member employers once again discussed whether or not to risk adjust employer premiums, they decided not to risk adjust for 1996 since the risk spread was so narrow. In addition, consensus seems to be growing among the companies that negotiations are a long-term process where some plans will have higher risks one year and other plans the next, probably resulting in a “wash” over the long term.



Use of Risk Adjustment Tools by Small Employers

The California Managed Risk Medical Insurance Board (MRMIB), has developed and applied a risk adjustment mechanism in the small employer group health insurance market. This risk adjustment tool was used to negotiate 1996 rates for the Health Insurance Plan of California (HIPC), a voluntary purchasing cooperative for small groups with three to 50 employees. The HIPC has been in operation since July 1, 1993 and now has 24 different health plans in the state participating with 80,000 individual enrollees. The method that was used to determine risk differences for the 1996 rates was tested through two prior simulations.

The risk adjustment tool developed for use in the HIPC utilizes demographic information and data relating to a set of expensive diagnoses to assess the relative risk level of enrollees in each of the participating plans on a concurrent basis. Specifically, the risk assessment value is based on gender, key diagnostic indicators, and the number of children per contract. These indicators of risk were chosen because they represented the key cost characteristics that are not permitted to be considered in setting the HIPC rates. Marker diagnoses were considered to be the most important indicator of likely differences in risk.

TOOLS BOX

- Currently being tested, but likely to be useful in risk adjusting health plan premiums, internal health plan budgets and primary care panel sizes, contributions to health plan premiums, and community rates or area-wide health budgets. Also might be used to identify within-plan cross-subsidies for various capitated pay

sources, including Medicare, Medicaid, self-pay, Workers' Compensation, and employer groups.

Hierarchical Coexisting Condition (HCC)⁵. *Developed by R. Ellis and colleagues at Boston University, Health Economics Research, Inc., and Harvard Medical School.*

- Derived from the earlier research on DCG models.
- Incorporate multiple coexisting conditions, providing greater explanatory power than DCGs.
- Being considered as a possible alternative to the AAPCC.



John Bertko, a principal investigator during the project (and now Chief Operating Officer and Senior Actuary with PM Squared), along with fellow investigators Sandra Hunt, principal with Coopers & Lybrand and Sandra Shewry, executive director of MRMIB, studied inpatient data over one year, examining lists of diagnoses with higher than average costs (ICD-9 codes associated with an inpatient stay and with average annual health care charges of \$15,000 or more) and predictability. Normal maternity cases, trauma cases, and mental health and chemical dependency cases were excluded from the list of illnesses and high cost conditions. A plan's risk assessment score was calculated based on gender, family size and age. Each carrier was measured to see how it compared, based on those factors, to the HIPC as a whole.

Transfer payments, accounting for disparate risk among the health plans, occur when any carrier has an aggregate cost value that is more than five percent different than average. If no carrier has a risk assessment value outside that threshold, then distribution among carriers is considered acceptable. If a carrier has a value outside that threshold, then risk within the HIPC is considered maldistributed, and the risk adjustment process is implemented. The transferred amount is calculated as the amount of money needed to bring the outlier plans' risk assessment scores within the threshold. If there are high-end outlier plans, funds are collected from the lowest risk health plans until the high end outliers have been compensated.

During the first simulation, which was completed at the end of May 1995, researchers found that less than one percent of total premium dollars would need to be transferred to bring all health plans in the HIPC within the acceptable level of risk distribution. The simulation determined that individual plan assessments ranged from a payment of \$27.11 per contract per month to a receipt of \$19.66 per contract per month. All of the HIPC health plans participate in the risk assessment process. This simulation indicated that four health plans would have received adjustment payments; eleven would have paid adjustments; and seven were not affected by the process. The simulation also revealed a wide

variation in results for smaller health plans. As a result, a blended risk-assessment score, based on a credibility formula, was used for small health plans with fewer than 1,000 enrollees for the second simulation.

