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NEW DISABILITY TABLES

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MR. JAMES OLSEN: IN 1962, the National Association of Insurance Commissioners (NAIC) appointed a committee to evaluate the then current reserve table, the Conference Modification of the Class III Disability Table. The NAIC committee appointed an Industry Advisory Committee to make recommendations for up-to-date reserve standards.

The Industry Advisory Committee developed a new disability table, the 1964 Commissioner's Disability Table. This table is based on morbidity data on the first year of total disability for claims incurred in the years 1958 - 1961, contributed by seventeen companies to the Society of Actuaries Committee on Experience under Individual Health Insurance. The claim termination rates after one year from date of disablement are the 1930 to 1950 disabled life termination rates, for Benefits 2 and 3 combined, in the 1952 Disability Study of the Society of Actuaries, which was based on total and permanent disability income benefits payable under life insurance policies.

The experience used as a basis for the new table for the first year of disability was split by cause of disability: disability under accident only policies, disability under the accident portion of sickness and accident policies, and disability under the sickness portion of sickness and accident policies. The experience was further split by five-year age groups, elimination periods, two occupational classes, and sex.

Over 80 percent of all the accident claims and about 30 percent of all the sickness claims arose from policies with a zero-day elimination period. The claims for the combined zero and seven day accident elimination periods accounted for about 96 percent of all the accident claims. The claims for the combined zero and seven-day sickness elimination periods accounted for about 85 percent of all the sickness claims. There was very little claims experience for policies with elimination periods in excess of seven days.

About 60 percent of the claims arose from Occupation Class I, consisting of occupations that involve little exposure to an accident

hazard and do not require heavy physical activity. An analysis of the experience indicated that active life reserves should be higher for Occupation Class II policies. However, much of the experience under Occupation Class II arose from "commercial" policies, which did not require active life reserves to be held. It was believed that policies issued to Occupation Class II risks on a noncancelable or guaranteed renewable basis would have better experience, and therefore, different reserve tables for each of the two occupational classes would not be necessary. The table was based on the male weighted experience for the combined occupational classes.

Claims on females amounted to only about 8 percent of all the claims. The number of claims for females in Occupation Class II was not large enough to warrant a study. The morbidity experience indicated that the slope of the curve of the net premiums by age for females was flatter than for males, and that active life reserves for females should probably be lower than for males. However, because of the paucity of data the committee did not feel that a separate reserve table for females could be developed.

The previous disability reserve standards did not require active life reserves to be held with respect to total disability benefits for accident, but the new table did.

The 1964 CDT includes a continuance table for sickness and accident combined, plus another table enabling claim reserves to be determined separately for sickness and accident benefits. The continuance table shows the number of lives disabled from date of disablement, by duration, per one hundred thousand active lives exposed at each quinquennial age. The table starts with the eighth day of disablement. The combined experience for males of both occupational classes was used to obtain the probability of being disabled on the eighth day for sickness and for accident and the total of these two probabilities was used to obtain the initial values for the continuance table. Disability termination rates by quinquennial age and duration, converted to continuance rates, were developed and graduated graphically for each day, up to ninety days from date of disablement, and monthly thereafter, up to the end of the first year of disability and then blended into the continuance rates of the 1952 study. The continuance rates were used to obtain the basic continuance table.

It has been about twenty years since the 1964 CDT was developed and we needed to determine if the table should be replaced and what new parameters should be introduced. The 1964 CDT has been recognized as being inadequate for claim reserves and too conservative for active life reserves for policies sold to females, in general, and to males in the white collar occupation classes. A table was needed to better represent current products and experience. The amount of available experience for the new table was substantially greater than it was when the 1964 CDT was produced. There was a need for a new table which would account for more of the characteristics of the disability benefit. Also new statistical techniques have been developed as a result of the availability of high speed computers with a large capacity.

MR. KIDWELL: It was becoming increasingly clear to those of us who worked in the disability income area as well as to the regulatory authorities that the 1964 CDT was grossly inadequate for claim reserves but very strong for aggregate active life reserves. The NAIC asked the Society of Actuaries to establish a committee to develop a new table.

Our objective was to build a new valuation table in the simplest form possible that would embrace all of the factors that seem to affect policy liabilities. We were not to determine whether or not the particular parameter or particular factor affected the length or the incidence of disablement. Our purpose was merely to find if there was a correlation and to develop a numerical representation of that correlation and a table which would enable us to reflect that variation in the liabilities.

Prior to the computer technology explosion, we were forced to develop reserve techniques that used aggregate tables. We know, however, that experience varies widely by sex and occupation class groups, and among policies with different elimination periods. It is necessary to use six or seven different aggregate tables to calculate reasonable active life reserves and claim reserves for GAAP valuations. We need a more flexible table that will allow us to take account for the true characteristics of each company's business. The objective that we established would have been practically impossible to achieve in precomputer days.

MR. FRANK KNORR: A detailed description of the methods of collection and analysis of data used in the construction of the Disability Termination Study (DTS) termination rates is included in Sections A and B of the appendix of our Committee Report.

The data used to analyze termination rates was first solicited by John Miller through his Disability Newsletter in May of 1977 as part of his Disability Termination Study (DTS). The data contributed to that study and subsequent contributions made directly to our committee (in the same form) were submitted to Bryant Gamble at the Monarch for editing and reformatting.

Contributions of individual disability income insurance experience came from twenty companies. The total number of terminations was about 134,000 and no company contributed more than 30 percent of that total. If we take the major contributors, companies with more than 5000 claim terminations and look at their contributions in terms of exposure months, the relative contributions are very similar, except for one company. This company had no data for the first year of disablement but had almost 50 percent of the data for the second year of disablement. After the first year of disablement, the amount of data becomes very sparse.

Since we did not want termination rates based on sparse data nor on the data of one company, we used group Long Term Disability (LTD) data for durations after two years. The second-year termination rates are a combination of group and individual experience. The group LTD data also became sparse after a few years. A number of sources of

ultimate termination rates (such as ordinary waiver, group waiver, and social security) were studied, resulting in both a shortened select period of ten years and a formula to define ultimate termination rates by sex and attained age.

The major portion of the analysis was done with the individual data at the Aetna and Travelers. This data contained a large number of variables which may influence (or correlate with) termination rates. We needed to know the most significant of these variables so that termination rates could be expressed in as simple a form as possible. We applied Contingency Table Analysis, using the University of Chicago's ECTA program, to find the important variables and eliminate the less important ones. The importance of some variables changed by duration of disablement.

In the first quarter of disablement there are six important variables: occupation class, elimination period, accident versus sickness, duration since disablement, age at disablement, and sex. By the second year there are only three significant variables left: age at disablement, duration, and sex. After the ten year select period only sex and attained age remain. This can be compared with the 1964 CDT termination rates where there are two variables, age at disablement and duration of disablement in the fifteen-year select period and one variable, attained age, thereafter.

The termination rates were then graduated using my multidimensional Whittaker-Henderson Graduation Program. General definitions of our occupation classes are:

- Class 1 - professional and office work
- Class 2 - nonhazardous work of a specialized or superintending nature
- Class 3 - hazardous work with light manual labor
- Class 4 - hazardous work with heavy manual labor or using heavy equipment.

These correspond to other classification systems as follows:

DTS CLASS	1	2	3	4
4 CLASS MANUAL	3A	2A	A	B,C,D...
5 CLASS MANUAL	4A,3A	2A	A	B,C,D...
"BUREAU" MANUAL	A,B	C,D	D,E	F,G,H,I,J...
NEW YORK STUDY CLASS	1	2	3	4
EXAMPLES (AETNA)	CLERK TEACHER LAWYER	NURSE CHEF ACTOR	DETECTIVE ENGRAVER GARDENER	COWBOY TAXI DRIVER FIREMAN
SOA LOSS OF TIME	- I -		- II -	

We were able to distinguish 4A from 3A and also the 3A of a 5 Class Manual from the 3A of a 4 Class Manual in our data. The 4As were found to have significantly different experience but they were combined with the 3As to be consistent with the incidence rate data and because the amount of data was small, relative to the volume of data for the other occupation classes.

MR. WILLIAM J. TAYLOR: At the beginning of this project, we assigned the responsibility for incidence rates to one of our committee members, Don Pearsall. We did not want to conduct a whole new study with all of the variables we had on termination rates. We requested minimum extension to the Society's biennial studies which reported the data in quinquennial age groups, rather than decennial age groups and broke the occupational classes into the four categories used in the New York Study, rather than the two categories used in the Society studies. Four companies complied completely, and one company complied only with respect to the occupational class breakdown. This gave rise to what we call the Four Company Study and the Five Company Study as shown in the exposure draft. We also contacted the New York Insurance Department who graciously sent us a copy of the magnetic tape containing all of the detail in their 1976 disability income study.

Until the problem of termination rates was under reasonable control, it was very difficult for Don Pearsall to concentrate the committee on the problems of incidence rates. When we did concentrate on this in the summer of 1982, we found that we had insufficient data on females other than the shorter elimination periods and the best occupation class and insufficient male data for the ninety-day elimination period. We produced tentative results in those areas where we did have a reasonable amount of data, and presented them at the Annual Meeting in Washington that year.

