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Understanding The Risks At The Younger Ages

Morbidity Experience Analysis

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contents

The last edition of this newsletter included a very interesting article pertaining to the risks associated with issuing long-term care insurance (LTCI) at the older ages. The authors concluded that issuing coverage to anyone above age 80 is a daunting task and that the industry should continue to work toward offering coverage to a younger crowd where adverse selection is much less significant. I have been a part of extensive research of a large insured claims database over the past few years, and I could not agree more with their conclusion. It is certainly not easy to manage the risk at those issue ages.

This research has also opened my eyes with respect to managing the risks at the younger ages. It definitely is much easier to underwrite under age 65 simply because fewer individuals at these ages pose an immediate claims risk. Most companies which implement prudent underwriting procedures see extremely good claims experience at the youngest issue ages. However, if underwriters are doing their job, there is no reason why any company should be experiencing numerous claims at these issue ages. Those are not exactly the prime claim paying ages in the first place. The real dilemma is how to accurately project younger *issue* age claims experience at the older *attained* ages.

Projecting young issue age morbidity is now a focus for some carriers; however the industry has not given this area much attention in the past. There are several reasons for this. First, average issue ages were typically much higher in the 1990s, ranging from the high 60s to low 70s. Consequently, issuing a policy at younger ages was not a focal point. Second, conventional wisdom in the 1990s was that ultimate lapse rates were much higher than what carriers now appear to be experiencing. Thus, since few policyholders were expected to be around 30 years from issue, the claim costs assumed at the older attained ages were not very important. Third, rate stability was not the hot topic it is today.

Fast-forward to the year 2002. Average issue ages are often in the 50s and low 60s for most individual carriers. Group LTCI plans continue to grow and the federal government now offers LTCI to their employees. Lapse rates are lower than anyone ever imagined. The NAIC has created a rate stability regulation that some states have implemented. As a consequence, the morbidity assumptions used for an issue age 55-year-old are now much more important, especially at the older attained ages. Thus, the challenges become even greater for those us of pricing and valuing LTCI products.

The reason this task is so difficult is really quite simple. The event the younger policyholders are insuring against is not likely to occur for at least another 25 to 35 years. Seasoned carriers that have some insured claims experience do not have more than 10 policy durations of credible data (at best). Further, because these policyholders are so young, most purchase an option which inflates their daily benefit by five percent annually. Thus, these claim cost assumptions are magnified because the benefits can grow to be *three to five times* the issued daily benefit at the key claim ages.

Now, coverage is not typically offered on a non-cancelable basis, and some might contend that future morbidity

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assumptions are not something we should worry too much about. We just need to take a shot and if we happen to get it wrong, who cares? You can always implement a rate increase, right? Yes, you certainly can. However, I simply believe we have a greater responsibility given that carriers must tell each and every policyholder that these premiums are intended to be level for the life of the contract. In addition, actuaries now must certify with some state regulatory authorities that "premiums are reasonably expected to be sustainable over the life of the form with *no future premium increases anticipated*." I don't know about you, but that pitch sure makes it appear that we have a pretty good grip on this thing called LTCI.

As an industry, I do not believe we should "punt" when it comes to this challenge until more data comes through the door. Some very valuable insured data exists that, if carefully examined, can shed some light on potential scenarios for what may happen in the future.

Analyzing the Data

The focus here will be on incurred claims analyses and the issues to consider when extrapolating the results of such analyses. Consider the actual to expected (A:E) claims study presented in Table I.

