Continuing Care Retirement Communities

An Empirical, Financial, and Legal Analysis

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Chapter Seven
New Entrant Pricing Theory

■ Continuing care retirement communities offer contracts that last for more than one year and promise shelter and health care to their residents. In exchange for this promise, residents pay a one-time entry fee and monthly service fees thereafter, subject to periodic increases for inflation. The purpose of this chapter is to describe the application of actuarial principles for (1) estimating the total liabilities (or costs) associated with a new entrant to a CCRC and (2) funding these liabilities (i.e., determining actuarially adequate fees). The actuarial methodology described in this chapter is the first component of a three-component management tool for assessing the long-term financial implications of CCRC contracts, the other two components being discussed in Chapters 8 and 9.

ACTUARIAL LIABILITIES

The actuarial liability for a continuing care contract represents the present value of expected future costs associated with an individual during his or her residence in a CCRC. The value of this liability is dependent on several factors for any given individual: (1) demographic factors such as age, sex, health status, and the number of residents per apartment (all of which, in turn, determine the appropriate mortality and morbidity rates to be used in calculating the liability); (2) contractual factors relating to refund provisions and health care guarantees; (3) accounting factors such as expense allocations; and (4) economic factors such as inflation rates and interest rates. For a given set of facts

(such as entry age and sex) and a given set of actuarial assumptions, the resulting actuarial liability is unique and predetermined for each individual resident. Management cannot change the expected value of this liability without altering the provisions of the CCRC contract. The funding of the liability (or the setting of fees), on the other hand, can be affected by management, provided that the fees selected, on either an individual or group basis, fully meet the liability of the individual or group. Therefore, the first step in formulating a pricing policy is to accurately determine a CCRC's actuarial liabilities.

Actuarial Liability Calculation

Calculating the actuarial liability for a cohort group of residents requires the use of a closed-group (assuming no new entrants) population projection that estimates the probability of survival, by living status, to each future year.[1] The population projection is then combined with assumptions about future expenses, with expenses being proportionately allocated to surviving residents so that they pay their fair share of the cost of future services. The present value, or today's value, of this expense stream is referred to as the present value of future expenses (PVFE) and is, in fact, the actuarial liability for the group. The details of this calculation are presented in Appendix D, while a simplified example is given in Table 7–1.

The values in Table 7–1 are based on mortality and morbidity rates applicable to a female entrant at age 75.[2] Expenses while residing in an apartment unit are initially assumed to be $700 per month ($8,400 annually), while health care center expenses are assumed to be $46 per day ($16,800 annually). Both apartment and health care expenses are assumed to increase 10 percent annually, and their present values are determined using a 12 percent interest discount rate.

Columns 3 through 7 contain the values required to determine the present value of future expenses. Column 3 contains the present value of $1 payable in future years (i.e., the interest discount factor). For example, the present value of $1 payable at the end of four years is 64 cents. Another way of viewing this is that 64 cents invested today at a 12 percent rate of interest will accumulate to $1 at the end of four years.

The probability of survival over the next 20 years in either an apartment or the health care center is given in columns 4 and 5, respectively. At the end of 10 years, for example, 70.3 percent of the original group

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[1] The actuarial mathematics used to develop this model are referred to as the "multiple decrement model." For an explanation of the underlying theory, see C. Wallace Jordan, *Life Contingencies* (Chicago: Society of Actuaries, 1975), chaps. 14–16.

[2] These rates are the same as the illustrative mortality and morbidity rates given in Appendix B.