Since we had been forced to summarize the termination rate data into decennial age groups to get a reasonable amount of data in each cell, we concluded that the only remaining limitation of the Society's biennial studies was the broad occupational classes. We decided to combine two biennial studies covering the years 1976-79 and develop what we referred to as generated four occupation class rates by using the relationships among the occupational classes which we could develop from the New York study. We also used the Four Company Study to develop weighted ages for our decennial age groups. Using this approach, we still had very little data on females in Occupation Class IV and also on females on ninety-day elimination period.

After attempting to graduate these data without much success, we examined the crude data more closely. We concluded that all of our cells either had a huge number of claims leaving relatively little room for statistical fluctuation or a paucity of claims providing relatively little guidance. After all of this we used Lotus 1-2-3 and put in the incidence rates for accident and for sickness.

After that we proceeded to do what we have coined as multidimensional graphic graduation. Exhibit C2 of our report contains 252 graphs on sixteen pages which illustrate this process.

The graduation process consisted of changing selected crude incidence rates for accident and/or sickness to eliminate perceived anomalies. Changing a single rate, automatically changes the corresponding implied ninety-day rate; the corresponding combined accident and sickness rates; and the corresponding female to male ratios for a total of eight rates. This in turn changes sixteen graphs. Early changes were tentative because changing another rate may change some or all of the sixteen graphs you just viewed.

MR. JAMES OLSEN: One of the most difficult tasks of developing a reserve table for disability benefits is to collect sufficient morbidity data which is accurate and appropriate for the purposes of the table. The data used for this table came from many sources. Although the amount of available data was much larger than that available for the 1964 CDT, it was still quite small in relationship to the entire network arising from all of the variables including age, sex, occupation class, cause of disability (sickness and accident), elimination period, and duration of claim from date of disablement.

It was necessary to check all of the data by running it through edit programs that tested the items in the various records for valid data. A record with seemingly invalid data was rejected and printed on an error list and referred to the contributing company for review and correction.

The development of edit programs, the actual testing of the data, and the correspondence with the contributing companies required a considerable amount of time.

MR. KNORR: Section D of the appendix of our Committee Report contains more detail about the consistency of DTS data with other sources of data. Software is available to calculate any additional DTS values. The incidence and termination rates are consistent with Society of Actuaries' published claim cost data and group LTD data.

The most important results are the impact on the reserves, since this is proposed to be a valuation basis.

Disabled life reserves are simpler since most of the variables disappear in the first year. The Chart A examples assume that the person was forty-seven years old at disablement and compare the current standard, the 1964 CDT and 3 percent interest with the DTS Male Experience Table at 3 percent interest. For these four benefit periods (lifetime, to age sixty-five, five years, and two years) it is clear that the DTS produces much stronger reserves except for a lifetime benefit period at older ages (since the DTS male ultimate termination rates are greater between ages seventy and ninety-five).

We are not recommending a 3 percent interest rate, but one that is currently close to 6 percent. Here the strengthening in reserves from CDT to DTS is not as drastic. Now the to-age-sixty-five benefit period reserve drops below the CDT, as shown in Chart B.

On the other hand, if the claimant is a female (Chart C) stronger reserves are held. This is only an example for forty-seven-year-olds, so you might wish to try your own age assumption.

Let's assume that a twenty-seven-year-old is issued a level premium policy for a one hundred dollar monthly benefit to age sixty-five after a thirty-day waiting period. (See Chart D for a male Class 2.) The claim costs for such a person are expected to increase with age then dip in the late fifties. The difference between the claim costs and the net level premium is the source of the active life reserve. The claim costs for most ages are greater for DTS making the net premium greater. The greater slope in the early years of the claim costs results in greater DTS active life reserves in the earlier years (Chart E).

Again the DTS Experience Table combined with the 1958 CSO with 3 percent interest is not the recommended standard. Chart F compares the 1964 CDT (with 1958 CSO mortality and 3 percent interest) to the DTS valuation table (with 1980 CSO mortality and 6 percent interest). The difference in net level premiums has been cut in half. The valuation margins increased the premium by 11 percent, the 6 percent interest decreased it by 25 percent and the mortality table had virtually no effect. Net level premiums for issue ages thirty-seven and forty-seven were added to this. The slope of DTS claim costs are less than the CDT's, resulting in smaller active life reserves (Chart G) for higher issue ages, and reserves that are close to the CDT's at age twenty-seven.

If a two year benefit period is used (Chart H), the net level premiums are less than the CDT's and the active life reserves are lower (Chart I).

For females (Chart J) the net level premiums are much greater and claim costs are much different from the CDT's. Chart K shows that the active life reserves are greater for issue age twenty-seven but less than the CDT for issue ages thirty-seven and forty-seven. For anyone selling disability insurance to women in their forties, notice the claim costs in Chart J peak in the early fifties. The DTS net level premiums are not enough to pay the claims in the first few policy durations. Therefore, active life reserves are negative. A reserve of zero ought to be held.

Chart L versus Chart D demonstrates that there is a big difference in the slopes of the Class 2 and Class 1 claim costs. Class 1 will not require active life reserves (Chart M) as strong as the CDT's.

Class 3 (Chart N) goes in the other direction but active life reserves still seem close to the CDT (Chart O).

In general, the DTS will produce smaller active life reserves unless your sales are heavily concentrated in the younger ages.

MR. OLSEN: The DTS Experience Table was developed from exposures of the mid to late 1970s. The claim experience up to about 1976 was relatively poor but improved thereafter. The DTS Experience Table is, therefore, on the conservative side relative to the good claims experience of the early 1980s.

It is not feasible for a valuation table to be so strong as to cover the worst possible experience of all companies. Nevertheless, there should be small margins to give some assurance of reserve adequacy for the most likely unusual occurrences.

The adverse part of claim experience during the 1970s was caused mostly by the prolonging of early claims, rather than by higher incidence rates. Increasing the claim incidence rates by the same percentage for all ages would increase active life policy reserves by that percentage but would not affect claim reserves. Increasing the claim incidence rates was not considered the right way to add a margin.

Decreasing the termination rate by a percentage during the early influential months of a claim will add a margin to most active life reserves as well as increase all of the claim reserves in the early durations where it is really needed. The margin included in the new table takes care of a possible 5 percent adverse deviation from normal claim termination rates during the first year of disablement. This could arise gradually before the trend was recognized or the cause identified.

Active life reserve margins will be from 5-10 percent, and claim reserve margins will be about 10 percent in the first two months of disablement. The claim reserve margins will decrease each month and disappear by the eighteenth month.

MS. KATHLEEN BURT: Just as this committee was completing work on termination rates, my concern was developing adequate group LTD reserves at Standard Insurance Company. The 1964 CDT was recognized as inadequate for claim reserves which meant that we didn't have any safe harbor during state insurance department examinations. Now we have a reserve table that we're comfortable with and is acceptable to the state insurance departments, but we might have to convince the IRS that our reserves are not excessive.

The DTS is based on individual experience for the first two years of disability and group experience for durations three through eight. For durations three through eight, the DTS claim termination rates are very close to the group LTD rates for 1975-79 as published in the TSA Reports. The differences appear to be fluctuations in the group LTD rates (since they are crude rates based on a limited amount of data) rather than actual differences in the underlying terminations. The largest volume of claims for the group LTD experience is for males age fifty to fifty-nine with a six-month elimination period. Here the crude group LTD termination rates are fairly smooth, and the fit with the DTS is quite good.

For the group claims in the TSA Reports, the DTS provides adequate reserves for durations after two years, but not for the first two years of disability. At Standard, we will be adjusting the DTS by reducing the termination rates to get our group claim reserves at an adequate level. We will use termination rates as low as 50-60 percent for the first year of disability and grade to 100 percent of the DTS after the second year of disability.

Adjusting the termination rates provides the best way of adjusting reserve factors. In the past we had adjusted the 1964 CDT by simply multiplying the reserve factors by a percentage. This is acceptable for small adjustments but for the first six months of disability we were increasing reserves by more than 80 percent. Adjustments this large can create discontinuities between durations within the table and can also produce factors which don't make sense - such as a reserve factor greater than six for a claim with six months remaining in the benefit period. With the software that will be available, it should be easy to adjust reserves by adjusting termination rates.

Since we will be making large adjustments in termination rates for the first two years of disability, we feel justified in ignoring some of the refinements that have been incorporated in the DTS for individual reserves. Some of the variables drop out after the first year of disability. Class is only important in the first thirteen weeks, elimination period for only six months, and accident versus sickness for only twelve months. For our group disabled life reserves, we'll probably just be using sex, age, and duration in determining reserve factors.