Table I
Actual to Expected Incurred Claims Experience Study
Expected Claims on Attained Age Basis (Without Selection Factors)

Policy Duration	Issue Age					
	<60	60-64	65-69	70-74	75-79	Total
1	0.01	0.01	0.03	0.15	0.20	0.10
2	0.03	0.05	0.15	0.30	0.40	0.15
3	0.07	0.15	0.15	0.30	0.40	0.15
4	0.12	0.25	0.50	0.70	0.80	0.40
5	0.17	0.35	0.70	0.80	1.00	0.60
6	0.22	0.45	0.80	0.90	1.10	0.70
7	0.25	0.60	0.90	1.00	1.15	0.75
8+	0.50	0.75	1.00	1.20	1.40	0.80

At first blush, this looks like really great news. If the youngest issue ages are coming in at 50 to 75 percent of the expected ultimate claim cost curve, then the morbidity supporting the premiums at these ages must include ample margins, right? Maybe, but it certainly requires more digging.

The first task revolves around the data you start with and this simple maxim: "Bad data in equals bad data out." Understanding the guts of the data is an essential piece of a good experience study. This process can be a project in and of itself. Communication among areas such as policy administration, marketing, underwriting, systems, claims and actuarial is very important to effectively develop a valid experience study.

A claims study is also only as good as its component parts. In other words, the precursor to a good incurred claims study is a good incidence and continuance experience study. Without them, the claims study can become materially skewed. The continuance study is of particular importantance since a fair amount of incurred claims data will include open claims. Thus, if the claim reserves are misstated due to a poor continuance study, then the recent claims (which are heavily dominated by the claim reserve) will also be impacted.

Developing Morbidity Experience Adjustments

The next task is to develop experience adjustments to the morbidity assumptions. Keep in mind that the actual to expected (A:E) experience analysis should consider each of the key risk factors related to a LTCI claim. To determine what these factors are, separate the A:E analysis for each significant component of your business. A few of the factors we have found that materially impact claims experience are discussed here.

Underwriting Protocols
LTCI underwriting has improved drastically over the past decade. This is evident when looking at the rise in decline rates as well as the resulting claims experience over the years. Therefore, it is important to segment data by underwriting category. This can be achieved by cutting claims data by issue eras, since underwriting generally improves each year as carriers learn which risks to avoid. Further, depending on the structure of your data warehouse, you may be able to further differentiate your data based on the specific underwriting guidelines in place and the resulting conditions which triggered a given claim.

Benefit Trigger
Policies have not always included the activities of daily living (ADL)-based triggers that are currently quite popular in the market. Originally, LTCI policies typically covered nursing facility stays if followed by a minimum three-day hospital stay. The next generation included nursing facility policies with a medical necessity trigger. Policies after that began to include home care benefits and assisted living facility benefits with ADL-based triggers. Because some of these benefit triggers result in materially different morbidity levels, it may be beneficial to segment your data by this criteria as well.

Care Management Procedures
Some studies have been performed which indicate that care management can significantly reduce LTCI claim levels. Thus, if your data contains claims under various care management settings, it may be valuable to split your data by this criteria.

Gender
It is no secret that females tend to claim at much higher levels than males. Because LTCI is often priced on a unisex basis, it is important to understand morbidity levels by gender to fully understand the subsidies in place.

Marital Status
While few carriers track the marital status of a given policyholder, almost all track whether or not a policy is issued with a spouse discount. Segmenting the data by this criteria can be invaluable in determining whether the level of your spouse discount is appropriate.

Geographic Area
Carriers often see significant differences in claims in different regions of the country. These differences typically vary by type of care as well. Often, an area with particularly high facility claims will see low home care claims and vice versa. Because of this, it is often valuable to review morbidity differences by geographic area.

Stand Alone Policies
Carriers often find that their claims are significantly higher on stand-alone policies (i.e. Facility Only or Home Care Only). This is often because policyholders who purchase stand-alone plans substitute covered services for non-covered services. However, geographic area also tends to play a role here because policyholders tend to purchase coverage for services that are more prevalent in their area.

Policy Option and Adverse Selection
Generally, richer plan designs attract worse risks due to adverse selection. For example, even after adjusting for expected benefit differences, claims for policies with longer benefit periods and shorter elimination periods typically experience more claims relative to expected.

