

RECORD, Volume 30, No. 2*

Spring Meeting, San Antonio, TX
June 14–15, 2004

Session 54 PD

Designing your Nontraditional Product from Start to Finish: Matching Underwriting to Experience

Track: Nontraditional Marketing

Moderator: Ian G. Duncan

Panelists: Van Beach
K. Michelle Moloney
George Stadtlander†

Coordinator: Ian G. Duncan

Summary: This session covers the impact of segmentation and underwriting on expected mortality and morbidity. Panelists discuss the importance of data mining and customer selection on ultimate experience, setting up direct marketing applications with the right type of questions to maximize responses but limit risk, the use of prescription drugs and other databases, tele-interviewing and expert systems—what they can and cannot do, and industry practices for obtaining customer information.

MR. IAN G. DUNCAN: Welcome to the next session in the continuing saga of "Designing Your Nontraditional Product from Start to Finish." This session is titled "Matching Underwriting to Experience." I'm Ian Duncan, and I'm moderating this session. I'm on the council of the Nontraditional Marketing Section. We are the sponsors of this series of sessions on product design.

I'm happy to welcome three excellent speakers: Michelle Moloney, who's going to speak about the life insurance perspective; George Stadtlander, underwriting vice

* Copyright © 2004, Society of Actuaries

†Mr. George Stadtlander, not a member of the sponsoring organizations, is vice president of underwriting at Medical Mutual of Ohio in Cleveland, OH.

president at Medical Mutual of Ohio, who's going to be talking about the individual health insurance market; and Van Beach, who's going to pull it all together and talk about experience-based decision-making.

MS. K. MICHELLE MOLONEY: As Ian mentioned, I work for Continental Re. I lead their business development area, which is about generating those next revenue streams for the company. More so than ever before, life insurance companies are struggling just generally to keep revenues level, let alone trying to increase it. Recently though, Continental Re has developed a new underwriting platform that will enable nontraditional products to drive that new revenue stream.

As some background information, a few years ago we took a look at the marketplace and identified a customer segment that's underserved. Those are the buzzwords that everybody talks about: Middle America is the next opportunity. They're trying to tap into that, but still nobody has been able to do it. We think this underwriting platform that we have developed can reach this market, and it's substantial. This opportunity of tapping into it is huge. During the next 20 minutes or so I want to talk about Middle America, what it looks like and its potential, and then I'll talk through some case studies that we've conducted to help us.

Why is there an underserved market? Life insurance has been traditionally distributed through the agent, and the life insurance agent does not share a value proposition with Middle America. During the last decade at least, agents and their companies together have been migrating to the more affluent consumer, probably more by default than design. If you look at some of the environmental things that have been happening, there has been a lower recruiting rate with agents, and, as a result, they have become older and predominantly male-based. At the same time, there have been insurance companies that have tightened expenses and lowered commissions. As a result, you have low access and lower value propositions. Either result is not surprising when you look at studies and you see that they report out that it's lower income, it's younger people and it's females who are saying that they have this need.

Someone who earns less than \$75,000 or a household income that's less than \$75,000 is twice as likely to buy than someone who makes more than that. Similarly, if you look at the age of that household head, someone who's younger than 45 is five times more likely to buy than someone who's above 55.

I think we all care about this market by its sheer size. Transamerica took a look at this a couple of years ago and tried to gauge the insurance gap. There isn't a family size that's a barrier here either. Whether you're single or you're married or have children or don't, there's an insurance gap that exists. It's gauged at being \$40 billion. A 1 percent tap in this is worth \$400 million in premium.

I wanted to show the family statistics, which we couldn't have done because of the way the numbers were given to us from survey. But when I tap that out, I show that 40 percent of the \$40 billion is from incomes between \$30,000 and \$70,000, in that age band of 25 to 55. This is worth another \$16 billion, and it's tapped into just that segment. That increases our market by 70 percent. This is worth finding a solution.

What we developed—and it has been three years in the making—is technology- and data-enabled. The underwriting engine takes an insurance application (a short application), reads it and can interpret it. There are five questions. We have a couple that might have longer ones, say 10 questions, varying in the marketplace. It interprets that, and with the personal information that's on it, such as the name and so on, goes in and retrieves the data on that individual. The data include prescription (Rx) data, Motor Vehicle Record (MVR), Medical Information Bureau (MIB) and credit. That, in combination with the applicant information, generates an underwriting outcome. I like to refer to it as simplified issue on steroids. It looks and feels like simplified issue. It keeps that transactional field that it offers with this, because of the protective value of the data we can offer up to \$250,000 and because the data improves the economics for either the consumer or the insurance companies.

We see Rx data as providing a major gain shift. In fact, this is where we spend a lot of time refining how to interpret the prescription data and improving the logic around that. Our analysis in interpreting the data is three-pronged. We look at prescriptions in association; we try to see, with this profile, what the treatment is for this condition. Then what we'll do is go through that, a series of identifying conditions, and then look at profiles, the conditions in combination for the grouping of drugs, so that there may be multiple treatments taking place, and understanding the resulting mortality. The third prong provides us with two safety checks. It looks at the prevalence of using a drug for a certain condition. That helps us in making checks on interpretations from the association grouping, but also serves as an automatic upgrade to the system. As new drugs come in they're almost predominately used for one condition, so it automatically addresses new drugs as they're coming into the marketplace. Our system also takes into consideration the applicant's responses, gender, build, tobacco use and so forth. For example, if a female is taking estrogen, there's a different inference than a male taking estrogen, and the system looks at the impact of build on diabetes or of smoking and heart condition.