With group we do have another factor that affects reserves: the varying treatment of deductibles. Our reserves are based on the assumption that claimants will get deductibles that they are currently pursuing. If someone is pursuing social security, we reserve the claim based on a monthly benefit that has social security subtracted out. Some carriers don't consider a deductible in reserving until the deductible is actually received, so when a social security deductible is received, a substantial reserve is released. Carriers that reserve this way can use higher termination rates in determining the reserve factors because this conservative treatment of pending deductibles will give them higher reserves.

MR. KIDWELL: A table using 50 percent of the ninety-day DTS termination rates in the first year of eligibility; 75 percent in the second year; and the full termination rates in subsequent years will reproduce the group LTD material very closely.

MR. TAYLOR: Our committee has been quite innovative in applying mathematical techniques that have confused even some of our members, but the result is a family of tables which are simple to use and analyze, considering the number of variables involved. We hope the following innovations will make it even simpler:

1. Rather than publish monetary values, the Society of Actuaries will distribute computer software to support the implementation of the new tables. A modest fee will cover some or most of their cost. The complete package is not yet ready. It will include complete documentation and source language listings.
2. The Society is distributing, on a complementary basis, software for your evaluation of the exposure draft of our report. We also hope that you'll provide us some feedback on that software. It certainly is more than adequate to support your review of the report but a long way from being adequate to support the implementation.

3. In the past, the Society of Actuaries has published detailed specifications for fixed point calculation of monetary values, the execution of which constituted the official values. We're recommending that the FORTRAN program using floating-point arithmetic be the official specification and that the results of the execution of that FORTRAN logic on any acceptable computer be acceptable values. If you use different computers with different floating-point arithmetic, you can get some very minor differences depending on levels of rounding.
4. The software that is being distributed will run on IBM or IBM compatible personal computers. The software in the final distribution is in FORTRAN.

On the diskette there's a program called DTS. In this particular form, conversationally, you can hit the control P on your keyboard and automatically get a copy of everything you see on the screen. The whole point of the conversational mode is that you get a question mark as a prompt, the only prompt you ever get. When you get the prompt, you have three choices. You can ask it to build a new table, do calculations (any one of the seven on the table you have), or quit. When starting the only logical choice is to build a table. Then you enter a string of numbers which are all explained in the documentation. The string is interpreted; if it is invalid, you will get a reject saying that you gave the computer inconsistent information. Otherwise, you will get an English translation of the code telling you the results of what the computer did. This is the form you'll want to use when you get the diskette just to become familiar with it. If you want any significant amount of calculations use it in "batch" mode.

To execute this program in "batch," type "DTSA" and follow that with two words. The first word tells the computer where it is going to get its input. The second word tells it where it is going to put its output. The input would normally be from a file and the output the printer, although you may want to put the output to a file.

The other thing on the diskette is the object module for everything in the package except for the calling program which is called "DTSCALL." For that module, you have the source code. "DTSCALL" provides the communication with the subroutine package which does the calculation. You also have a batch file which will recompile "DTSCALL" and link edit the whole package over again. So you can go into the FORTRAN source, change it, and make it do whatever you want it to do. Eventually when we distribute software, you will not be tied down to any particular FORTRAN. It will be FORTRAN 77 with comment cards to get to G level FORTRAN if you need to. We're now just distributing object code which doesn't allow you to mix different FORTRAN compilers. So you will need access to Microsoft FORTRAN for this exposure period to modify the program to do what you want. Be sure you have a security copy of the diskette because the revised

program is also going to be called DTS, and it will wipe out what you have on the disk.

MR. PAUL BARNHART: In 1971 when my paper on disability income tables was published, I used what I described as a functional method. I appealed to the profession to see what other techniques might be developed. A little later when John Miller came out with his papers on a disability model and a disability termination study, he introduced a graduation method similar to Gompertz' Law. That is what is still being used in the ultimate part of the DTS Table. Mr. Miller also introduced an alternate kind of functional method and now yet another technique is introduced in the form of parametric construction.

The other committee I'm working with on proposed new minimum valuation standards for health insurance is a subcommittee of the American Academy of Actuaries Committee on Health. The NAIC, through its actuarial task force, has given this committee the specific charge of developing recommended new minimum valuation standards. What we're expecting to recommend departs a little from the recommendation in the DTS exposure draft.

One difference concerns the question of the mortality table. We are simply going to recommend that a mortality table permissible in the valuation of currently issued whole life insurance would be permissible in the valuation of active life reserves for disability policies issued in the same year. The effect of this is that the 1958 CSO table is permissible up until about 1989. The 1980 CSO table is either already permissible or will be soon in most of the states. Our approach is more permissive over the next four or five years. The mortality table used has very little effect on the reserve values and this struck us as a matter of minimal importance as long as it is reasonable. It is useful to have this permissive period when the 1958 CSO table or the 1980 CSO table can be used. Both committees are agreed that an ultimate table should be used. There isn't any reason to use a select and ultimate table.

Another difference is the interest rate. A totally dynamic approach to the interest rate is of far less importance in disability income reserves than it is in life. For a lot of companies, having to deal with changes in the interest rate would be more of a nuisance than anything else. Over the last several years, 3.5 percent was the maximum rate, then 4 percent, then 4.5 percent, and now 6 percent. This is unnecessary for valuing disability income policies. It would be more practical if the industry had a specified maximum interest rate. We recommend 5 percent as the maximum interest rate. Our committee is working on new minimum valuation standards for health insurance generally, not just disability income.

For the first two years of disablement the present standard for claim reserves does not require that you use company experience it simply permits it. You may use tabular reserves, reserves based on company experience, or reserves based on other assumptions. The only requirement is that the results should be adequate and appropriate. It

had been my own opinion when my committee first started discussing this that the period should be shortened from two years to one year or less because a lot of companies have found that in using their own experience or some average factor method, they've had to make an abrupt adjustment when they come to the two year point where the 1964 CDT is the standard. If you have to go with the tabular standard at twenty-four months you really have to grade to tabular reserves at that duration.

The question of when one should be permitted to depart from the tabular basis has a lot to do with how many claims there are to value. For example, thirty active claims are a small population with which to use a tabular reserve standard. The valuation on a claim by claim judgement basis would be more realistic, considering cause of disability and prognosis. If a small company has only a few open disability claims, I'm not sure they should ever be content relying solely on a tabular standard. Small companies may have a big decision to make concerning this table.

The report also points out that a small company, particularly one growing aggressively, that hasn't had much chance to analyze its ongoing disability experience, may have a difficult time trying to decide what is prudent so far as valuing its active life and disabled life reserves. Large companies have one assortment of considerations and small companies with a very small block of business have a different set of considerations.

Another consideration in deciding when to depart from the tabular basis is length of the benefit period. For example, if the standard requires tabular reserves at twelve months, there probably is no point in applying that to a two-year maximum benefit period, since there's only a year left to run anyway.

What should we do when reviewing the exposure draft? First, compare the results of using the DTS table with your present reserving method. Some companies are using a percentage of the 1964 CDT for disabled life reserves. Most are simply using 100 percent of the 1964 CDT for active life reserves. The diskette will make it possible to see what kind of values this array of new tables actually produces.

You should give some careful thought to the nature of the valuation margins. The exposure draft has some comparisons of both active life reserve values and claim reserve values between the basic DTS and the loaded valuation table. That loading creates a margin in the active life reserves. However, it only creates a margin in the claim reserves over the first eighteen months. The ultimate termination rates in the DTS experience table are actually quite conservative however. Page 47 of Appendix B gives a comparison of ultimate DTS termination rates against OASDI, ordinary waiver benefits, group waiver benefits, and so on. The group and ordinary waiver benefits, are for a fairly recent period. There is also data from a Mutual of Omaha study published as a paper in the Transactions. This study of individual policies has termination rates after the tenth year that tend to run more than one-third higher than the ultimate termination rates in the DTS experience table. Also, if you track the longer term DTS termination

rates against the termination rates in the TSA Reports on group LTD, you'll see a consistent pattern of higher termination rates under group LTD extending through the ninth year. The valuation tables that I constructed earlier rely almost entirely on these group LTD termination rates. By the sixth or seventh year of disability, the DTS experience table begins to develop reserves that run as high as 120-125 percent of the reserves in my table. There is more margin than the ratios shown in the report would indicate because these ratios are of the valuation table results to the experience table results. The report comments that the Mutual of Omaha termination rates are higher and suggests that this is caused by differences in occupational class. This contradicts the conclusion drawn in the original construction of the table, that after only thirteen weeks of disability, occupational class becomes an insignificant parameter. You will all certainly want to get a feel for what you think of the valuation margins; are they adequate? are they appropriate? how would they fit your block of business?

How well will the parametric approach fit in with your valuation system? The diskette makes it easy to calculate values, but what happens when you try to use them for valuation? Would you have to completely restructure your valuation system, or could you adapt it without difficulty?

You should also give some thought to the sources used to construct the table. Do you feel those sources present any problems or demand any further discussion?

Is it practical for a company to develop an aggregate table that incorporates everything that's significant in that company's portfolio? It would require quite a bit of modeling and testing to determine whether an aggregate or blended table would be suitable. There should be minimum standard rules established for variant benefits and provisions, even though there is no credible experience on which to base them. Companies are pricing many variations on pure total disability and with guaranteed premiums. There will be a lot of important benefits in force for which there are absolutely no reserve guidelines or standards applicable. This is a problem that has not been dealt with or solved.