By no means is this an exhaustive list; however, it does point out several factors in addition to issue age and policy duration that should be considered when analyzing LTCI claims.

As you develop A:E experience adjustments based on the key risk factors, it is crucial that the adjustments are not developed in isolation. Rather, you should control for the correlation of the various factors as you develop experience adjustments to your morbidity basis. Without this, much of the value of the experience analysis will be lost.

Some may disagree with the need for this level of analysis by arguing that if your underlying expected claims are adjusted for the appropriate mix of business, then this level of segmentation is unnecessary. However, what if the underlying expected costs failed to recognize the immense difference in claims that result when comparing a policy issued without cognitive screens vs. one with such screens in place? Further, what if all of the 50-year-olds were issued with improved underwriting standards while a majority of the 80-year-olds were issued at time without such improvements in place? If that happens to be true (and it is not uncommon), then it becomes very difficult to extrapolate the 50-year old claim costs based on a very different cohort of 80-year olds.

Another example of the potential pitfalls of aggregated analysis is shown in Table II.

Table II
Actual to Expected Claims Analysis
By Issue Age, Gender and Benefit Period (BP)

Criteria	<70	70+	Total
Females			
Lifetime BP	1.20	1.40	1.25
2 Year BP	0.60	0.80	0.77
All BP	1.12	0.97	1.04
Males			
Liftime BP	0.70	1.00	0.78
2 Year BP	0.40	0.80	0.75
All BP	0.66	0.86	0.77
Unisex			
Liftime BP	1.02	1.25	1.08
2 Year BP	0.53	0.80	0.76
All BP	0.95	0.93	0.94

Table II displays a hypothetical claims analysis of a block by gender and benefit period (BP) (note: trends shown are not necessarily representative of actual experience). If the study were simply done on a unisex basis without reviewing benefit period or gender, one might conclude that experience is tracking as expected. At both the younger and older ages, morbidity is roughly five percent to seven percent below expected. However, by segmenting the data more, it becomes clear that this is not always the case.

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While the two-year BP experience is much better than expected, the lifetime BP experience is much worse, particularly with females. Even more important, though, is the relationship by issue age. Without such a detailed analysis, it appears that the experience by issue age is close to expected. However, further analysis by BP shows that this is certainly not the case. This is very important since carriers often look to their older age experience to determine where to project their younger issue-age claims. If this level of analysis had not been performed, the projection of those older age costs may have been much different.

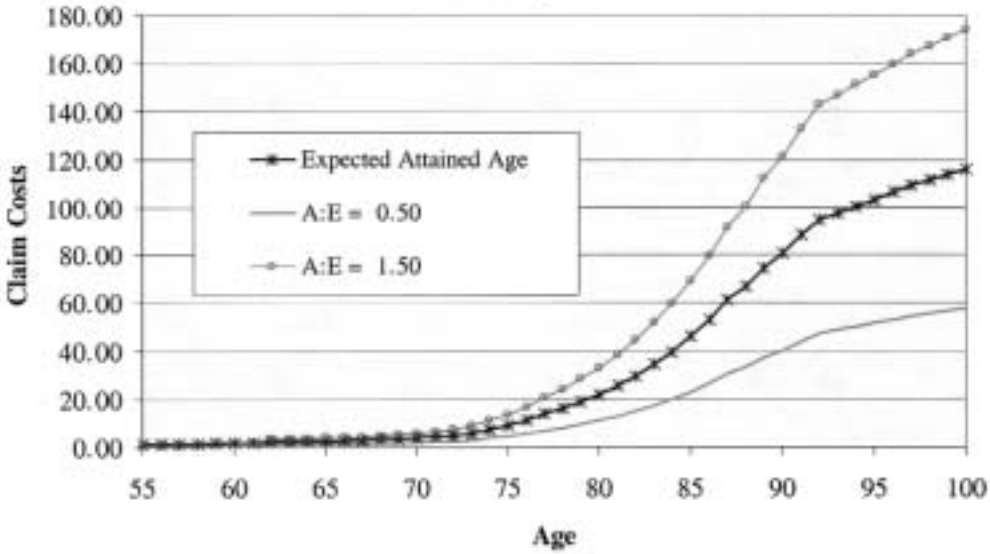
This leads to the subject of credibility. Almost every claims study is plagued by limited validity or credibility of the data, especially when segmenting the data as suggested here. How credible is your data? The answer hinges on a number of things including the number of life-years exposed and assumed distributions of incidence and average lengths of stay. However, the most important thing to keep in mind is the very nature of credibility theory. It centers around the assumption that you have a best estimate to rely on in the absence of fully credible actual experience. For many carriers, this best estimate is non-existent for LTCI morbidity except for a few population studies which have been performed over the years. However, insured data is often much different than the population data. Thus, the "best estimate" in your credibility formula should be carefully considered before performing such calculations. I was fortunate enough to work with almost $2 billion in actual claims in our research efforts, thus credibility was less of an issue. However, even when dealing with smaller blocks, I tend to give more weight to actual insured experience than I typically would with other product lines simply due to the lack of a credible best estimate in the first place.