What it means is either a price discount or improvement of profitability. The amount of benefit has to do with what you're already doing. If you're doing fully underwritten, remove those requirements and just use the data elements, the pricing obviously will not be as attractive. The other is distribution channel: how much money is being spent on distribution versus the actual benefits to the

consumer. As a comparison, on a simplified issue it's about a 20 percent improvement over price.

Again, you can look at it the other way; maybe 5 or 10 percent of premium—in the extreme case, 10 percent—goes to profitability. If you put that 20 percent and dropped it down with a 10 percent, it could have a huge leverage effect on your ROI or ROE.

I'm going to talk about value: transactional and speed. You can see that using technology to underwrite brings other advantages, such as scalability—you can support growth. The other issue is that using prescription data can be a bit more complicated, especially in the simplified issue world where underwriters are just looking at binary responses to those few health questions. Being able to automate how you would draw inferences on the data optimizes the use of people, as well as resulting in consistent decisions. Another benefit from the system is that it brings the agents back into the equation. If we can make it convenient and easy for them to sell it, make it transactional so they don't have to wait three weeks for a decision, then you're more inclined to sell to this segment of the market. The other beautiful thing about transactional quoting is that they get paid faster, and that makes them happy.

How do you draw experience into your underwriting or know what your mortality is going to be? When you do nontraditional product development you don't have any experience to draw from, so it's kind of like putting your finger up in the air and trying to figure out what it might ultimately be. So for our end, for our analysis in drawing this mortality basis for this nontraditional product that we'll be developing, we decided to study gateposts. We look at what simplified issue will look like if you have this data and what fully underwritten would look like if you have this data. To give you some background, we studied more than 3,000 simplified issue cases. On the applications there were two questions. This market is lower income. This amount was between \$25,000 and \$100,000, and the average was \$73,000. It was the middle market, ages 25 to 55, where the average age was 42. Going back to something that I mentioned earlier, females have expressed a higher need for insurance than males. In this market, where it's not a traditional distribution where they're really pulling the product rather than being pushed, you can see that bias in that one-third of the business is sold to men, versus two-thirds sold to females.

What we found is that on 27 percent of the applications they had responded "no" to health questions, but when we found our Rx data, it was not benign. In a nutshell, we found that it's not just politicians that lie. I think heroin addiction was the most interesting for us to see. But this covered everything. You can see that just adding that extra layer of protective information of prescription data can have an enormous impact on what your profitability or pricing could be.

The other gatepost on this was fully underwritten. On a simplified issue, because there's not a lot of information to study, they really just got an indication of how severe the lying factor was or what mortality might look like if some of the cases that were in there were eliminated. On the traditional, this was much more of an engaged, long-term and continuous study for us as we added on to it day by day.

We took 10,000 cases, re-underwrote them and measured the value of each underwriting requirement so we could understand that value, what it would look like if you added Rx data on top of it, and also what would happen if it was underwritten in our nontraditional platform. This is a bit more upscale. This is a more traditional market. It's the \$100,000 to the \$500,000. The average is \$312,000, with relatively the same age band relatively. They generally split back to where it has more predominately broken into—almost two-thirds sold to men and one-third sold to women.

What we found was that in 2.4 percent of the cases, Rx data would have changed the decision if you were underwriting on a fully underwritten basis. What we found was that it was split almost 50-50. In half of these cases, Rx data would have produced a minor change, preferred to standard or something like that. Then the other half provided fairly serious evidence of more severe conditions and would have changed their decision momentarily and in some instances, declined. We saw cancer that hadn't been found in fully underwritten, that type of thing, and mental disorder treatment was frequently found.

Another observation on this to share with you is that it was a huge undertaking and, I think, a great exercise for us. I think we learned a lot in this, but it carries over from nontraditional to full underwriting. It was broad in scope and became bigger and bigger as we went through, not realizing what we could learn. As a word of advice, from our experience, and not to state the obvious, but in doing this I found that the more discipline, the more definition in scope and definition up front, the fewer the communication problems, because there were multiple disciplines involved.

I'm going to go through some cases that now. There are four cases, and I'll run through them fairly quickly to show you how this can be effective. The first is just a benign case. These were actually taken on the simplified issues. This one is a female. You've got the occupation of financial planner and it says "answered no to all questions."

When we pulled the drug profile and other data profiles in this case, all information was relatively insignificant. It says here "infection" and there's a report that was pulled out. It's relatively minor. The credit data just shows whether they pass or not pass for fraud. It gives us the flexibility of do we want to put the program through to say accept, reject as a standard or keep two, three or four. We know in that pro

rata to cut it out to be able to support various programs. This brings a score of 15, which is just low enough on a score here to 100. It's a preferred case in the end.

What that does, though, is look if you are taking an enormous number of antibiotics, and it's actually applied for HIV because the system is smart enough. The system is smart enough that it still comes out with an infected score on this individual, but we'll flip over if there were several antibiotics. The final decision that our score is a preferred according to our scoring mechanisms and the underwriting office of our direct rider will receive this back from our system to tap the individual: a date of birth, underwriting, etc. This is actually the examples of these four programs. This is applied for monthly rate, look at there were a declined code necessary that would come through.

The next example is female, age 46, 5 feet 7 inches, 110 pounds, answered no to all the questions. In this case, in the drug profile there are several prescriptions for depression, some of them more severe than others. If there's a fairly severe or strong drug for depression, it would score that higher and so forth. It actually interacts with the weight on an individual and scores them a little higher. You'll note it was a 5-foot 7-inch woman at 110 lbs., which is fairly low, which would possibly indicate some type of eating disorder.