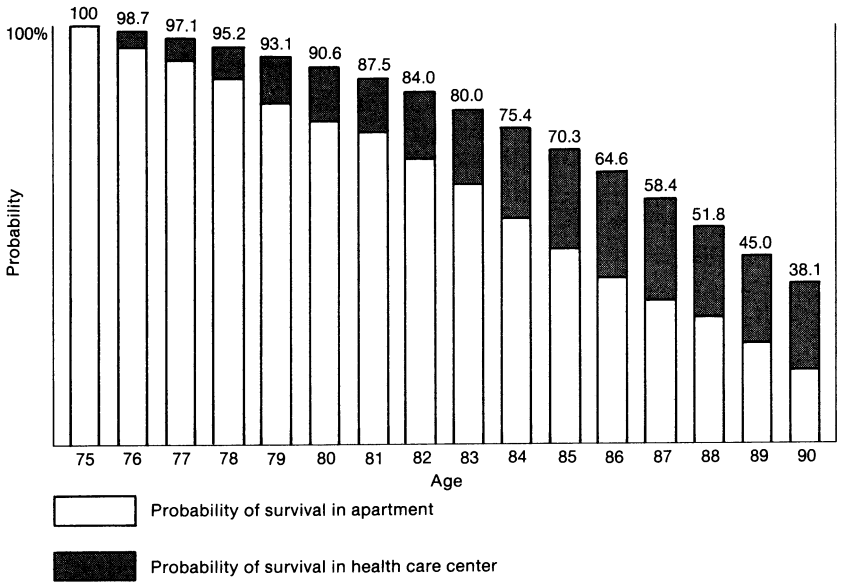
TABLE 7–1
Illustration of Actuarial Liability Calculation

Beginning of year (t)	Age	Present value of $1 promised in year t	Illustrative Probability of survival		Projected apartment center expenses	Projected health care center expenses	Present value of apartment expenses	Present value of health care expenses
			Apartment center	Health care center				
0	75	1.00000	100.0%	0.0%	$ 8,400	$ 16,800	$ 8,400	$ 0
1	76	.89286	96.3	2.4	9,240	18,480	7,942	402
2	77	.79719	92.2	4.9	10,164	20,328	7,472	799
3	78	.71178	87.8	7.5	11,180	22,361	6,991	1,187
4	79	.63552	83.2	9.9	12,298	24,596	6,500	1,558
5	80	.56743	78.2	12.4	13,528	27,057	5,999	1,905
6	81	.50663	72.8	14.7	14,881	29,762	5,492	2,218
7	82	.45235	67.3	16.8	16,369	32,738	4,980	2,487
8	83	.40388	61.5	18.6	18,006	36,012	4,469	2,702
9	84	.36061	55.5	19.9	19,807	39,613	3,962	2,854
10	85	.32197	49.4	20.9	21,787	43,575	3,466	2,934
11	86	.28748	43.3	21.3	23,966	47,932	2,985	2,937
12	87	.25668	37.3	21.1	26,363	52,726	2,526	2,860
13	88	.22917	31.5	20.3	28,999	57,998	2,096	2,705
14	89	.20462	26.1	18.9	31,899	63,798	1,701	2,479
15	90	.18270	21.0	17.2	35,089	70,178	1,349	2,198
16	91	.16312	16.6	14.9	38,598	77,196	1,043	1,883
17	92	.14564	12.7	12.6	42,458	84,915	787	1,557
18	93	.13004	9.6	10.2	46,703	93,407	580	1,243
19	94	.11611	7.0	8.0	51,374	102,747	417	960
					Sum*		$80,034	$40,170
					Actuarial Liability			$120,204

* Column totals reflect projected revenues and expenses to age 110.

of entrants are expected to be alive, of whom 49.4 percent are living in their apartments and 20.9 percent are living in the health care center. The relative change in the living status of surviving residents is illustrated in Figure 7–1. The life expectancy for this group of entrants, not

FIGURE 7–1
Probability of Survival by Living Status



shown in Table 7–1, is 13.6 years (10.6 years of expected apartment residence and 3.0 years of expected health care center residence).

Projected expenses are given in columns 6 and 7. The present value of apartment expenses, which is the product of (1) the interest discount factor (column 3), (2) the probability of survival in the apartment center (column 4), and (3) projected apartment center expenses (column 6), is given in column 8 and sums to $80,034. The present value of health care expenses, equal to the product of columns 3, 5, and 7, is given in column 9. Its sum is $40,170. Hence, in this example, the total PVFE, or actuarial liability, for an age-75 female entrant is $120,204.