Projecting Morbidity Assumptions

Let's make life simple and assume that the claims study in Table I has been reasonably adjusted for the key LTCI risk factors. With mature product lines, most of the work would be done at this point because you could simply take the resulting A:E experience adjustments and project future morbidity based on a previous best estimate of the claim cost curve. If only LTCI were that easy. Unfortunately, this is where the substitution of facts for appearances abruptly ends because we do not have a very reliable "previous" best estimate. This becomes especially obvious at the younger issue ages.

Chart I shows the results of the <60 issue band claim cost analysis from Table I. The middle line is the hypothetical expected ultimate attained-age

Chart I
LTC Claim Cost Analysis
Issue Age 55



claim cost curve assumed in pricing. The bottom line is an issue-age 55-year-old's claim costs using the experience adjustments in Table I. Future experience is assumed to be 50% of the attained age curve. Finally, the top line is a hypothetical 55 year-old's claim cost if experience had come in at 150% of the ultimate attained age curve, rather than 50%.

A number of things become either very clear or very unclear. The comparison of all three lines from ages 55 through 65 emphasizes just how small the younger-age LTCI claim costs are relative to the older-age costs. This is the primary reason why it is relatively easy to underwrite at the younger ages — claims are not expected at these ages in the first place, nor are they expected to occur for quite some time. Because of this, favorable or poor A:Es at the youngest ages may have less significance. When you are dealing with expected costs this small, a slight modification to the expected claim cost curve at the young ages can drastically change the magnitude of the A:Es. Further, to simply take the experience adjustments and project them forward for the life of the contract relative to an expected claim cost curve (which probably had little credibility to begin with) can dramatically impact financial projections. Due to this reality, more analysis is generally necessary.

Attained Age Curve

Since we cannot simply assume the underlying claim cost curve is appropriate to project future morbidity for a younger issue, we must review claims from policies that were issued at the older ages. This is why the previous discussion on properly segmenting the data when developing experience adjustments is so important. Without such segmentation, it is difficult to infer anything from the experience of two issue age bands.

Chart II is a graphical presentation of the claim cost analysis from Table I for all issue age bands. It only includes actual claims experience relative to a hypothetical expected attained age curve. No future projection of claims is included. This presentation of the results certainly tells a much different story than Table I does. While the younger age experience is much better relative to the expected costs, Chart II suggests that all issue ages track fairly well with this expected curve.