A third example here is breast cancer. This is an interesting example for fully underwritten as well as to demonstrate how useful this data can be. If we see the prescription profile, in this case, she is taking tamoxifen citrate, which is usually prescribed for individuals who have breast cancer for about five years after they've been diagnosed. This is an example where it's obviously a very serious condition, so you wouldn't want to accept them on a program up to two-four, but it's out there in for underwriting. If you had not gotten the prescription profile, you probably would not have known that this person had cancer. You cannot detect breast cancer from fluid testing. If they haven't disclosed on any applications, this is something that would probably slip through. It's a 210 or higher in a traditional underwriting program. She will be declined.

In the interest of time, I'll give a brief example of a stroke: male, age 55, 5 feet 9 inches, 130 pounds, lawyer. This prescription profile of Coumadin and Toprol-XL in combination is an example of how drug association using diagnosis is very accurate with the condition. In this case, it's probably a stroke or obstruction of a blood vessel. It's fairly serious and would result in us going on a system of a Table 4.

A gentleman was just asking about the weight. In this case, he was overweight and there's a bill of one debit on that. I think that that in combination, I'm not sure that we pulled it over to two-four much or what kind of an impact there was, given it was only one debit. But it actually combines the scoring in debits slightly differently to adjust the overall decision in this example.

We in the insurance industry have a tendency to be so risk adverse that we don't necessarily learn from what we've been doing. I think it's time that we start to figure out how to learn better and how to get smarter. I talked earlier about how it's getting harder and harder to generate your next revenue stream. I think it's going to be even worse in the future, if you think about banks and other companies coming into our vertical, learning how to capture and get better at doing things. Pulling experience and extrapolating what is going to be is, I think, a core competency to say profitable and not profitable in this industry.

MR. GEORGE STADTLANDER: I'm from Medical Mutual of Ohio. It's a health insurer primarily operating in the state of Ohio. We've expanded operations into several other states. I've been very impressed with the quality of the presentations here and it's really a treat to speak to people that are so bright and, even though there are a lot of actuaries here, the candle power of this group is self-evident, particularly in the presentations. Michelle's conclusion sounded like my introduction. It was very much on spot and the point is well taken.

I think that even with all the technology and all the science we have in the insurance industry, particularly in the health insurance market, it is still relatively crude in the questions it asks, evaluation of risk, determination of price and monitoring of results. We're talking about the individual market (in health, we call it individual). I'm fascinated that the product is nontraditional. What's good about the health market is that the purchaser is the consumer. In many cases, when you look at the group model, that's very different.

The group model derives different behavior than the individual market. I, personally, believe that the individual health market is more efficient. In many states, individual health allows for a rating based on health status and other characteristics, including that you don't have to guarantee issue, and that is a real benefit. The small group market was small-group reform, which really required guaranteed issue at the end of the state, and that creates a whole new pricing dynamic. Market pricing is determinable far more easily in the individual health market than in the group market.

We're going to be matching underwriting to experience. We want to state that underwriting, simply put, is the practice of pricing risk appropriately and understanding your cost. There are three times in the underwriting practice when we're going to do this: when we design our product, at application time and then retrospectively if we monitor experience. We want to try to get a match, or at least the knowledge, of how our risk evaluation is performing as evidenced by the emerging loss ratio. Objectives generally relate to profitability and market share. What are the challenges in individual health? Currently, most individual carriers can take up to two weeks to provide the individual with a rate and a positive yes. The reason for this is, in the individual market, most of the sales occur through a writing agent who takes an application, then it goes to a general agent who may do some processing and send it off to home office, then there's an underwriting review and

then the decision comes back. When you do a process, while it looks like it could happen in four or five days, the reality is it's quite some time.

Another challenge in the individual health market is that individuals know their own health status or their suspicion of their own health status far better than anyone else. The motivation to purchase an individual health policy when you suspect you're ill is very high. Also, individuals who are sick will stay far longer than individuals who are healthy. This is very different than the group market, where a sick individual, particularly in guarantee issue state, really has no control over who the health insurer is, and, because of guarantee issue, it may actually be cheaper for the group to make the decision to change; that's leading to the inefficiency to which I referred.

We want to match underwriting to experience. To do that, we look at several factors. The foundation is establishing your objectives. Competitive pressures put the ceiling on product design. Market determines the ceiling, along with the competition, your objectives and your costs. Your profit is how well you evaluate the competition in market pricing, what it is you want to accomplish and what the cost structure is. You can talk about the various departments (marketing and sales, cost to purvey actuarial sales) to determine the price. That's how we come up with our profit. It has to be interdisciplinary.

I appreciate that in this whole track the interdisciplinary nature of the process is understood: know your costs, market age, sex. These factors are well known and documented. We just had a nice review of health status with Michelle. As far as network contact, in health-care insurance there's a tremendous difference in the contracts physicians in hospitals have, but the difference among different carriers is quickly shrinking. The health insurance market is becoming traumatized. I think it will look a lot more like the life insurance market.

Also, another product option is changing dramatically in the health industry today. We used to have the equivalent of a defined benefit; it has switched over to defined contribution. I think the same thing is happening in health programs to a remarkable degree. Five to 10 years from now we'll probably see more consumer choice and health status adjusters. Here are the dollars, and you worry about how you spend it and what kind of coverage you buy for us, as health insurance becomes increasingly less affordable.

We have to know our market segment by agent area, understand life events and which life events you believe are the life events you want to insure. We've identified certain segments: graduation from high school and college, waiting periods when employment starts, starting a business, the time in between jobs and retiring (not retiring at 55). We like retirees who are about 62 or 63 years old, so if the health underwriting wears off, they'll soon be in the Medicare program. A 55-year-old retiree is, I think, a dangerous retiree to take. You should know their health status.