In order to test this blended risk-assessment score and to increase confidence among the health plans prior to the actual transfer of money, a second simulation was completed in August 1995. It indicated that one health plan would have received payments, while five plans would have been required to make payments. Based on these simulations, the MRMIB board approved the risk assessment methods for implementation for the program's July 1, 1996, contract renewals. Plans submitted data for the analysis by November 1995, and risk transfer payments for the period from July 1996 through June 1997 were revealed in January 1996. In this way, plans were able to know the level of money transfers before the ratings for the next year were established. Health plan premium submissions incorporating the risk transfer amounts were submitted to the HIPC on February 15, 1996. Again, approximately 1 percent of total premium dollars were designated to be transferred with a range of payment from \$11.80 per contract per month to a receipt of \$46.04 per contract per month. One "payer" plan dropped out of the HIPC at the last moment, thus changing some of the cash flow to the "receiver" plan. However, because enrollment increased in other payer plans, the effect on payments to the receiver plan was reduced. It is assumed that plans took risk adjustment amounts into consideration when setting premiums, since the adjustments were provided more than one month before the rates were due. In a competitive environment, like California, it is not possible to measure directly the effects of risk adjustment.

Once plans begin to accept higher cost enrollees, the ever-present potential for fraud and abuse will escalate.

TOOLS BOX

Hospital Dominated (HOSDOM)⁶

Developed by J. Weiner and colleagues at Johns Hopkins University, in conjunction with The Lewin Group.

- Combines earlier research on PACS and ACGs.
- Incorporates sociodemographic variables, diagnoses based on both inpatient and outpatient claims, and a hospital

dominant marker.

- Being considered as a possible alternative to the AAPCC.

Payment Amount for Capitated System (PACS)⁷.

- Developed by G. Anderson and colleagues at Johns Hopkins University.*
- Designed as a prospective, inpatient-

oriented risk adjuster for the Medicare-aged population.

- Combined demographic and prior use model with health status measured as a combination of age, sex, disability status, and three variables that define prior use (major diagnostic category associated with each hospitalization, chronicity of each disorder, and ambulatory resource use).



RISK ADJUSTMENT

Risk assessment tools can also be used to help policy-makers achieve social goals.

Use of Risk Adjustment Tools by States

An increasing number of states are attempting to channel their Medicaid enrollees into managed care plans. As a result, some are taking steps toward developing risk adjustment mechanisms for their Medicaid populations. In addition, a few states are experimenting with risk adjustment for the state employee population and some states have passed regulations requiring the development and implementation of a risk adjustment system for their small group and/or individual insurance markets. HCFA has also supported

several projects that focus on a variety of risk adjustment tools for the Medicare and Medicaid populations. The following section discusses some of these activities, but is by no means complete.

Washington

Researchers at the University of Washington School of Public Health and Community Medicine in Seattle are about to demonstrate a new risk assessment/risk adjustment tool. These researchers, led by Carolyn Madden, are working with the Washington Health Care Authority, which administers the state's employee health plan, to refine and implement a risk-adjusted payment system based on diagnostic and demographic models. While the Health Care Authority has been paying risk -adjusted rates for a number of years, the adjustments only reflect demographic differences. Through simulations, the University of Washington researchers have found that using any one of a number of diagnostic measures, along with demographics, improves the ability of the models to predict risk. The public employee system provides a unique population in which to test

this type of risk adjustment model, because it has a large number of employees that are not concentrated in one geographical area.

Anticipating implementation of the risk adjustment system in January 1998, when actual payment transfers among health plans will be calculated and assessed, the Health Care Authority is currently working to resolve issues that will make the transition administratively and politically feasible. In particular, the Health Care Authority is actively engaging all contracted plans through a broader data request (20 plans have agreed to submit test data on public employees and dependents). It is also developing policies concerning data confidentiality, phase-in procedures, and system monitoring.

Minnesota

The 1995 MinnesotaCare law requires that risk adjustment systems for state-run public programs be developed and implemented by January 1998. The public program risk adjustment system must focus on demographics, health conditions, other factors related to poverty, cultural or language barriers, or other special needs of public program populations. The state is evaluating two types of diagnosis-based models: one based on targeted conditions, where a finite set of conditions (usually inpatient-based) are chosen for added payment; and one population-based diagnosis classification system, which evaluates all recipients using ICD-9 codes to determine risk. The state is also exploring some combination of the two models.