If you believe that LTCI is a select and ultimate risk, you may be inclined to simply modify the attained age curve such that costs are reduced at the younger attained ages and increased at the older attained ages. Chart III demonstrates one potential variation of this approach in which all issue ages reach an ultimate level by policy duration eight. This pure select and ultimate approach

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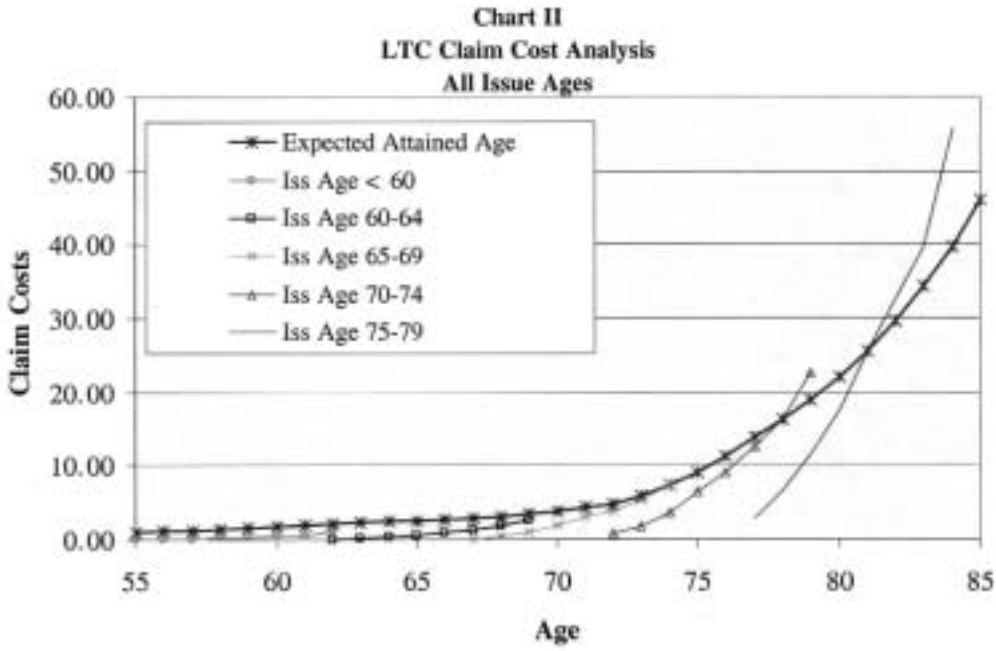


inherently assumes that each policyholder will exhibit the same level of claims at any given age beyond the first eight policy-year durations. Thus, the 55-year-old policyholder will have the same probability of claiming and the same length of claim as the 80-year-old policyholder once they both reach age 90. This scenario also implicitly assumes that any selection, either positive or adverse, will be gone by policy durations eight and later.

If you think Chart III looks reasonable, you may have doubts after performing a competitive premium analysis or a gross premium valuation. By bringing all of the younger age claim costs up to an ultimate level which is closer to the older age experience, we have effectively implemented a much steeper claim cost curve. Chart IV demonstrates this by showing a comparison of the original and revised attained age curves.

Projecting a steeper curve with realistic lapse rate assumptions produces premiums that tend to be very uncompetitive at the youngest issue ages. "Compounding" this problem is the fact that most younger policyholders purchase inflation protection coverage, thus steepening the curve even more. However, whatever is projected for ages 90 and beyond is also largely an educated guess due to the small amounts of insured (and population) data available at the extreme ages.