The preceding example is a simplified illustration of the actuarial liability calculation. For an actual case, the liability would include the costs of both temporary and permanent health care utilization and would recognize that some expenses (e.g., capital assets) may necessarily be part of the projected expense stream for a limited time period or may increase more slowly than the assumed inflation rate. The subsequent tables presented in this chapter are based on a more realis-

tic calculation using assumptions presented in Appendixes B and C. The derived actuarial liability for an age-75 female entrant is $151,951.

Demographic Factors

Since demographic factors (age, sex, health care, and couple status) affect the mortality and morbidity assumptions used to develop the probabilities of survival, the PVFE varies according to these factors. For example, since younger entrants are expected to live longer, their PVFE at entry is larger than the PVFE for older entrants. Females are expected to live longer than males, as well as require more health care, and therefore their PVFE is higher than males at the same age. The PVFE for a couple, even though less than the sum of two single-entrant PVFEs, is larger than that for a single entrant, since a couple is expected to occupy an apartment longer and to experience twice the health care costs of a single resident. The impact of variations in health status is not as straightforward. While less healthy entrants will require more health care and thus incur higher costs, their shorter life expectancy might offset this increase.

The relative impact of age, sex, and couples on the PVFE, or actuarial liability, at entry is shown in Table 7–2. With regard to the age

TABLE 7–2
Illustration of Age, Sex, and Couples on Actuarial Liabilities
(age-75 female actuarial liability = 100 percent)

Entry age	Female	Male	Couple
70	118%	97%	178%
75	100	82	153
80	81	67	126

dimension, the PVFE changes by 15–18 percent for each five-year age interval, or an average of about 3 percent per year. The change is the same for couples (where both entrants are assumed to be the same age) as for single entrants, or 16 percent [(178 ÷ 153) − 1] per five years. Along the sex and couple dimension, the PVFE for age-75 females is approximately 22 percent [(100 ÷ 82) − 1] more than the PVFE for males, while a single female entrant has a PVFE approximately 35 percent [1 − (100 ÷ 153] less than that for a couple. It should be noted that even though there may be a specific relationship among PVFE's with regard to demographic factors, as well as other cost determinants, it does not necessarily follow that fees must exhibit these differentials. Fees, as illustrated later, can be developed to match a wide range of

management objectives. The only restriction must be that the aggregate fees for all residents must equal their aggregate PVFE.

Contractual Factors

One way that management can alter the actuarial liability associated with a new entrant is by changing the contractual provisions. Two commonly modified areas are the health care guarantee and the refund provision. While it is true that the total actuarial liability faced by an individual resident is the same regardless of the type of health care guarantee offered, the portion faced by the individual himself versus the amount faced by the community is affected by the CCRC's health care guarantee. An example of this effect is given in Table 7–3.

TABLE 7–3
Illustration of Alternative Health Care Guarantees on Actuarial Liabilities
(extensive guarantee for each age = 100 percent)

Entry age	Co-pay provision		
	0%	25%	50%
70	100%	90%	82%
75	100	90	81
80	100	90	79

The relative change in the liability faced by the community for a 0 percent, 25 percent, and 50 percent co-pay contract is given in Table 7–3 for female entrants ages 70, 75, and 80. Under a co-pay provision, the resident pays a percentage of the per diem health care charge in addition to his or her monthly fee while utilizing the health care center. For example, if the per diem charges are $46, the resident would pay $11.50 per diem under a 25 percent co-pay contract and $23 per diem under a 50 percent co-pay contract.[3]

This table shows that, as a percentage of the 0 percent co-pay provision (or extensive guarantee), a 25 percent co-pay contract reduces the total actuarial liability (apartment and health care combined) by 10 percent. A 50 percent co-pay contract reduces the total liability by 20 percent. The trade-off in offering a limited health care guarantee is that the community may experience an increase in its financial aid liability if

[3] A comprehensive discussion of the relative costs of health care guarantees is presented in Howard E. Winklevoss and Alwyn V. Powell, "Retirement Communities: Assessing the Liability of Alternative Health Care Guarantees," *Journal of Long-Term Care Administration 9,* no. 4 (Winter 1981) pages 8–33.

the financial requirements at admission are not strengthened, and such strengthening may, in turn, restrict the market of potential CCRC residents. The financial aid liability is not easily quantified; however, it is an important consideration in analyzing the risks of a specific guarantee since communities rarely terminate a contract due to the resident's inability to pay fees.[4]