Who are your competitors? Who is the lead competitor? Your second leading competitor? Who are the niche players, and what makes them such? What is their financial condition? If you're shadow pricing or market pricing against someone who's going out of business, you're going to be having some difficulties. What are their objectives? Are they lawsuit-oriented? Are they health- or an industry-oriented? Are they a mutual? Are they a Blue that doesn't really have the same profit objectives that a commercial carrier does? Or are they interested in the hospital street? Are they a provider sponsor identity? We could ask these questions no matter what line of coverage we're looking at.

What are your objectives? How large? What niche? As far as profitability, do you want to go for a high profit ratio or a high contribution to overhead, penetrating a greater amount of the market, perhaps, at a smaller gross profit? As far as brand objectives, do you want to be concierge or utilitarian? Economical or expensive?

We identified young, healthy, transitional, life-event market segments as the ones that we were most interested in in our individual product. In health insurance everything is so complicated that we said we just want it simple and easy to understand. So we consider that every time we make a decision about an application for product literature. Rapid issuance, we thought, would be a key to success.

In doing competitive research, we identified the market leaders. We did all the things we just talked about as important to do.

Here's an example of us entering a new state. We get the counties in a state, the rates they're charging, and where the competition is. Then we went over to the actuaries. The actuaries consulted the Milliman area studies, and now the problem begins. The actuaries said, "This is how the costs are paid with our network using Milliman health area cost guidelines, and then here's our competition. This is our lead competitor, a very well-run company." We're looking at the huge differences and saying, "How could this be?" Differences in networks? They contracted different hospitals and physicians. No, we're going to use the same network as they are using. So we're using the same network, it's a respected company, but there are huge differences.

On further investigation of those higher-cost counties, it appears as though the competition redlined inner cities for health conditions. It was really surprising because those high-cost sells are all inner city areas. I guess they feel that there's some likelihood that you're going to pick up adverse selection in lower-income areas that are self-motivated to buy health insurance. It was an interesting perspective.

What we did was we said, "Let's try to narrow the gap here." We knew that there was a bridge. We had a market that was very close to the market we wanted to

enter. We were able to say, "Well, the Milliman numbers were pulling down a little bit." I don't know why we decided to do that. We couldn't enter this market with that kind of pricing disparity. You see what I mean about the primitive nature of what we're doing. It's shocking the actuaries in both companies looking at the same cost number.

We also said, "We're probably going to shadow-price, so our profit objectives are we'll make a lot of profit, hopefully, in the areas that we're shadow pricing. We're going to watch carefully the areas that are theoretically high cost and we're going to see how that emerges." So here we're matching underwriting and price setting to experience that's globally available and, in some cases, our experience.

We designed a simple process for applications. The application captures data, which enables the case to be field underwritten. We used a simple Excel spreadsheet. We're now developing a Web-based version of this. The writing agent in the field can evaluate the health questionnaire and then that information is submitted through the general agent. The spreadsheet allows the agent to take the responses of the person and say you're preferred or standard. He's got about 16 tiers, giving about a 200 percent mark-up from the preferred issue to the substandard issue. Field underwriting means automated, consistent evaluation of the response.

Also, there's a legal advantage to this. The less we found, the less you do, the better you are on the rescission and compliance work. The more work you do in terms of attending physician statement (APS), evaluating and things of that nature, the courts say, "You did all this checking, so why you didn't you find the problem?" It's better if you rely on them, and then when it's detrimental reliance, it makes it far easier to rescind. We review the application. We query our own claims history. We're a large market-share organization. The average time from field submission to ID card issuance is three days. We used a pharmacy database to detect problems that emerge in the early months of the case. We used maintenance medication triggers for audit with high-dollar claim screens. It resulted in case rescission rates of 0.1 percent, and a dollar rescission rate of 1 percent.

We didn't have a robust compliance function at first, so we continued to monitor experience. We liked the way this MedPoint pharmacy database was working. You're probably very familiar with it if you're in the life business. It's an access to an online pharmacy benefit manager (PBM) pharmacy database that's used for dispensing safety. It's a standard thing that's out there for the health insurance business, typical Health Insurance Portability and Accountability Act of 1996 (HIPAA) compliance. It identifies five years of drug history including name, dosage, physician name, address, Drug Enforcement Administration (DEA) number, probable diagnosis profile and estimated cost index, which we found a merger of value.

I have to say this database is wonderful because before we would find a drug that was issued, but then we'd have to go to the DEA register. Then a nurse would have to make an evaluation of what's the likelihood. Then we'd send out a request for a medical record. We'd get the medical record back. That was about a two-month process; in time there were four other doctors involved. Send out another series. It was taking us 12 months to get to a rescission date for a rate update because we wanted to be sure when we pulled the trigger on the rescission that we wouldn't be challenged and lose, thus creating a whole industry of attorneys challenging us. We haven't been successfully challenged on our rescission process, and that takes two rescissions to the Circuit Court of Appeals.

There are compliance issues in the individual market. The motivation to conceal medical history is strong. We knew that. Now we look at our experience. We took 275 approved individual applications. Fifty-seven were revised based on the pharmacy database review. This represents a 21 percent conceal rate. You consider we lost about 5 percent of the applications in our simplified underwriting process. I think the life factor is about 27 percent. We're starting to develop credible statistics that one out of four applications will misrepresent in their self-interest. That's coincidental, but it's remarkable. It's virtually the same number, and it's typical of a study or two that has been done by other individuals using it. Forty-seven revisions resulted in a \$37,000 rate-up premium and 10 rescissions resulted in \$13,000 of canceled, for a total savings of \$50,000. If you estimate \$15 out-of-pocket review for each of the 275 applications, then that's \$4,000 in cost, or a 10:1 savings rate.