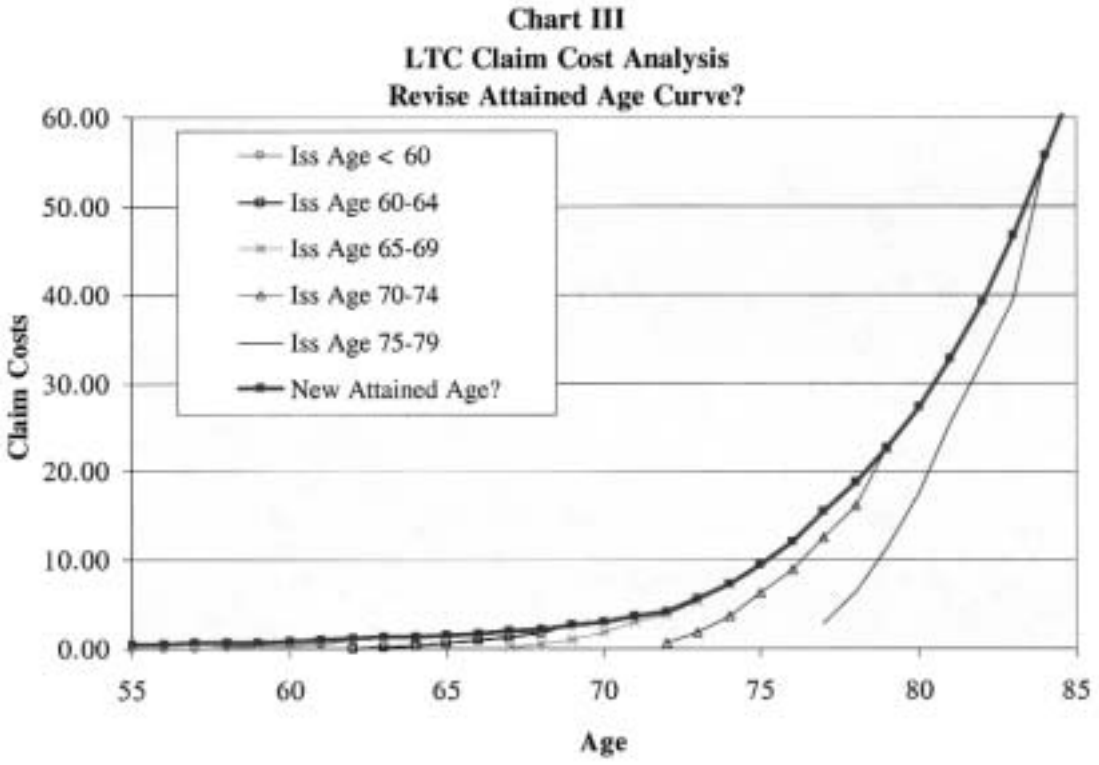
So, does this mean catastrophic financial results are only a matter of time? Not necessarily. Fortunately, there are reasons to believe that projecting with one attained age curve may not be appropriate.

Issue Age Curves

There are valid arguments for using different claim cost curves by issue-age band. The theories center around the following ideas.

Adverse Selection

There is no question that a group of LTCI applicants in their 80s looks drastically different from a group of applicants in their 50s. The older applicants often have a LTC need in mind and it is the underwriter's job to determine if the risk is worth it. On the other hand, the younger group is often simply buying a policy to protect themselves financially for such a need in the future. While underwriters are learning more and more about the proper way to control the risks at the oldest ages, the resulting risk group for older issue-age bands almost always exhibits worse experience than their younger counterparts. LTCI is subject to significant adverse selection, and experience indicates that more unhealthy individuals are accepted for coverage as issue-age increases. If the risk pools by issue age are materially different,



then ultimate differences may also exist but probably diminish some over time. Unfortunately, the amount of insured claims in the later policy durations is not credible enough to determine the exact magnitude of these differences on an ultimate basis.

Declining Lengths of Claim with Policy Duration

Another theory deals with the potential for a reduction in average claim length as an insured is further removed from underwriting. The article from the last newsletter on older age morbidity touched on this somewhat as well. The thought is that individuals are the healthiest at the point of issue and become more frail as they age. If this is true, then the 50-year-old issue at attained age 85 is more likely to experience higher mortality rates than an 80-year-old issue at attained age 85. In effect, this would result in shorter claim lengths for those issued at the younger ages. Unfortunately, even if the entire industry put their data together, there may not be enough claims to give us a valid continuance study of this nature. Still, the theory seems plausible.