Entry fee refund provisions at death or withdrawal are often used as a marketing tool to promote an "open door" effect for residents. However, liberal refund provisions increase the actuarial liability.[5] The expected increase in net entry fees (i.e., entry fees associated with no refunds) for several refund provisions is given in Table 7–4. Column 2 contains the increase for 100 percent death refunds for 1 to 25 years, while column 3 shows the effect for a prorated refund. For example, the cost of a 100 percent entry fee refund for five years is 11.3 percent of the initial entry fee, while the cost of a prorated refund is 5.5 percent. Columns 4 and 5 show the entry fee increase associated with withdrawal refunds. These costs are substantially less than death refunds only because the probabilities of withdrawal are assumed to be less than death rates. Alternative withdrawal assumptions may affect these ratios dramatically.

Accounting Factors

Accounting factors refer to management decisions regarding the allocation of future expense values used in the PVFE calculation. These decisions include the methodology used for *expensing* fixed assets (actuarial versus accounting methodology), the *allocation* of aggregate expenses to individual residents, and the *timing* of when expenses are assumed to occur for the replacement of equipment and furnishings, the generation of reserves for future building refurbishments, and the eventual replacement of the current facility. Management decisions on each of the accounting factors must be somewhat subjective, there being no specific guidelines for such decisions.

Actuarial versus Accounting Methodologies. The basic issue here is whether the method used for financing a fixed asset should be a factor in determining the expense stream associated with that asset. Actuarial expenses for a fixed asset are determined such that the present value of those expenses equals its cost. For example, if an asset cost $15 million and is assumed to have a useful lifetime of 40 years, the annual actuar-

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[4] Results of the survey conducted for this study indicate that none of the surveyed communities had ever terminated a contract so long as the resident did not willfully dissipate his or her financial resources.

[5] Actuarially, the refund can be any value even though traditionally it is based on the original entry fees.

TABLE 7–4
Illustrative Relative Increase in Entry Fees for Alternative Entry Fee Refund Provisions
*(age-75 female entrant)**

Refund period (years)	Increase in entry fee for death refunds		Increase in entry fee for withdrawal refunds†	
	100 percent refund	Prorated refund‡	100 percent refund	Prorated refund‡
1	2.2%	1.1%	0.9%	0.5%
2	4.4	2.2	1.7	0.9
3	6.7	3.3	2.4	1.3
4	9.0	4.4	3.0	1.6
5	11.3	5.5	3.9	2.3
6	13.8	6.6	3.9	2.3
7	16.3	7.7	4.3	2.5
8	18.9	8.9	4.6	2.8
9	21.6	10.0	4.8	3.0
10	24.3	11.2	5.0	3.1
11	27.0	12.3	5.1	3.3
12	29.7	13.5	5.2	3.5
13	32.3	14.7	5.3	3.6
14	34.8	15.9	5.4	3.7
15	37.0	17.0	5.4	3.8
16	39.0	18.1	5.4	4.0
17	40.7	19.2	5.4	4.0
18	42.1	20.3	5.5	4.1
19	43.1	21.3	5.5	4.2
20	43.9	22.2	5.5	4.3
21	44.4	23.1	5.5	4.3
22	44.8	24.0	5.5	4.3
23	45.1	24.7	5.5	4.4
24	45.2	25.5	5.5	4.4
25	45.3	26.2	5.5	4.5

* The values given represent the amount by which entry fees would have to be increased to cover the cost of expected refunds, based on an age-75 female entrant.

† Withdrawal rates are assumed to be 1 percent per year regardless of age, sex, and length of stay in the community.

‡ This provision means that the amount refunded is prorated over the time period given; thus, a prorated refund over five years implies that 20 percent is deducted annually.

ial expense would be $1,625,000 ($15,000,000 ÷ 9.23303, where 9.23303 is the present value of $1 payable at the beginning of each year for 40 years). The actuarial expense methodology generates the same expenses for a fixed asset irrespective of its financing. The rationale for this is that the asset provides the same services to the community and, therefore, is consumed in the same fashion by residents irrespective of the method by which it is financed. The accounting expense methodology, on the other hand, generates expenses that vary according to the financing method (the depreciation expense is fixed, but the interest

expense varies). This implies that the PVFE derived from accounting methodology differs, depending on the financing method, a concept at odds with the true economic expense of the asset. The actuarial expensing methodology is used to develop the numerical illustrations presented in this book.