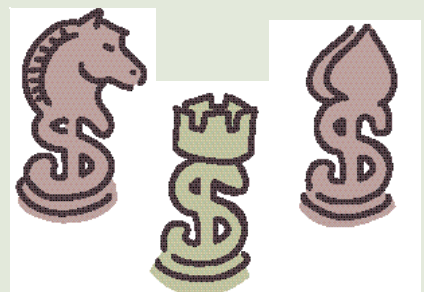
In order to evaluate the risk adjustment models, the state is developing a database that will include claims and eligibility data on enrollees of three major public programs — Medical Assistance, General Assistance Medical Care, and MinnesotaCare. In addition, a health status survey of recipients is being administered. This survey is designed to test the explanatory/predictive ability of items not currently being collected as part of the eligibility process. If any such items are found to be useful, then consideration will be given to including them in the eligibility process. By late fall 1996, the survey had been tested but not yet administered, results were expected by spring 1997.

TOOLS BOX

RAND Self-Reported Health Status Survey⁸

- 36-item, self-administered social survey instrument that has been examined for its potential use in forecasting future real per capita health expense.

- Designed to capture multiple dimensions of health and to measure the full range of health states, including levels of well-being, providing a generic measure of patient functioning and well-being.



Minnesota has also explored the possibility of developing a risk adjustment system for the private sector. The 1995 MinnesotaCare legislation required that the Risk Adjustment Association (RAA), a public-private organization established by the 1994 MinnesotaCare law to develop and manage a commercial sector risk adjustment mechanism, continue to develop risk adjustment mechanisms for the private sector. An implementation plan submitted to the Commissioners of Health and Commerce on November 5, 1995, recommended that risk adjustment not be implemented in the private sector until the benefits outweigh the costs, and the RAA concluded that this was not currently the case, in the absence of community rating and guaranteed issue. The RAA did recommend, however, that development activities continue, so that the system would be ready for implementation should the cost and benefit balance change.

Colorado

Colorado's Department of Health Care Policy and Financing is developing a risk adjustment methodology for setting HMO capitation rates for its Medicaid program. The department is working to develop a methodology that can be used for the entire spectrum of the state's Medicaid population, including Aid for Families with Dependent Children (AFDC) as well as the disabled and elderly in Medicaid. The capitation methodology currently under development would account for enrollees' age, gender, geographic location, enrollment category, and health status as measured by the DPS. The goal of such an approach is to calculate a case mix weight for each plan, and payments will be calculated based on those relative weights. Such a system requires the use of encounter level data that Medicaid did not previously collect from plans. The department, however, has worked with its contracting HMOs to develop specifications for the submission of a limited set of diagnostic encounter data to support risk adjustment. The first "test run" of data was submitted in December 1996. A full set of data for services delivered from May to December 1996 will be submitted in April 1997. These data will be used to make diagnostic-based adjustments to plans' rates for the year beginning October 1, 1997.

During the fiscal year beginning July 1, 1996, the department implemented an interim risk adjustment methodology that uses prior costs as a basis for modifying capitation rates. The drawback to this approach over the long run is that it creates an incentive for plans to spend money on individuals for the sake of obtaining an adjustment the following year. The department chose to use this method for one year only due to pressure from the contracting HMOs to implement some type of risk adjustment as soon as possible. This prior cost-based approach is simpler to implement than a diagnosis-based methodology. Implementation of a diagnostic-based risk adjustment system is, however, still the department's ultimate goal.

The current thinking in the department is that future risk adjustment will be prospective, using diagnoses from one time period to adjust rates in the next time period. This issue is currently unresolved and will be decided in consultation with the participating HMOs. Other key questions to be addressed prior to implementation of the risk adjustment methodology include the following: 1) Will plans' risk exposure be limited through the use of floors or ceilings on the possible case mix weights, e.g., will case mix weights be limited to a range of .8 to 1.2? 2) How often will the department perform risk assessment and re-adjust weights? Will six months worth of data be used to adjust rates for the entire fiscal year? and 3) What are the appropriate marker diagnoses? The department plans to use the list of marker diagnoses used for the DPS model developed by Richard Kronick and colleagues. It may be necessary, however, to expand the list to reflect other high cost conditions, such as pregnancy, found most often in the non-disabled AFDC population.