Morbidity Improvement

It has been demonstrated that the prevalence of ADL deficiencies has been declining in the elder population over the past two decades. Published trends in general population morbidity support this theory, which is often attributed to advances in medical technologies. Further, insured data generally indicates that morbidity is improving as well. However, keep in mind that insured data is significantly impacted by the market maturation process as carriers learn the risks associated with LTCI. While the pace of this improvement may slow some in the future as the market continues to mature, some believe it is reasonable to assume a level of morbidity improvement into the future. Assuming you subscribe to this theory, it is reasonable to assume that a younger insured is much more likely to benefit from future medical advances than an older insured who may require LTC services before such advances materialize. This is yet another reason why a true LTCI attained-age morbidity curve is unlikely.

Chart V considers some of these issues. This chart shows the results of Table I assuming that each issue-age curve is a percentage of the original expected attained-age curve. The percentage is simply set equal to the ultimate A:E shown in durations eight and later. (Note: this is the same methodology which produced the lower issue age 55 curve in Chart I)

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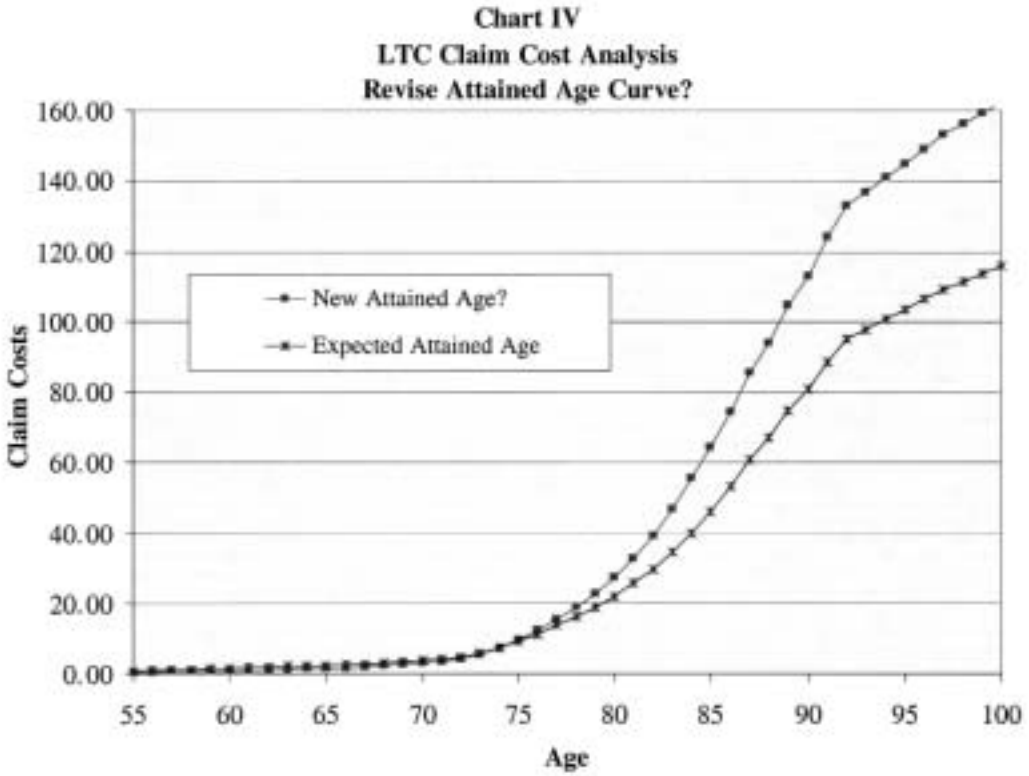