MR. JOHN MONTGOMERY: The Life and Health Actuarial Task Force of the NAIC is now considering the adoption of the disability tables developed by the Society of Actuaries Committee to Recommend New Disability Tables for Valuation. Such tables, if adopted, will bear the label of the year in which adopted by the NAIC. Unless serious problems with the tables are revealed by the time of the annual meeting of the Society in October, 1985, it is the intent to propose adoption of these tables at the December 1985 meeting of the NAIC. For this reason any significant reasons for not adopting such tables should be made known to the NAIC before October 1, 1985 if possible.

At the June 1985 meeting of the NAIC, the year in which the use of such tables should become mandatory will be discussed. Also to be discussed at that meeting is the optional use of the tables prepared by Paul Barnhart, previously circulated as an exposure draft of disability tables to be adopted by the NAIC.

The Society tables may have a much wider application since reserves can be distinguished by many more parameters than those using the Barnhart tables. However, the Barnhart tables may be much easier to use by small and medium-sized insurers where detailed breakdowns of disability business may not be practical. The NAIC is considering adoption of the Barnhart tables as an alternative if it can be demonstrated that in the aggregate reserves calculated by the two sets of tables are reasonably close. The NAIC may have to define what is "reasonably close."

MR. ALLEN P. MALTZ: I direct my comments to the proposal made by Mr. Barnhart to change the method by which statutory minimum LTD open claim reserves are calculated. The proposal would eliminate the ability of valuation actuaries to modify the minimum open claim reserve standard to reflect actual company experience during the first two years following disablement. I focus my attention on group LTD open claim reserves. While it is true that the proposal would not stop a company from holding reserves in excess of the statutory minimum, adoption of this proposal would establish an inadequate minimum open claim reserve standard during the early durations of disability. Since there are significant tax penalties associated with holding reserves in excess of the statutory minimums, there has been increasing pressure on actuaries to hold reserves for newly arising claims at the statutory minimum level. While I have not completed my analysis of the experience underlying the new disability table, it was mentioned during this session that the new table produces inadequate reserves for group LTD open claims during the first two years after disability. Establishing an inadequate minimum valuation standard, which would be used for tax purposes, is dangerous since it may encourage companies to hold inadequate reserves in an effort to minimize their tax liability. As a result, it is imperative that valuation actuaries continue to have the latitude to adjust minimum LTD open claim reserves to the extent they can demonstrate that actual experience justifies a modification to the published table.