Expense Allocations. Two sets of allocation factors are required in developing actuarial liabilities. The first set is used to distribute aggregate expenses between the apartment cost center and the health care cost center (if the community offers both personal care and nursing care, a further allocation is required). The second set is used to indicate the portion of each cost center's expenses that vary on a per capita basis versus a per unit basis (square footage). These allocation percentages may be difficult to derive precisely, requiring some judgment by management.

Table 7–5 contains the relative cost differentials for a single entrant to a studio unit, a one-bedroom unit, and a two-bedroom unit. This

TABLE 7–5
Illustrative Comparison of Actuarial Differentials for Three Apartment Types *(age-75 female entrant)*

Apartment type	Ratio of present value of future expenses for one- and two-bedroom units to studio units		
	Capital costs	**Operating costs**	**Total costs**
Studio	1.00	1.00	1.00
One bedroom	1.28	1.09	1.18
Two bedrooms	1.55	1.18	1.33

table contains differentials for the PVFE associated with capital expenses, operating expenses, and total expenses (capital and operating combined). For example, if a community adopted a pricing policy in which entry fees covered only capital expenses, then the one-bedroom entry fee should be 1.28 times the studio entry fee and the two-bedroom entry fee should be 1.55 times the studio fee. One-bedroom and two-bedroom monthly fees, which in this illustration are designed to cover operating expenses, should be 1.09 and 1.18 times the studio monthly fee, respectively. On the other hand, if the community employed a pricing philosophy that allocated a portion of the total PVFE to entry fees and the residual to monthly fees, then both entry fees and monthly fees for the one-bedroom unit should be 1.18 times the studio fees (column 3), while the two-bedroom fees should be 1.33 times the studio fees.

Timing of Capital Expenses. The inclusion of expenses for the replacement of capital assets poses interesting equity questions for the man-

agement of a CCRC. On the one hand, since it is not possible to predict exactly the incidence of future replacement expenditures, one might factor into the PVFE calculation a "smooth" stream of replacement expenses that anticipates future expenditures. It could be argued that this approach is not equitable to current residents, who are not likely to receive any benefit from future expenditures. The counterargument is that since current residents are using (consuming) the community's capital assets, they should replace those assets to maintain the community's attractiveness to future residents. The rationale for this argument is that residents do not have ownership rights in the community and therefore can be assessed charges to minimize its physical deterioration. Alternatively, the expenses for capital assets could be incorporated into the PVFE when these assets are actually replaced. The advantage of this approach may be its equity, since the residents who receive the benefit of the new asset fund its purchase. The disadvantage is that the resulting expense stream is not likely to follow inflation, creating an undesirable pattern of fee increases.

The numerical examples presented in this chapter are based on a smooth expense pattern in connection with replacing equipment and furnishings and with refurbishing and/or modernizing the current facility. Building replacement expenses are factored into the PVFE based on the resident's expected lifetime in the new facility. Thus, early generations will have a small value for this expense, while later generations will have an ever-increasing value. An alternative approach for building replacement (not illustrated in this chapter) is to advance-fund a predetermined portion of the estimated replacement cost. This approach will generate larger liabilities than the first method during the early years of a community and smaller liabilities when replacement is needed.

Economic Factors

The actuarial liability is significantly affected by the two economic factors of inflation and interest rates. Since inflation is used to project the cost of future services, the higher the rate of inflation, the higher will be the actuarial liability. The interest rate, on the other hand, is used to find the present value of such future costs. Thus, the higher the interest rate, the lower will be the actuarial liability. If the interest rate and the inflation rate are both increased (or decreased) by the same amount, they will have little impact on the actuarial liability because their individual effects will be offset. Therefore, the crucial economic factor is the *difference* between the two rates. Generally, the long-run equilibrium relationship is one where the interest rate is one or two percentage points above the inflation rate; however, there have been many short-term periods during which this relationship has not held.