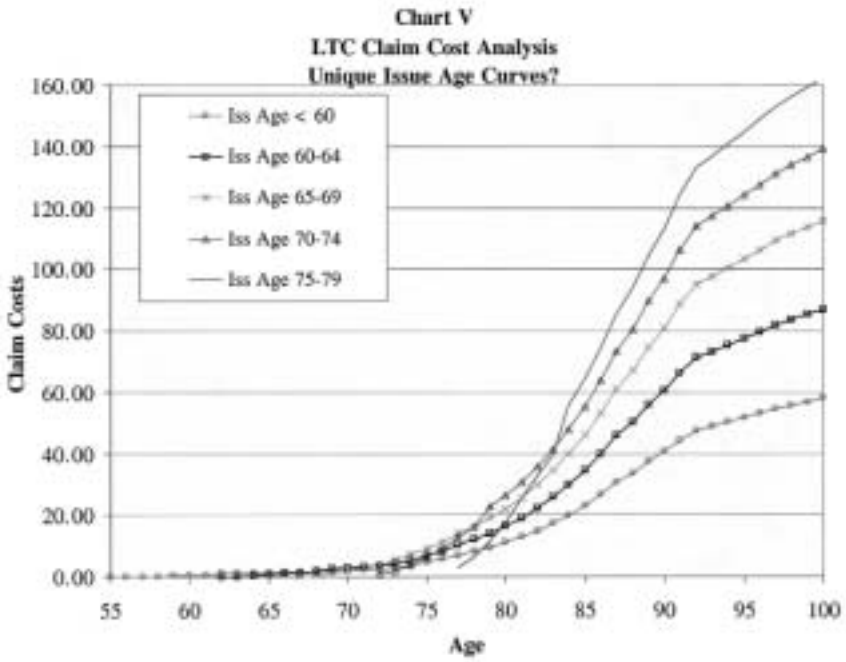

This is a significantly different view of the morbidity curve by issue age. By projecting the morbidity in this manner, we are assuming that ultimate claim costs for the 55-year-old issue will be roughly one third the level of ultimate costs for a 77-year-old issue. Could this be correct? Sure, anything is possible. Some might even say it is conservative since an explicit adjustment for shortening lengths of claim and morbidity improvement is not included here. However, others might argue that this is implicitly incorporated since the ultimate claim levels are so different by issue-age band. Most would probably agree that it simply does not make sense for ultimate claim cost levels to be that far apart regardless of how much adverse selection exists at the upper ages or how much lower the 55-year-old's claims may ultimately be due to declining average claim lengths and morbidity improvement. A more likely scenario is an adaptation of Chart V which brings the ultimate costs somewhat closer together at the older attained ages as selection diminishes.

Conclusion

What is reasonable? That is for each company to decide for themselves. A combination of Charts III and V seems like a plausible compromise at this time. It certainly seems unreasonable to believe all policyholders will experience the same ultimate level of morbidity as Chart III suggests. A claim-cost curve that steep simply does not seem possible given the significant amount of adverse selection that is present at the older issue ages. However, Chart V's extremely different issue-age curves seem just as unreasonable as Chart III. To extrapolate the younger issue-age curves based on experience where claims are so tiny can be misleading.

Still, we must be able to glean some information from the older-age data to determine where to reasonably project the younger insureds' future claims. To answer some of the questions brought up here certainly requires additional modeling. Due to the lack of data available at the later durations, this modeling will have to be theoretical in nature for now. However, most probably agree that a theoretical model with insured data as its backbone is much preferred to one with none at all.

Analyzing insured claims data is very important to the future of this industry. It is a resource that becomes more valuable each year as benefits are paid to a policyholder pool, which continues to grow. Moreover, accurately projecting claims experience for a younger risk pool takes on even greater importance as issue ages decline, sales increase and liabilities become a more prominent piece of LTCI financial statements. As actuaries, we must develop reasonable assumptions based upon careful scrutiny of the data available to us so that we can develop potential scenarios regarding what *may* happen in the future. In some cases, this type of examination is a real eye opener and may lead to significant changes to various components of a company's LTCI operations.

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