Now we've used experience to modify our application process. We've hired a few more compliance people. We're strengthening our health underwriting function and we're going to go to 100 percent submission to the pharmacy database, most likely following the model. The model is set up with electronic transfers back and forth. It doesn't consider the sentinel impact or avoided savings or total cost to review, including labor.

Extensive product monitoring is the third area we're going to talk about. First was design and the second was on application. Now what happens as you look back and watch emerging experience? We've targeted young people; the good news is that we got young people. We didn't want people who were 50 to 55. We did a little decline there, then we get a little bump up at age 62, say, and then, of course, no one after age 65 because you're on Medicare, in most cases, or a group plan. So we looked at this and said that this is great and working as designed.

We looked at profitability by tier. Considering we're pretty crude in this business, it isn't bad. If we're hitting the risks and the claim paying system correctly, and, believe me, we did a lot of judgment in the sizing, it seems as though we are not rating the impact of co-morbidity. We're not rating up enough for that. Here's the beauty of an automated underwriting system. The old world had a bunch of nurses sitting around with an underwriting person or two, trying to figure out what to do.

Now we've got targets, we can go in and change what happens as the point total, and we'll find out what conditions are driving these (there are a couple of studies in place), to become more scientific in this regard. Then we can change the factors in the system, and it will work because we've removed a lot of individual consideration from the topic.

What do the tiers represent? We've segmented clean risk as zero debit points at tier 1. Tier 12 is the maximum number of points that we assign to the self-disclosed health condition and response on the smoker question. Then the other underwriting characteristics that are embedded in the application have points attributed to them; weight would be an example. We convert the combination of weight, health conditions, smoker/non-smoker status into points, and then rate up. There's about an 80 percent rate-up from preferred to substandard. In other words, tier 0 is \$1 and tier 12 is \$180 for a given rate sell.

The loss ratio is observed loss ratio. We could argue about active life reserve. If any of you know it, I'm a CPA and I didn't even know what an active life reserve was, so we rolled around in the mud on that because, as you know, you've got health underwriting wearing off and all that. But we're running a very positive, a very good loss ratio in this business. We think this market segment is growing and will continue to grow with loss ratios under 50 or 55 percent, which is pretty good in the health industry.

MR. VAN BEACH: I think George and Michelle did a fantastic job setting the stage for me. You know, this session is not just marketing track. I work with Milliman.

It's not the most glamorous thing, but when I played baseball, most of my career I played as a catcher. I look at administration in kind of the same way. You're the field general. You roll up your sleeves, you're getting dirty and if you're doing your job, nobody notices you. The only time they do notice you is when you're not doing your job.

There are some questions as to why and how you end up dealing with administration. Part of that, I think, goes back to my early days as an actuary. I worked with reinsurance. We were getting the data in from client companies, and I was very elated to get it in. I rolled up my sleeves and started taking a look at what exactly this experience was telling me. One of the things that perpetually frustrated me was that what I was really limited by the data that was being sent to me. There are all kinds of analysis that you'd like to do, but if you don't have the data to support that, if you don't have within the data defining your experience, you're really hindered when it comes time to do the types of analysis that George and Michelle are talking about.

I'm broadening the topic here beyond experience-based underwriting to experience-based decision-making. As you're capturing the experience that's coming in, as

you're using that and bringing it, it's a reflective process, where you're bringing what you're gathering back into the process and improving your product, improving your pricing and improving the whole process beyond just the underwriting. I'm going to spend a little time on that, and then I'm going to piggyback off of what Michelle was saying and talk a little about the idea of using underwriting (or the experience) and pulling in additional sources of information to change the way that you're pricing your product.

I'm going to talk a little about the mortality charge for risk class being potentially based upon experience. For a risk class there's a given set of characteristics that define that risk class. I'll talk about how profitability can be assessed by monitoring merging experience, as well.

I am highlighting the two different angles that we're taking out. We're talking about experience-based decision-making. The first is that you can use the experience to change the way that you underwrite. You can also use your experience to improve your profitability. The key underlying all of this is that you have to have a system in place to be able to capture this information, then evaluate it, then bring it back into the process and ultimately use. I'm going to talk about an example here of experience data or the value of having good experience.

Two hypothetical companies, Company A and Company B, both sell the same products. They have a standard risk class that's identical. They both charge the same premium. The standard risk really is composed of two components. There's a true standard risk, and then there's also what I'm going to call the "cheaters," the 25 percent of people that materially misrepresent themselves in their own interest that we talked about earlier. In the case where both companies have identical products, identical price and same distribution, on average Company A gets about half of the standard people and half of the cheaters. Company B gets the same. On average, we're saying that the premium for those exactly priced is about \$110.

I want to take a look at what happens when Company A pulls in some of the additional information that's out there, starts using the Rx profiling and uses some of the tools that Michelle was talking about. Now what that allows Company A to do is crosscheck those people who were materially misrepresenting themselves against that database and identify those that just forgot about that cancer that they had a while back. What it has done is changed what Company A is able to define as a standard risk.

Company A can eliminate this 10 percent of cheaters. Now that they're eliminated, they've limited it to purely just the actual standard risk. I'll throw in some numbers as an example. If it was \$110 for the previous class that included both the standard and the cheaters, suppose that the cheaters can be put in the 10 percent (George and Michelle are saying that it's actually closer to 25) and actually the cheaters had a true risk price of \$200, then what we're saying is that we could price the true standard risk at \$100, if you exclude the 10 percent of \$200 cheater risks.

What that means for Company A and Company B is that now Company A goes to market with a \$100 product. Company B still has a \$110 product because Company A is able to eliminate the cheaters. Company A is left with the pure standard risk. So what that means is Company B is going after those same folks, but any person that can get the \$100 standard rate, of course, is going to go over to Company A. Company B, then, is only winning the cases that are the cheaters. What this has done is greatly change the playing field.