DISABLED LIFE RESERVES

CDT (3% INTEREST) VS DTS EXPERIENCE TABLE (3% INTEREST)
FOR A MALE AGE 47 AT DISABLEMENT

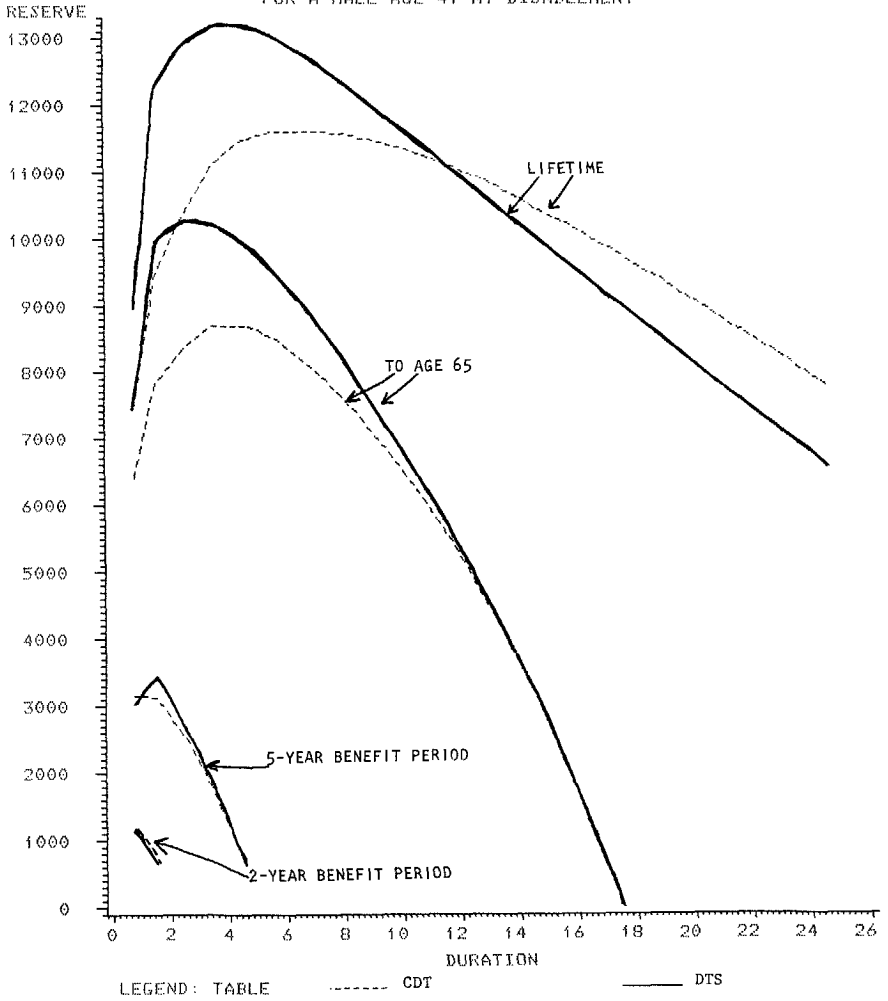


CHART A

DISABLED LIFE RESERVES

CDT (3% INTEREST) VS DTS VALUATION TABLE (6% INTEREST)
FOR A MALE AGE 47 AT DISABLEMENT

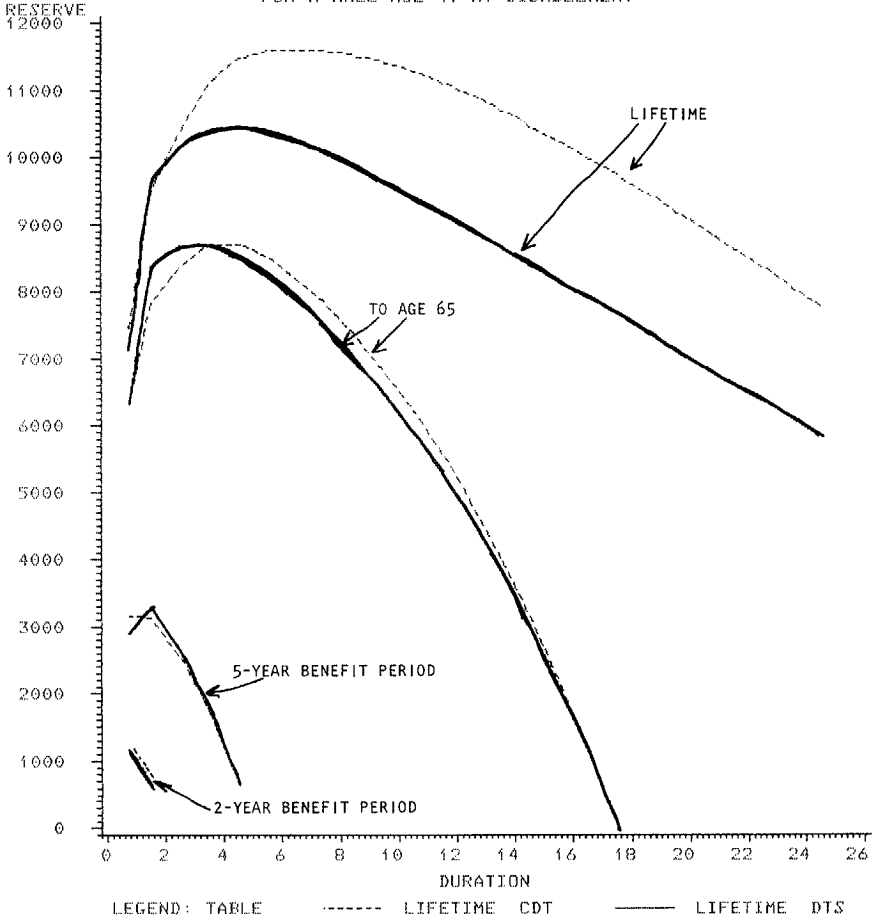


CHART B

DISABLED LIFE RESERVES

CDT (3% INTEREST) VS DTS VALUATION TABLE (6% INTEREST)
FOR A FEMALE AGE 47 AT DISABLEMENT

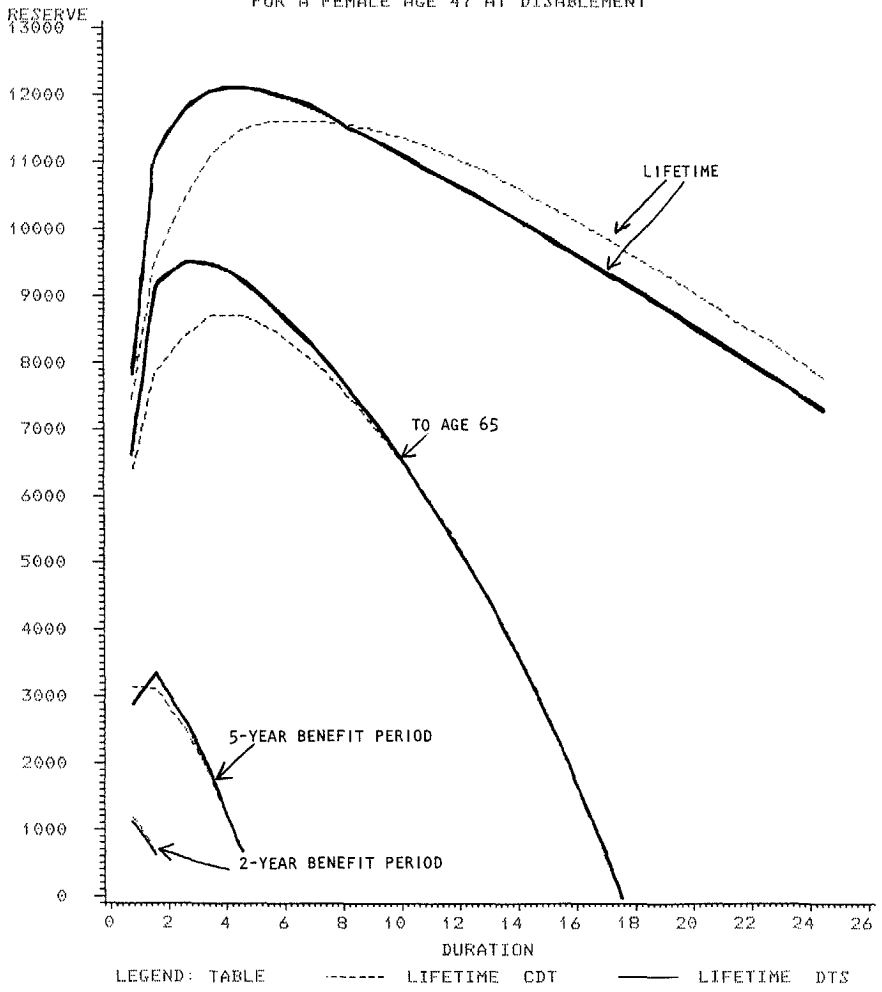


CHART C

CLAIM COSTS & NET LEVEL PREMIUMS

CDT (WITH 58 CSO 3%) VS DTS EXPERIENCE TABLE (WITH 58 CSO 3%)

CLASS 2, MALE, ISSUE AGE 27, 30D EP, TO 65 BP

ACCIDENT AND SICKNESS COMBINED

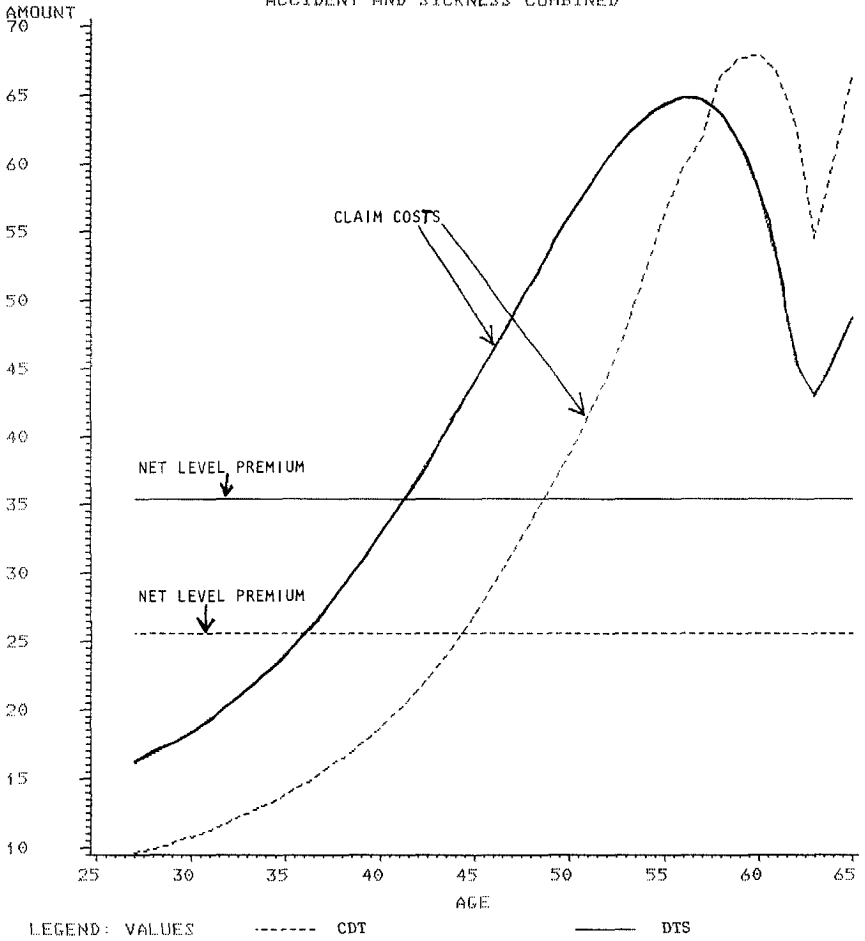


CHART D

ACTIVE LIFE RESERVES

475

CDT (WITH 58 CSO 3%) VS DTS EXPERIENCE TABLE (WITH 58 CSO 3%)
CLASS 2, MALE, ISSUE AGE 27, 30D EP, TO 65 BP
ACCIDENT AND SICKNESS COMBINED

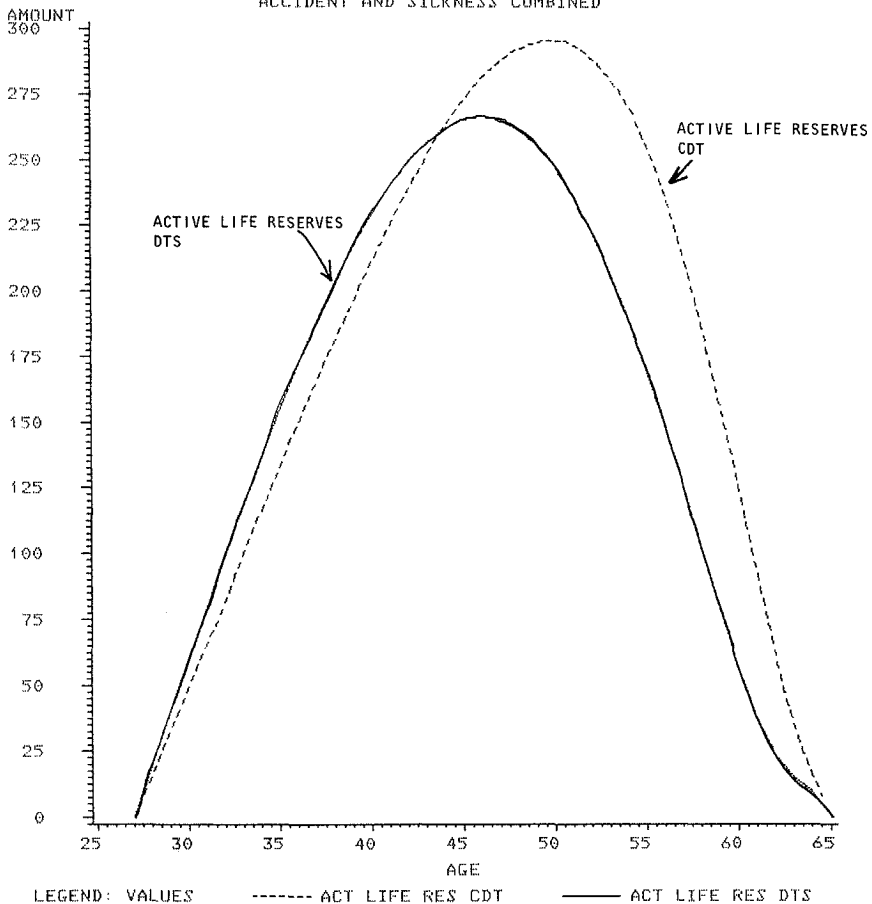


CHART E

CLAIM COSTS & NET LEVEL PREMIUMS

CDT (WITH 58 CSO 32) VS DTS VALUATION TABLE (WITH 80 CSO 62)
 CLASS 2, MALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
 ACCIDENT AND SICKNESS COMBINED