Very few of the available risk assessment tools have been used in "real world" settings.

TOOLS BOX

NOTES

- 1 Dowd, B., Feldman, R., et.al., "An Analysis of Selectivity Bias in the Medicare AAPCC," Health Care Financing Review, Spring 1996, pp. 35-57.
- 2 Weiner, J.P., Dobson, A., et.al., "Risk-Adjusted Medicare Capitation Rates Using Ambulatory and Inpatient Diagnoses," Health Care Financing Review, Spring 1996, pp. 77-99.
- 3 Ellis, R.P., Pope, G.C., et.al., "Diagnosis-Based Risk Adjustment for Medicare Capitation Payments," Health Care Financing Review, Spring 1996, pp. 101-128.
- 4 "Development of Global Risk-Assessment Models (GRAM) to Support Risk-Adjusted Community Rating," Project Description, HCFA Cooperative Agreement No. 17-C-90433/9-01.
- 5 Ellis, R.P., Pope, G.C., et.al., "Diagnosis-Based Risk Adjustment for Medicare

RISK ADJUSTMENT

Questions are beginning to be raised about why the available technology is not being used.

New York

In 1993, New York State implemented open enrollment and community rating requirements for small group and individual policies issued in the state. In order to address the concerns of insurers and HMOs that they would be subjected to financial losses due to the enrollment of very ill and high cost patients, the legislation required that the regulations include “market stability and other provisions designed to encourage insurers to remain in or enter” the individual and small group markets, “and to protect all insurers and HMOs in those markets from extreme losses due to open enrollment.”¹⁵

To that end, the state designed and implemented a market stabilization process comprising two components: 1) an age/sex relative morbidity table to measure the relative risk for each insurer and HMO with respect to the demographic characteristics of the persons covered; and 2) a list of specified high-cost medical conditions to protect insurers and HMOs from part of the adverse financial effects of covering a disproportionate number of people with such conditions.¹⁶

Currently the state is divided into seven geographic regions with one pool for each region. Carriers make quarterly payments of up to \$5 per individual or \$10 per family to the risk pool. Payments are then made to carriers for enrollees who experience transplants, AIDS, and ventilator dependencies, as well as for neonatal infants. Approximately \$7 million per quarter is transferred in this way.

CURRENT STATUS OF RISK ASSESSMENT AND RISK ADJUSTMENT

Each of the projects discussed above has attempted to develop, evaluate, refine, or implement new risk assessment tools or risk adjustment systems in a variety of different situations. While the perfect tool or system has not yet been developed and relatively few demonstrations are underway, strides have been made toward measuring and compensating for at least some portion of the difference in enrollee risk among health plans, and there are some general lessons that can be learned.

Tools

Using demographic measures alone has the advantage of being easy to administer and relatively difficult to “game,” since these data can be easily audited. However, most comparative analyses conducted to date show that models using demographic data alone have less predictive accuracy than any of the models incorporating measures of health status.

In general, health status measures have been gathered in two ways: self-reported surveys and claims-based diagnoses. Ideally, these approaches are complementary, with demographics and diagnoses providing information on elimination of disease, while surveys provide information on functional health status, which is particularly important for the chronically ill and frail populations. In terms of predictive accuracy, the methods are comparable. Each method is also relatively expensive: surveys are costly because it is inefficient to conduct repeated surveys of the enrolled population; and claims-based methods are expensive because it is necessary to maintain and analyze very accurate and detailed databases or risk losing some of the predictive accuracy. In addition, it is difficult, if not impossible, to make distinctions among “final,” “rule-out,” and “incidental” diagnoses.