The interesting thing is how each company will react to this new world. There are implications for both Company A and Company B. Will Company B recognize that their mix of business has changed? Clearly now the business that they're getting in is not the standard risk that they had before. How long will it take for them to realize that they're not getting those true standard risks that they were getting before?

There are implications for Company A as well. Suppose that their theoretical protective value study said that they believe that the true standard risk is \$100. What if, in fact, the true standard risk should have been priced at \$105? Then it becomes a question of, how long will it take for them to evaluate the experience that's coming in to recognize the trend that's being presented to them? The point is that successful companies will be able to capture this experience and react to it. This is a case where the point is that there is no substitute for your own experience data. Industry data can provide some general insight as to where patterns are going to go, but there is no substitute for capturing your own experience data and evaluating that.

I'll give a quick schematic of how the experience analysis plays into the whole product development underwriting process. At the top you have the entire insurance market. We have a few of the drivers that are trying to capture that market: the price, the products that you're offering and the distribution. They bring it to an application, and then once you get the application you may go off and pull in a bunch of additional information. You would go to the drug database. You go to MIB to get motor vehicle reports, APSs and whatnot. There are more and more sources of information to go out and capture, which all lead to the underwriting decision. After the policy is issued, there are still things that are going on that are telling you about what is happening with your business. There are those policy changes. Of course, you're going to have claims. There are additional transactions. The premiums come in. These are all the things that develop your own internal experience. Your ability to take that, bring it back into the process and use what your experience is telling you is going to drive how successful you're going to be.

One thing that I always highlight is your experience. Your company's experience is defined by the data that you collect. I've often been accused when talking to actuaries that I'm preaching to the choir and, of course, I do know this. The

interesting thing becomes, who becomes the driver of making those decisions to spend the time and spend the money to improve the data that you collect? That's something that I feel obligated to keep bringing up. It's something that smacks you in the head like, of course, that's obviously the case. But if you start looking around, I think that you'll find that too often there are examples of cases where the data that you're collecting isn't complete or isn't consistent.

One of my favorite examples of that is you have an agent who needs to get a case issued. The agent has got someone who's clearly a non-standard risk, but the agent needs the person to be issued a standard in order to make the sale. The agent presses the underwriter and harasses him or her until the underwriter finally says, "Fine. We'll give you the concession that you're looking for. We'll issue the person a standard." The underwriter goes in, plugs into their system and says that this person is a standard risk.

From that point forward, we, as actuaries, go off and leave you that record. All we see is that this person was issued as a standard risk. Because the field that you're filling in in your data record is for an underwriting decision or underwriting class, there isn't the differentiation between what the underwriter had identified as the true risk class versus the as-issued risk class. That's an example of having incomplete data.

There are really two pieces of information that you're capturing in there. There's the true risk class that the person was as the underwriter had identified the person, and then there's also the risk class that the person was issued as. If you capture both of those pieces of information, then you put the tools in place for the actuaries or whomever to go back in and analyze and determine the effect of these exceptions on your ultimate profitability. Are these good business decisions that the underwriting is making?

This brings you back to the administration solution that you put in when you're designing a new product. The administration solution is going to fundamentally affect the data that's captured and is going to fundamentally affect your company's ability to leverage your experience. One thing that came up in one of sessions yesterday is that it also can fundamentally affect the profitability of your product.

I'm going to diverge a little right now because I spent a little too much time justifying the need for good experience and the need for administration to support that, and I'm going to talk a little about some of the things that are happening out there that I think can put the tools in place to actually help companies address these things. One of them is that there isn't any reason why a company has to do the administration in-house anymore. There are lots of places that provide outsourced services for the administration.

These outsourced services do a couple of things. You're able to leverage a product that has been built very specifically for administering a given product and has been deployed across multiple companies, so you're gaining some efficiencies there. The other thing that it does is offer the opportunity to turn what typically is a very heavy fixed cost into a marginal cost, which I believe is one of the real hurdles that prevent companies from implementing something that would change the way they administer business; there's such a large up-front cost that they have to overcome, amortize and prove that they're actually getting return on the investment that it doesn't take long for them to get overwhelmed by that and turn away.

The other thing that's happening is that if you choose to do your administration in-house, there are lots of tools that are being developed or have been developed that put the capability to administer in the hands of business analysts, actuaries or whomever. It's no longer necessary for administration to be done purely in the IT area. That has some great potential to align the new product and the ability to deliver that product in the hands of the businesspeople.

I talked a little about the administration decisions. On one extreme, you can have a solution that's completely systematic and completely tailored to your specific business needs. On the opposite end, you have, of course, something that's completely manual. Theoretically, you can have every policy that comes in written down on a piece of paper and kept track of in your paper file. Now, granted, there are probably not many companies that are completely on one end and have a completely systematic, completely tailored system, and I'm guessing that there are not a lot of companies on the other end that administer their policies out of a shoebox.

I'm going to talk a little about the decisions that you're making when you find the appropriate spot on that spectrum. Clearly the up-front cost to get your completely systematic solution increases as you're tailoring it. The ongoing maintenance will probably decrease to the extent that you can create a system that will automatically apply the business rules. There's less need to go back and use people to keep that system going.

When it comes to the cost associated with fixing errors and fixing data, clearly, the more manual the process is the more you're going to spend on those types of things. The more systematic your system is the better that you'll be able to produce consistent and complete data as you're capturing it. When you talk about the data quality increasing, better data will certainly be captured the more systematically you capture things. What that means for experience is that the better data that you have, the more completely that you capture it, the better chance you're going to have to do the types of things that Michelle and George talked about.