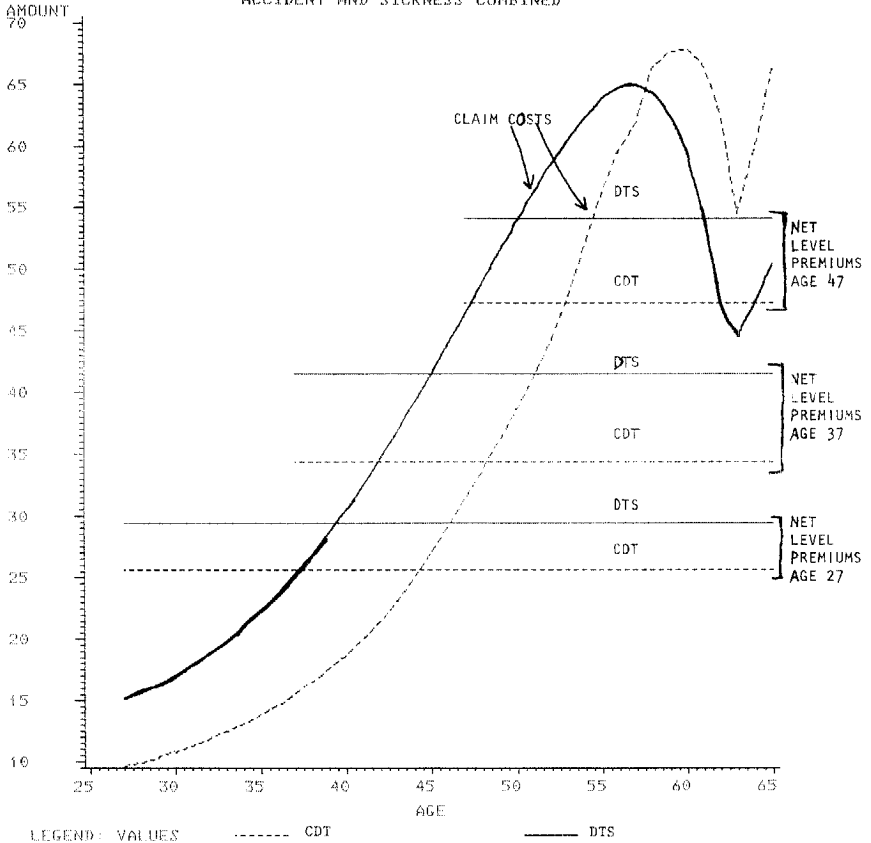


CHART F

ACTIVE LIFE RESERVES

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
 CLASS 2, MALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
 ACCIDENT AND SICKNESS COMBINED

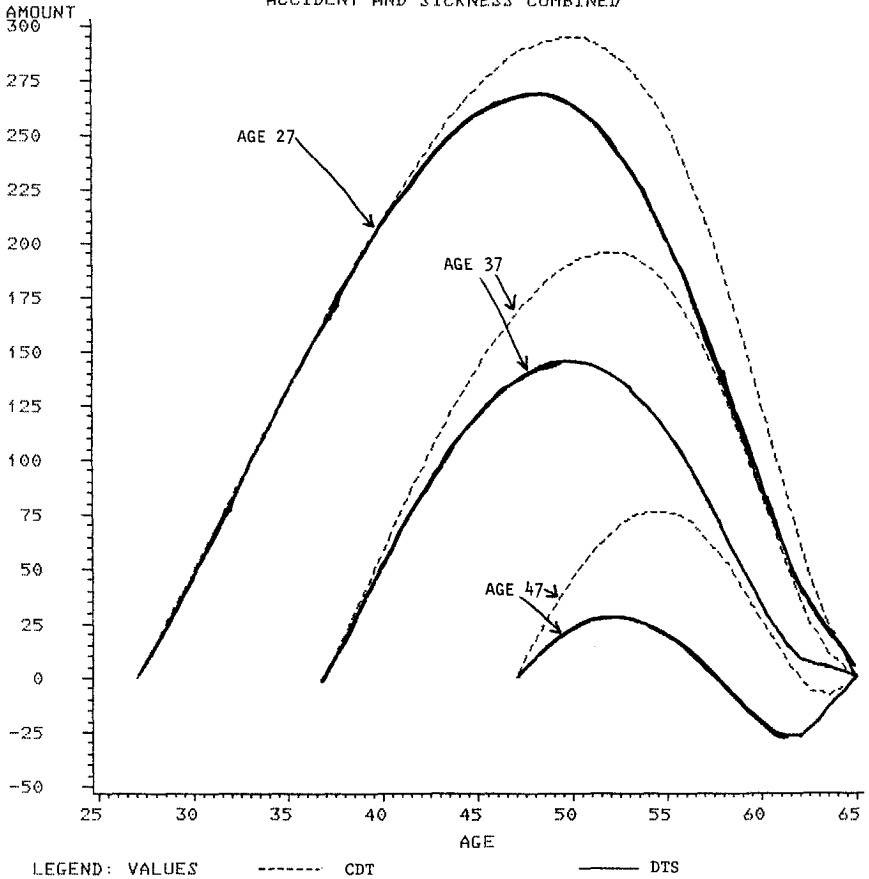


CHART G

CLAIM COSTS & NET LEVEL PREMIUMS

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
 CLASS 2, MALE, ISSUE AGES 27, 37 & 47, 30D EP, 2 YR. BP
 ACCIDENT AND SICKNESS COMBINED

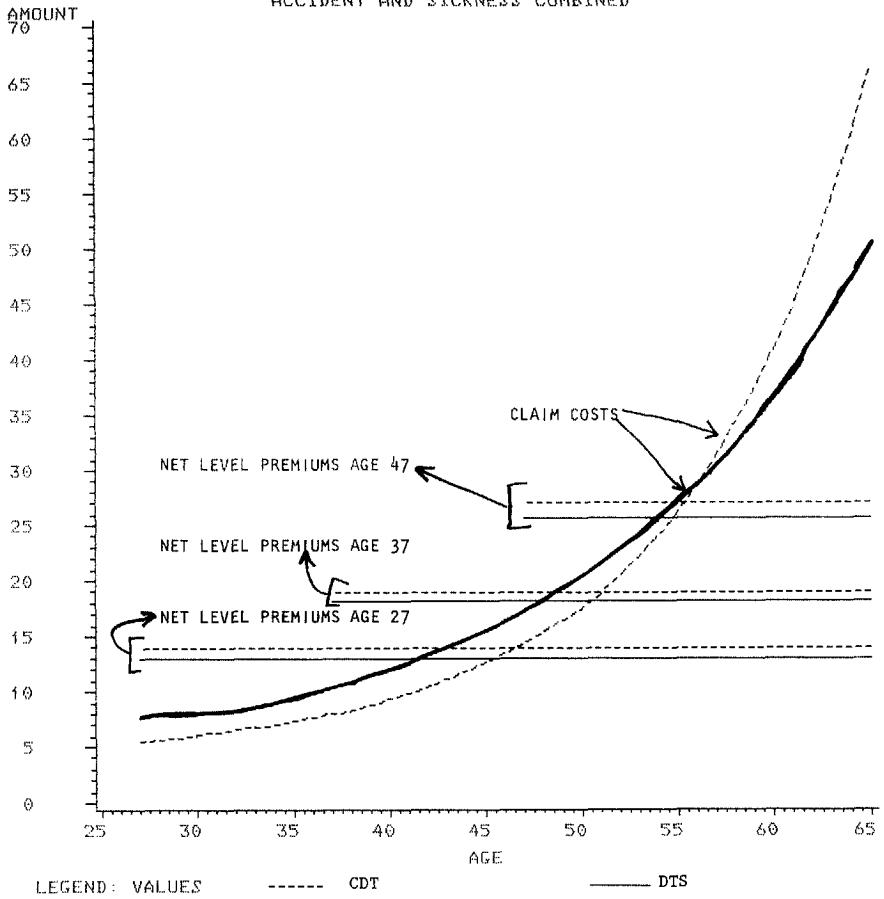


CHART H

ACTIVE LIFE RESERVES

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
 CLASS 2, MALE, ISSUE AGES 27, 37 & 47, 30D EP, 2 YR. BP
 ACCIDENT AND SICKNESS COMBINED