Survey measures of health status have the advantage of obtaining more accurate and detailed information, but individuals may be reluctant to reveal confidential information or might be encouraged by

TOOLS BOX

Capitation Payments,” Health Care Financing Review, Spring 1996, pp. 101-128.

6 Weiner, J.P., Dobson, A., et.al., “Risk-Adjusted Medicare Capitation Rates Using Ambulatory and Inpatient Diagnoses,” Health Care Financing Review, Spring 1996, pp. 77-99.

7 Ibid.

8 Hornbrook, M.C. and Goodman, M.J., “Assessing Relative Health Plan Risk with the RAND-36 Health Survey,” Inquiry, Spring 1995, pp. 56-74.



their employer or health plan to report themselves as “sicker” than they are. Surveys also are not as useful in assessing the risk of vulnerable populations, since these individuals tend to have difficulty responding and may be difficult to locate, resulting in low response rates and biased estimates of risk. Claims-based models using diagnostic data are very sensitive to the quality of the data that is used, and, particularly for models using ambulatory data, the quality is often sensitive to the health plan.

It is clear that none of the risk assessment tools or risk management systems discussed above is perfect. Each has its own flaws. However, as data collection systems become more comprehensive, improved risk models can be developed. While it is acknowledged that a perfect risk adjuster is not desirable, since it would be antithetical to the insurance risk-sharing function, many researchers, health plan administrators, and policymakers remain convinced that more adequately compensating health plans for high-cost enrollees is one of the most important and difficult health policy issues under consideration today. So, they are continuing to make incremental improvements in the methods for doing so.

Implementation

Despite the plethora of risk assessment and risk adjustment tools that are available to health plans, employers, and policymakers, relatively few demonstrations have been undertaken. Therefore, there is little experience with the actual transfer of dollars using these mechanisms. Questions are beginning to be raised about why the available technology is not being utilized. Is there too little or inappropriate dissemination of information about the tools that are available? Do the tools need further development, taking into account administrative and political feasibility issues, prior to utilization in “real world settings”? Or have employers, health plans, and policymakers identified alternatives for dealing with risk segmentation in the health care market?

Some employers in the market are dealing with risk segmentation by offering their employees carve-out plans, capitation plans, or high-end deductible options.

In addition, some researchers are thinking about entirely different approaches to dealing with risk in the health care market by trying to adapt lessons learned from other service markets. For example, Katherine Swartz explored alternative ways to compensate health plans that incur adverse risk selection that go beyond the mechanisms discussed above. Questioning whether the effort to incrementally improve the various risk adjustment models is warranted, Swartz examined secondary mortgage and futures markets, reinsurance markets, and government-run competitive bidding and auctions to

determine whether there were tools or lessons applicable to the health insurance market. She found that lessons from the development of the secondary mortgage market and innovations in the futures markets imply that a financial instrument that would deal with adverse selection of risk and relieve the federal and state governments of the necessity of developing risk adjusters could be created. The biggest challenge to using financial markets to deal with the risks inherent to health insurance are in standardizing what is being bought and sold and creating some type of “backstop” for people who are chronically ill and, therefore, very high risk.

What is the Next Step?

Given the amount of information now available on ways to do risk assessment and risk adjustment, further progress will require testing existing methods in “real world” settings. While solutions will differ from market to market, the essential components required for gaining practical experience with various mechanisms seem to be fairly consistent across geographic markets.

Essentially, health plans, employers, and policymakers must be convinced that risk adjustment is the best way to address risk segmentation in the health care market. Key players in the health care market must seriously consider the implications for consumers of not adequately addressing this problem, and where health plans, employers, or policymakers determine that implementation of risk adjustment mechanisms is not feasible, other alternatives must be considered.

Michael Rothman of Colorado notes that purchasers have typically initiated the efforts tried so far. Having large purchasers start the process seems to make sense because they have both an interest in seeing risk adjustment work and the market power to create incentives for plans to participate in a risk-adjusted approach. As purchasers begin working toward a risk-adjusted system, they need to consider the following questions: Does senior management understand and support the effort? Are sufficient staff or consultant resources available to analyze data and give advice based on theory

To the extent that broader adoption of risk adjustment is deemed desirable, an array of implementation issues must be addressed.