TABLE 7–6
Illustrative Effect of Economic Factors on Actuarial Liability *(age-75 female entrant with 10 percent inflation and 12 percent interest = 100 percent)*

Inflation rate	Interest rate			
	8%	10%	12%	14%
6%	96.0%	88.9%	83.3%	78.8%
8	107.4	98.1	90.9	85.1
10	121.5	109.4	100.0	92.6
12	139.0	123.2	111.1	101.6

Table 7–6 shows the relative impact of alternative inflation and interest rates on the actuarial liability for an age-75 female entrant. As can be seen, as long as the differential between the rates is constant, the actuarial liability is minimally affected; however, when this relationship is altered, the economic factors are seen to have a significant impact.

SETTING FEES TO FUND ACTUARIAL LIABILITIES[6]

As noted in the preceding section, the actuarial liability for an individual resident, or a group of residents, is fixed for a given set of facts and assumptions. However, the fees selected to fund that liability can be structured to match a wide range of criteria set forth by management. By using the actuarial liabilities previously calculated, management can apply actuarial theory in developing fees that are both adequate and equitable on an individual, or micro, basis. This means that fees would vary according to the resident's age, sex, health status at entry, apartment type, year of entry, and so forth. Alternatively, management may desire to offer a less complicated fee structure, choosing to socialize, or share, costs among all residents. For example, fees may vary

[6] The funding discussion is based on the assumption that fees are set to cover *expected* liabilities (i.e., those liabilities that will accrue if experience exactly follows the actuarial assumptions). In practice, the so-derived fees, or "pure premiums," would be increased either implicitly or explicitly to recognize the potential for larger liabilities due to the uncertainty of the underlying assumptions. Implicit or explicit adjustments are referred to as contingency factors. An implicit contingency factor means that more conservative assumptions (as compared to one's best estimate) are used to generate actuarial liabilities, thus producing higher fees. An explicit contingency factor means that the pure premiums are increased by an explicit amount based on a statistical estimate of the potential variation in the expected liability. An example of an explicit contingency factor calculation for a group of residents is given in Chapter 8 in the discussion of the buffer fund method used to deal with financial gains and losses.

according to the resident's apartment type and number of occupants only. In this case, management need only be concerned that fees in the aggregate, or on a macro basis, for a group of residents be adequate.

Fee Structure Objectives

Actuarial theory gives management considerable flexibility in designing the pricing structure of a CCRC. However, this flexibility may be disadvantageous in the sense that there are no prescribed guidelines or objectives for developing fees. Without guidelines and objectives, management may not be able to explain (or defend) changes in fees to residents. Two logical and desirable goals for setting fees that will both provide guidance to management in adjusting fees and allow it to defend such adjustments to residents are discussed below.

Group Equity. On a macro level, this goal requires that the pricing structure for a cohort group of new entrants be self-supporting. In other words, the total revenues anticipated from a group of entrants should cover the total expenses anticipated for the services provided to them by a CCRC. A pricing structure meeting this objective ensures that the fees associated with future groups will not be needed to pay for the services used by prior groups (assuming that the community's future experience matches the underlying assumptions). On a micro level, this objective implies that different fees would have to be charged to individual residents with different characteristics as to age, sex, health status, apartment type, and so forth. The micro interpretation of group equity, however, need not be fully implemented. Fees could vary by some factors (such as apartment type) and not others (such as age, sex, and health status). Thus, the group equity objective can be met on a macro level. Pricing structures based on the group equity concept are, by definition, actuarially adequate.

The group equity concept also has implications for the types of expenses that should be allocated to the current group. For example, one issue is whether it is equitable to include amounts for future refurbishments in the fees for current residents, since many will have died by the time such expenditures are made. Another issue is the expensing of the physical facility in such a manner that each generation pays its fair share of its costs.

The group equity concept, on either a micro or macro level, is the keystone of any actuarially sound pricing methodology. Its acceptance has manifold ramifications for establishing fees.