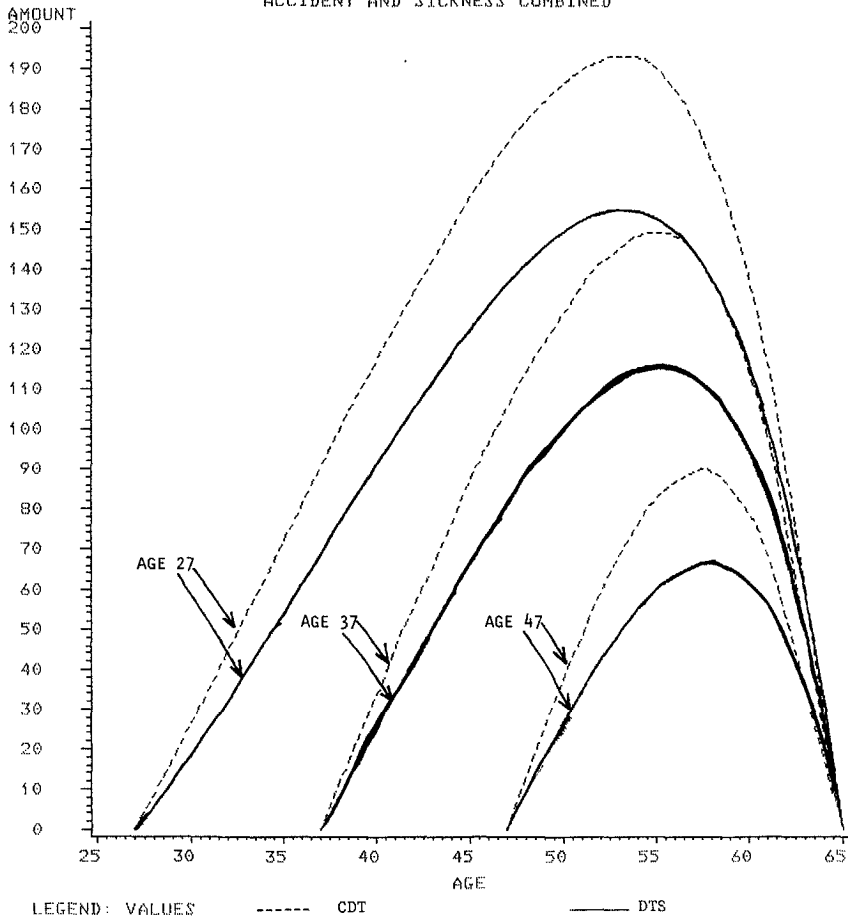


CHART I

CLAIM COSTS & NET LEVEL PREMIUMS

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
 CLASS 2, FEMALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
 ACCIDENT AND SICKNESS COMBINED

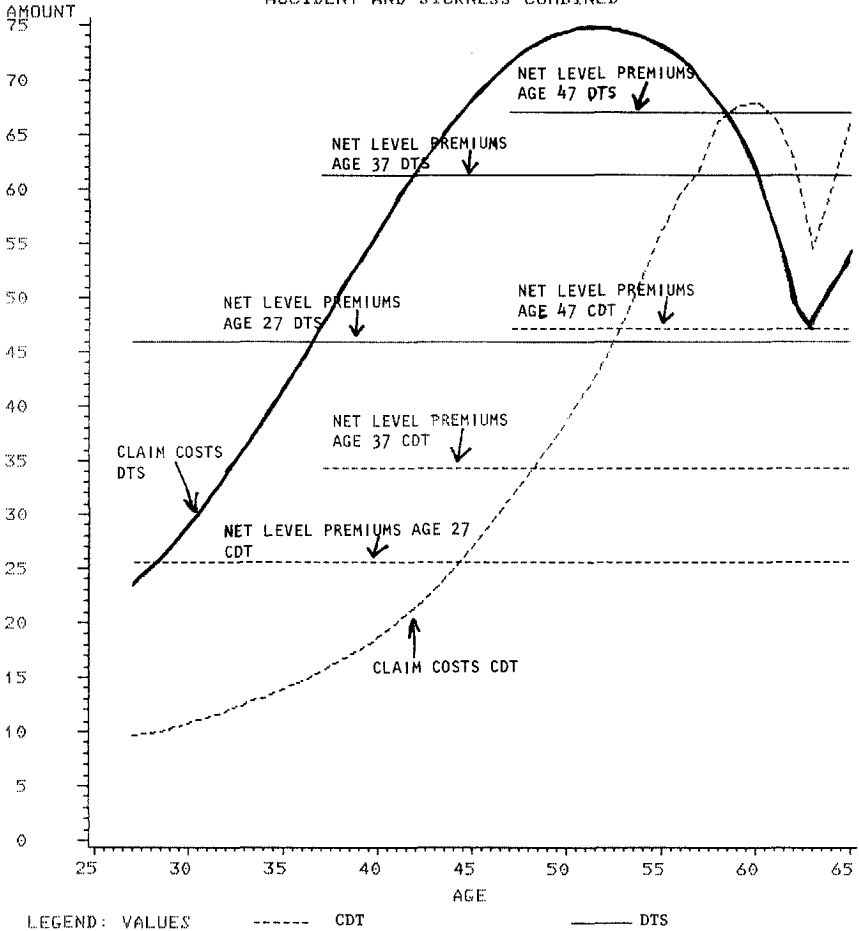


CHART J

ACTIVE LIFE RESERVES

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
CLASS 2, FEMALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
ACCIDENT AND SICKNESS COMBINED

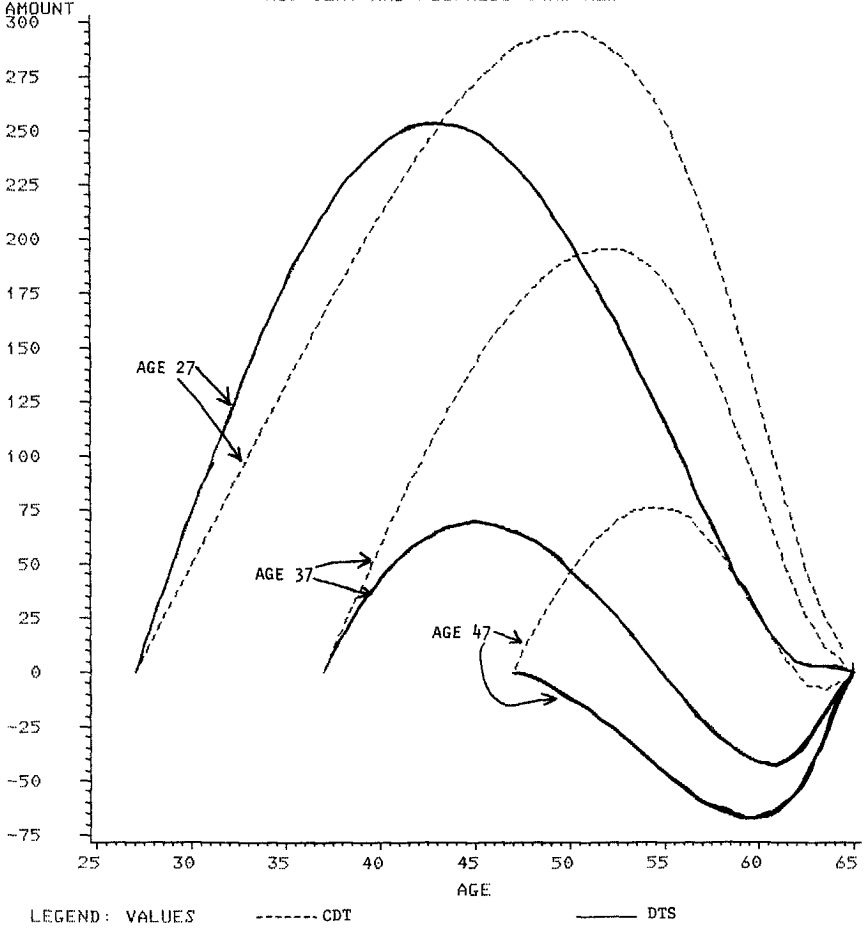


CHART K

CLAIM COSTS & NET LEVEL PREMIUMS

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
 CLASS 1, MALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
 ACCIDENT AND SICKNESS COMBINED

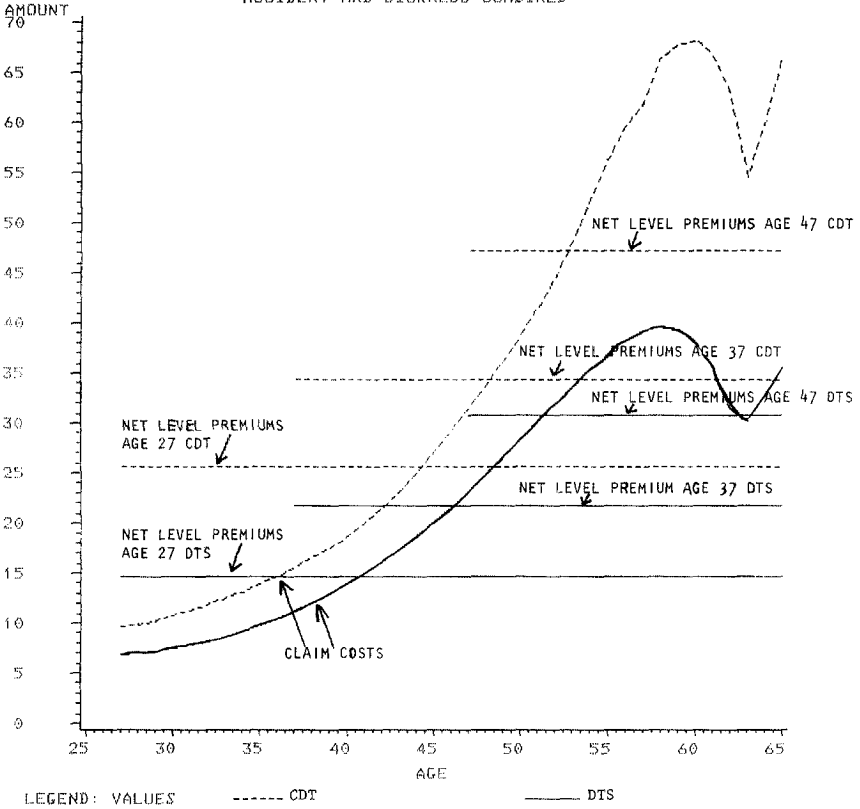


CHART L

ACTIVE LIFE RESERVES

CDT (WITH 58 CSD 3%) VS DTS VALUATION TABLE (WITH 80 CSD 6%)
CLASS 1, MALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
ACCIDENT AND SICKNESS COMBINED