RISK ADJUSTMENT

and practice? Are data demands reasonable enough for plans to comply without being overly burdened? And will the results be worth the effort?

Rothman also suggests that discussions about which risk adjustment method to use should remain abstract or conceptual until after all parties agree on an approach they are comfortable with. Then the process can move on to calculations using real data that will determine how much money will have to be moved around and on which risk-adjusted contracts will be negotiated.

In order to convince plans that risk adjustment can work in their interest, some experts suggest that market simulations might be used to allow plans to get a feel for how a risk-adjusted system would work. Such a model could simulate data for enrollees, lay out the rules and then allow several competitors to put in bids and go through several fiscal cycles in a compressed period of time. Plan decision makers would experience each other's gaming efforts and other realities of the market, and they could gain significant insights that would otherwise take years of real time and risk to obtain.

Another approach experts have put forth would be to ask plans in a given state or area if they experience adverse risk selection. Because all are likely to say that they do, they would be asked to prove it by showing evidence. Such an exercise would either verify that some plans currently attract more risk than others and identify them, or it would demonstrate that most plans experience the problem to a comparable extent.

To the extent that broader adoption of risk adjustment is deemed desirable, a vast array of implementation issues must be addressed. Are health plans and employers capable of collecting and supplying

the data necessary to utilize existing risk assessment and risk adjustment tools or can the tools be designed to be easily modified for use in specific settings where specific data is available? Have issues of administrative simplicity, payment accuracy, and potential gaming been adequately addressed by the researchers developing and refining the risk adjustment tools? Can risk assessment and risk adjustment tools accommodate differences in benefits, plans, and regional utilization patterns?

*Realistically,
a voluntary
health insurance
system will
always
invite some
risk selection.*

Once an approach is decided on for a given market, many researchers agree that the agent for actually carrying out the risk assessment and risk adjustment should be a government or quasi-governmental organization or an agreed-upon coalition, with enough stature and authority to implement risk adjustment policies. The governing body would also need to be sufficiently restricted to assure carriers that risk adjustment is not simply one more way for regulation to intrude on the insurance business.

Risk Adjustment's Rich Potential Also Breeds Complexities

Adequately devised and instituted, risk adjustment could transform high-risk patients into the profitable ones while making it difficult to turn a significant profit on healthier enrollees. Success would be verified by highly regarded plans being able to stay in the market. Premium rates would stabilize eventually, and rates and profits would vary among plans according to efficiency, rather than risk selection.

Realistically, a voluntary health insurance system will always invite some risk selection, and even the best risk adjusters will invite gaming. Some risk adjustment researchers also acknowledge that the current system will not necessarily "melt down" without risk adjustment. They do question, however, whether the system can be as "good as it could be" without significant changes in the incentive structure.

Risk adjustment has the potential to move the system in the direction of matching financial incentives with the increasingly prevalent rules that limit insurers' ability to be selective about whom they insure. Without risk adjustment or some other way of making the rules and the financial incentives more compatible, the rules will perpetually be skirted, and precious resources will be spent tracking where and how the system does not work. Even more important, the sickest and most vulnerable consumers are likely to become or remain uninsured.

In order to address outstanding questions and make meaningful progress in the direction of acceptable, workable risk adjustment systems, it seems clear that communication among researchers and health plan representatives, employers, and policymakers must be enhanced. In addition, further demonstrations and comparative analyses of risk assessment and risk adjustment tools must be conducted.