What this means is that the way that you administer your business has the potential to turn itself from being purely a cost center into something that's drives the value

of your business. It's more than putting people in front of the machine to send out bills and collect and pay premiums and pay claims. It means that to the extent that you can use your system to increase the value of your data, it's going to have great implications for your ability to manage. The value that you're unlocking comes from at least three different areas. To the extent that you can manage your business and take corrective action to prevent and to identify trends early, you're going to be adding value. To the extent that you're capturing additional data and know your customers better, the marketing folks will be able to do a better job identifying who their customers are and targeting those going forward. Also, the more information you have about your customers the better you're going to be able to serve them, which should help you retain clients and increase persistency.

To wrap it all up, the insurance market is going to be continually changing, and the business that you're bringing on the books is going to tell you how your company is doing within that ever-changing market. Successful companies are going to be able to recognize the trends and the signals that their experience is giving them. I believe the way that this is going to happen is that you have to be able to use your administration systems and put those at the service of the business rather than the business being at the service of the administration systems.

MR. DUNCAN: Thank you very much, Van.

FROM THE FLOOR: I have two questions. One, how do you define "preferred" in your system? I wasn't sure whether it's based on a 100-point count system or some other system.

Secondly, it seems to me any such system is only as good as the credibility behind the value in the point count, whether "15" really means "15." Without giving away anything terribly secret, how did you come up with it?

MS. MOLONEY: The scoring mechanism from zero to 100 was part of the development of the three underwritten analyses that we had conducted. When we did do those studies, and we also ran through underwriters' fully underwritten basis, we understood the value of that, the value of your Rx exceeding each element. But we also ran the life through our automated system and what it had scored. That's how we understood how effective we were at gauging while I was measuring them against what would have happened.

That was part of understanding what it would look like if it were simplified issue with an extreme side versus fully underwritten. There was a lot of iteration on that back and forth in understanding. The first fundamental was getting inferences and drawing those conclusions from underwriters on these. The next was calibrating, drawing against what the mortality would have been with other mechanisms.

FROM THE FLOOR: You have to define what "fully underwritten" is, of course, because for some ages and stuff, I guess "fully underwritten" is non-medical. But if it's always has to have blood, etc., are you trying to get the same type of mortality in your simplified process modified with all the evaluations going on as you would expect with blood and a certain electrophysiologic study (EPS) rate and so on?

MS. MOLONEY: I think we were using a goal post to understand what the mortality would be for this new product. It's not fully underwritten and it never will be because we want it to be transactional. We know there are going to be gaps. In the presentation, I was a bit biased in showing you the benefits, but there are gaps. You're not going to catch alcoholism, for example, if they're not taking any drugs. Also, one of the things about not doing fluids is that you're not going to detect any conditions that the individual doesn't know about either, and that's one of the benefits of full underwriting.

But what we wanted to do was design a product that still kept it transactional, still met that need quickly and still added some value to products with simplified issue where most of the cost is based on serving an unhealthy population, and distribution is going to be associated with it. We wanted to lower cost on it, bring some more levers into it and enhance relationships. So it's somewhere in the middle. That's actually how we went to understand what the mortality would be—getting those goal posts and trying to close in on them.

FROM THE FLOOR: And the definition of preferred?

MS. MOLONEY: When we do preferred, we actually were connecting it back to what it would have been if it were fully underwritten. That's how our scoring calibration is—back to what you would have gone on a definition of fully underwritten. On the business that we studied that was \$100,000 to \$500,000, there's an underwriting grid, like you said. Some of the younger individuals would not have EPS ordered on them. Fluids would have been ordered. That's how we would calibrate.

FROM THE FLOOR: Is it somehow correlated to that—the people with blood, with cholesterol and all the other things?

MS. MOLONEY: Right. This isn't fully underwritten. What it's really effective at is identifying or lasering at high risk. It's not good at identifying whether it's preferred or standard. But the program is associated with our technology, and again, it's trying to transaction quick. It doesn't have multiple classes. We might offer up a T-2, for example. We might have a preferred standard class and then a T-2 to T-4, or you might just have a simple accept/reject-type program.

FROM THE FLOOR: I wasn't thrilled waiting for preferreds to come into nontraditional products. It sounds like you got it, and I'm just curious as to how you're measuring it.

MS. MOLONEY: As we study how good our preferreds were at scoring on our technology versus fully underwritten, there's a mismatch. But as we aggregated standards and preferreds, they were starting to get correlation. Similarly, let's say we got a T-2 score in our system, how does that compare to the T-2 scores from full underwriting? Again, you aggregate a couple of classes, it starts to come together and it indicates that it's working. There are going to be some differences as you move along because you don't have all the same information. You could imagine if down the road we start to get EPSs electronically and things like that. This is just the beginning of what the opportunities are going to become.

FROM THE FLOOR: My first question is for George. Can you clarify for me the price difference between the lowest tier and the greatest?

MR. STADTLANDER: Yes. The price difference is about an 80 percent mark-up.

MR. STADTLANDER: It goes up to 180. So if \$100 is tier one, \$180 is tier two.

FROM THE FLOOR: My second question is for Michelle. On your statistic of 27 percent of people you found out had a non-benign prescription profile, do you have a feel for what that constituted? Do you know what impairments those were? Were they mostly heart, or were they a variety of impairments?

MS. MOLONEY: We're having some unique forms. I mentioned addiction, but it was really across the map. There was a large amount of mental disorders that seemed to come up. Mental disorder seems to be more predominant.

MR. JAY JAFFEE: I have a couple of questions to follow up on these. What percentage of the people doesn't have prescription drug hits that you found in your experience? You said there were 27 percent that you got, but is that 27 percent of 100? Are you getting 28 percent? Is it 27 of the 28 that we're looking at or is it 27 of 100, first of all?