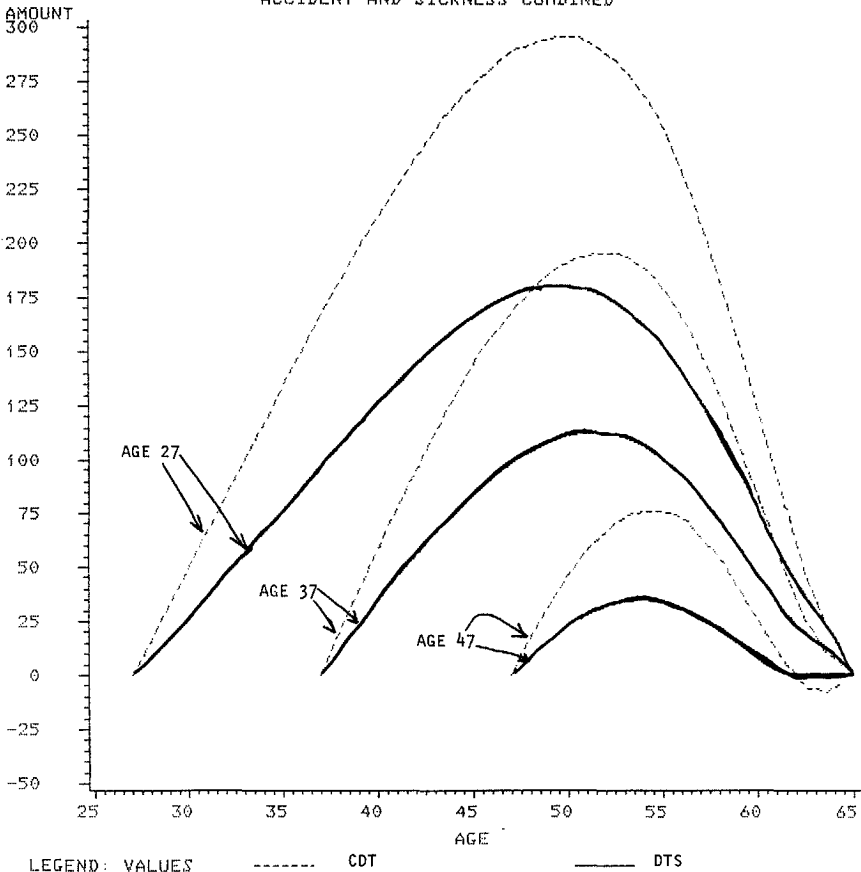


CHART M

CLAIM COSTS & NET LEVEL PREMIUMS

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
 CLASS 3, MALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
 ACCIDENT AND SICKNESS COMBINED

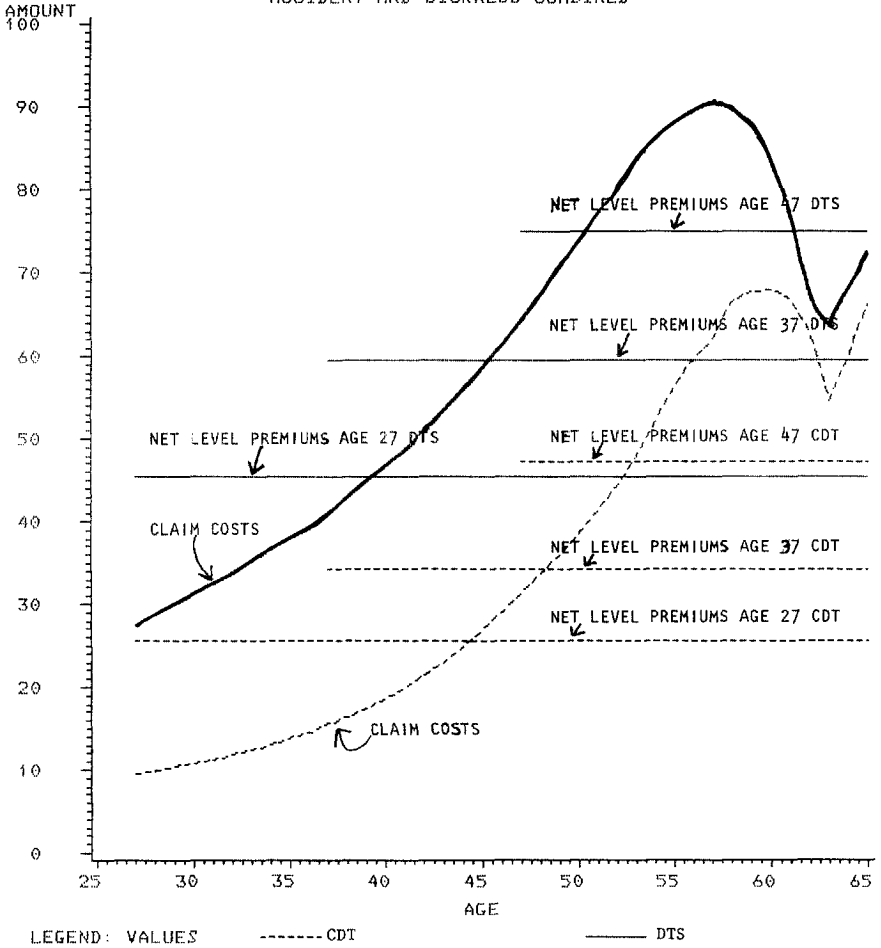


CHART N

ACTIVE LIFE RESERVES

485

CDT (WITH 58 CSO 3%) VS DTS VALUATION TABLE (WITH 80 CSO 6%)
CLASS 3, MALE, ISSUE AGES 27, 37 & 47, 30D EP, TO 65 BP
ACCIDENT AND SICKNESS COMBINED

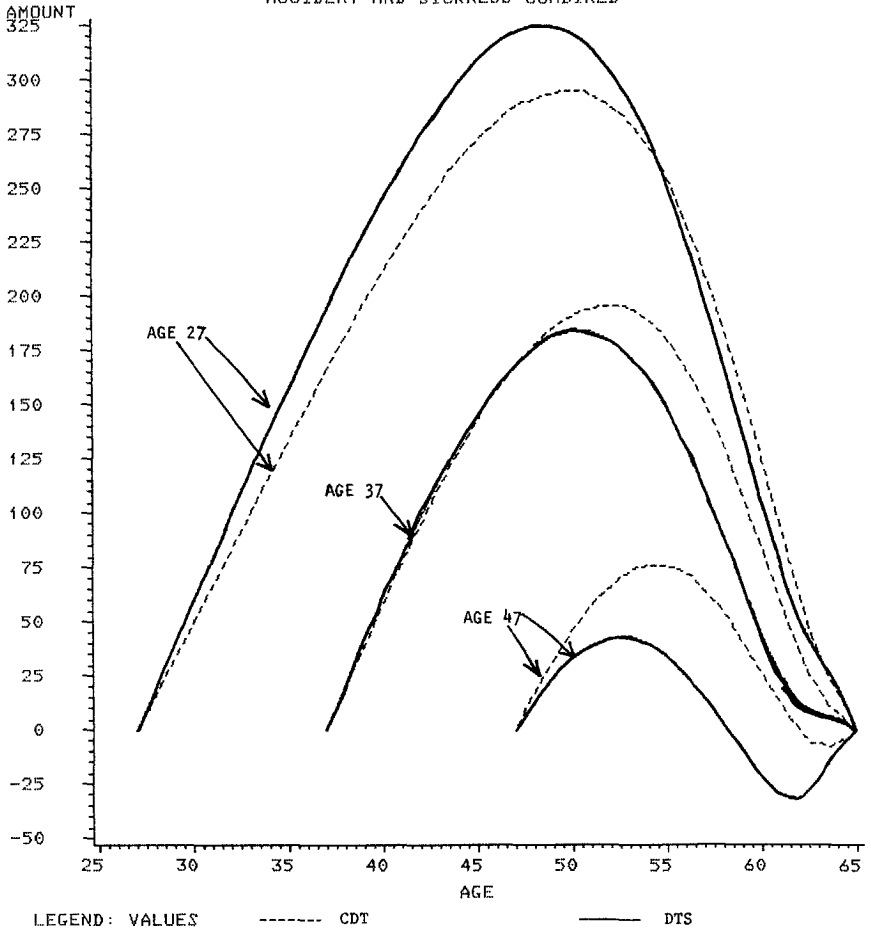


CHART O