Endnotes

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- 2 Dunn, D.L., Rosenblatt, A., et.al., "A Comparative Analysis of Methods of Health Risk Assessment, Final Report," research sponsored by the Society of Actuaries, December 21, 1995, pp. 2-6.
- 3 Hornbrook, M. and Goodman, M., "Assessing Relative Health Plan Risk with the RAND- 36 Health Survey," *Inquiry*, Spring 1995, pp. 56-74.
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- 6 Dunn, pp.2-6.
- 7 The models tested included: 1) A simple age-sex model; 2) Ambulatory care groups (ACGs); 3) Ambulatory diagnostic groups (ADGs); 4) Principal Inpatient diagnostic cost groups (PIPDG); 5) Expanded DCGs (EDCG); 6) Expanded DCGs with high cost-coexisting conditions (EDCGDX); 7) All DCGs (ADCG); and 8) All Diagnosis DCGs with high cost-coexisting conditions (ADCGDX). Descriptions of these models can be found in the Tools Box beginning on page 10.
- 8 "Development of Global Risk-Assessment Models (GRAM) to Support Risk-Adjusted Community Rating," Project Description, HCFA Cooperative Agreement No. 17-C-90433/9-01.
- 9 Ellis, R.P., Pope, G.C., et. al., "Diagnosis-Based Risk Adjustment for Medicare Capitation Payments," *Health Care Financing Review*, Spring 1996, pp.101- 128.
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- 11 The Medicare Choices demonstration is designed to give Medicare beneficiaries expanded choices among types of managed care plans and to test new ways to pay for managed care. As part of this demonstration, HCFA hopes to begin developing solutions to a wide range of implementation issues — including risk sharing, payment methods, certification requirements, and quality monitoring systems — which would be associated with some of the legislative expansions of Medicare managed care under consideration. The first six health plans under this demonstration were operational as of January 1, 1997. Medicare payments for each of these plans will be adjusted according to the health status of beneficiaries — using DCGs and HCCs — rather than just according to demographic factors. (Sources: HCFA Medicare Choices Demonstration Fact Sheet, April 1996; Bureau of National Affairs, "Medicare: First Six Health Plans Start Operating Under HCFA 'Medicare Choices' Demonstration," *Managed Care Reporter*, January 8, 1997, p. 34; and Faulkner and Gray, "Medicare Choices Selections Reveal Latest Thinking on Risk Adjustment," *Medicine and Health*, January 6, 1997, p. 1.)
- 12 Kronick, R., et. al., "Diagnostic Risk Adjustment for Medicaid: The Disability Payment System," *Health Care Financing Review*, Spring 1996, pp.7-33.
- 13 Participating employers include: APL Limited, Automobile Club of Southern California, Bank of America, Bank of the West, Bechtel Corporation, Chevron Corporation, the Federal Reserve Bank of San Francisco, Fireman's Fund Insurance, LSI Logic Corporation, McKesson Corporation, Mervyn's California, Pacific Telesis, Ross Stores, Safeway Inc., Stanford University, Union Bank, Varian Associates, and Wells Fargo Bank.
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- 15 New York Senate Bill 5469-A, "An Act to Amend the Insurance Law and the Public Health Law in Relation to Creation of a Competitive Market for Comprehensive Individual Health Care Policies," June 14, 1995.
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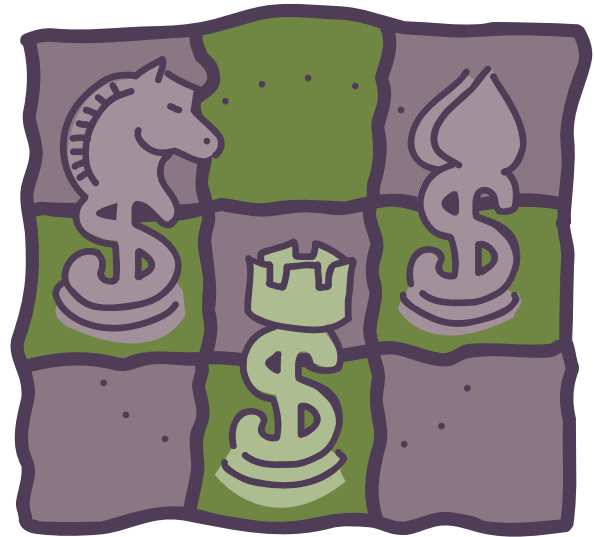
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*A Key to
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1350 Connecticut Avenue, NW

Suite 1100

Washington, DC 20036

Phone: 202.296.1818

Fax: 202.296.1825

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