MS. MOLONEY: I should have mentioned that. We look at when we had data. On our part, Transamerica Re has been working on developing a system for years. It has been three years. We embarked on this and are investing the time because we believe that this is the way of the future. We can tap into this. Now when we embarked on it three years ago, I think the hit rate could have been below 10 percent. It was wildly low. Right now they are experiencing about a 60 percent hit rate on their data, and that's price comparative on sales, with a 20 percent on distribution actually reflects how you get that kind of coverage. It can get better and better and is improving. The opportunity is there to close that gap.

MR. STADTLANDER: That's interesting. Our hit rate is about 90 or 91 percent, and that is some drug taken in the last five years. In Ohio, we know that MedPoint has captured virtually all the PBMs operating it. It's a pretty comprehensive database.

FROM THE FLOOR: There's a difference between health and life then.

MR. STADTLANDER: Absolutely.

MS. MOLONEY: It's actually also driven by socioeconomic factors. We found that when you get into the very low income, you're not going to have access to health care, and so if they don't, then you're not going to be able to get sufficient data.

FROM THE FLOOR: Have you been able to do anything in those cases or reach any conclusions where you don't get a hit or get data? Is there any different action taken when it's 40, 50 or 60 percent of the group where there's no hit than with those where there's a hit?

MS. MOLONEY: You do a couple of things. One, we don't want to go after low income so that we can increase the likelihood of a hit. There are certain things on targeting populations when you go after them, whether they're able to purchase a house, for example. That's a good sign that they're probably in health care. If you're going to do any pre-selections on understanding what their credit is going to look like, a recent mortgage or refinancing, things like that, is going to enhance and minimize that exposure.

What we are doing though is we want to keep it transactional, so what we do is when we don't get a hit, we make the adjustment for our pricing that there isn't any data and we price it accordingly. So there is a pad in our pricing to reflect that there's going to be some misrepresentation in that population. As the data coverage goes up, that exposure goes down.

FROM THE FLOOR: My final question is, do you have any suggestions or thoughts about privacy issues? Did that bother you? Did it impair what you have done? We're living in a different world today. What steps did you take to assure yourselves that you were not violating privacy? What can you do with the privacy rules as they exist today? Did you have permission to do all this research that you did, or do you just assume that you could do it? It's a general question and a loaded question, but I'd like to hear your answers, please.

MS. MOLONEY: Yes, it has been a minefield working through those things, but it is getting better. If you learn some of the stuff, it's a little easier to find your way forward. There's also a change in the landscape of what you can do as of April 15 of last year. The Health Insurance Portability and Accountability Act took it back. In our picking this up a few years ago, it made things a little easier for us to do some

of the studies than it is to do today. Still though, there are ways around it. Trying to do a study in real time, having the data real time and being able to do what we refer to as a "parallel" study where you're collecting information and you can go back and understand how each requirement works, is invaluable.

If you can go back afterward and study the stuff over time, your retrospective study is all the better, Stratifying how you might map range from whether it's not your death record, Social Security claims and things like that. There are tremendous opportunities to really dig into this and learn better, but you'll need some lawyers.

MR. DUNCAN: Can I throw out a related statistic? We have a fairly extensive health-care database. We did a comparison between one of the national pharmacy databases and our data, and we got about a 60 percent match. That's sort of consistent with what you're seeing, I think. However, what is also interesting is that the average person with drug coverage in the health plan only fills and complies with the prescriptions that the doctor writes them about 70 to 75 percent of the time. Even when you've got all this data and there is a match, you don't necessarily collect everything on that individual.

UNIDENTIFIED SPEAKER: On the legal front, we had extensive discussions and evaluations with our legal department concerning our applications and the right to access the systems that we're contemplating. Whenever we enter into a vendor relationship with anyone that we're obtaining that data from, we create the HIPAA corridor action Business Associate Agreement. They are very explicit contractual discussions. I may have a good idea, but I won't move unless an attorney is strapped to my front side and back side.

FROM THE FLOOR: I'd like to follow up on one of the values of some of this information. This is somewhat related to what Jay was asking, only in a different way. If you're trying to determine how much you're going to save by implementing one of your systems, obviously you can tell me "from the database." There are two problems. The first one is if I'm going to use historical data, I don't have the necessary approvals, and can I really go back and pull all these applications, go through them and put them into your system and see whatever Jack did and what it would have issued? I don't have a HIPAA on the current, unless it's grandfathered, because those applications were made prior to HIPPA. That's one question.

The second question would be, if I go prospectively, and you're telling me that 27 percent of these people would be declined, they're kicked out and you know what the conditions are, how do I determine the mortality impact of those people prospectively? Are they going to persist? Are they going to die in the contestable period? I just wonder if you made any attempts to do that or how you go back doing that type of thing to demonstrate to your clients why they should use the usual system?

MS. MOLONEY: As far as doing the studies, you can't go back now on cases unless you have the HIPAA authorization that you gained in underwriting. If you don't pull in the data for the underwriting at that point in time, you can't go back and do it; that's my understanding of the interpretation.

As far as how we work with our system, I should probably have given some background to this. This technology is something we do to support product development and consulting that we do. As a company, Transamerica Re has two business units. One does all the back office and underwriting of product development for traditional business. If you want to come to us, we can develop a product for you and give you the pricing. We can offer it fully underwritten and go after tapping into that market with you, or you can work with us and we can do all the product development and consulting on a simplified or a product that would reach the middle market and streamline it through our underwriting system and provide you with reinsurance. We would work with you to design a product and help you with the pricing and things like that, and then take the reinsurance so that you can be comfortable with the mortality.