Inflation-Constrained Increases in Monthly Fees. The second desirable goal is to limit the annual increase in monthly fees to the rate of increase in the community's expenses (i.e., the community's internal inflation rate). Inflation-constrained fee increases are intended to insu-

late residents from the higher costs associated with increased health care utilization during the community's maturation period.

The desirability of inflation-constrained fee increases is based on the assumption that residents move to a community, in part, to avail themselves of a continuing care program that has a reasonably predictable future cost. Under this assumption, the overseers of the community have a moral and implied commitment to develop a long-term pricing strategy that is not anticipated to require monthly fees to increase faster than the community's internal inflation rate.

One important implication of inflation-constrained increases in monthly fees is that the community's fee structure will automatically build up funds to cover the future shortfall between expenses and monthly fees as the community matures and health care utilization increases. These funds represent the prefunding of future health care costs and other deferred liabilities.

Illustrative Actuarially Based Fee Structures

Actuarially adequate fees structures that meet both of the above pricing objectives can be determined by equating the present value of future revenues with the present value of future expenses for an individual entrant or a cohort group of entrants. The present value of future revenues consists of the entry fee plus the present value of future monthly fees. The general relationship between revenues and expenses can be represented as follows:

$$PVFR = PVFE^{7}$$
$$EF + PVMF = PVFE$$

where

PVFR = Present value of future revenues
PVFE = Present value of future expenses (or actuarial liability)
EF = Entry fee.
PVMF = Present value of monthly fees (inflation-constrained)

This formula can be used to determine actuarially adequate entry fees for a given monthly fee, and vice versa, once the PVFE (or actuarial liability) is calculated.

Table 7–7 contains several actuarially adequate fee combinations where the PVFE is assumed to equal $151,951. This table shows that if the community were to charge no monthly fee, then the actuarially adequate entry fee would be $151,951. Alternatively, if no entry fee were charged, the actuarially adequate monthly fee would be $1,062 (an amount that would also have to be paid after permanent transfer to

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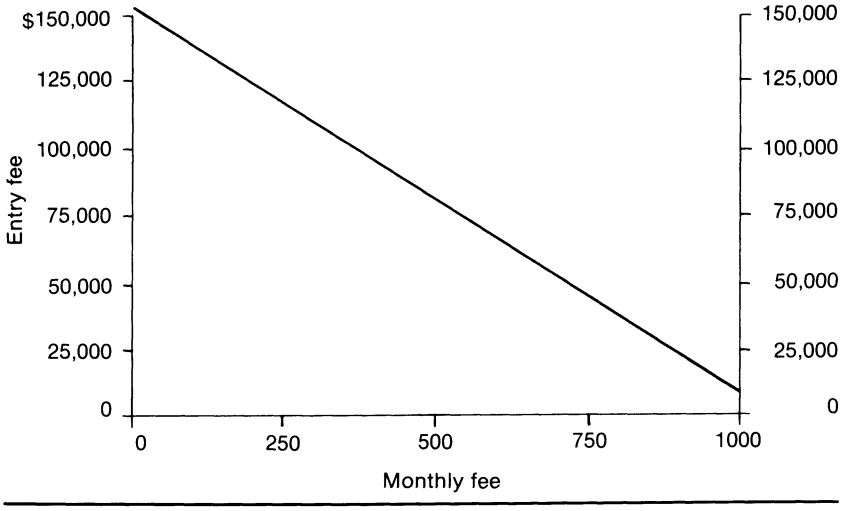
[7] The underlying mathematics of this formula is explained in detail in Appendix D.

TABLE 7–7
Illustration of Actuarially Equivalent Pricing Structures *(age-75 female entrant)*

Actuarial liability	Entry fees	Monthly fees	Present value of monthly fees
$151,951	$151,951	$ 0	$ 0
151,951	125,000	188	26,951
151,951	100,000	363	51,951
151,951	75,000	568	76,951
151,951	50,000	713	101,951
151,951	25,000	898	126,951
151,951	0	1,062	151,951

the health care facility). If the entry fee were set at $50,000, then the present value of monthly fees would be $90,000 and the derived monthly fee would be $713.[8] As Figure 7–2 illustrates, an infinite number of actuarially adequate entry fee/monthly fee combinations can be

FIGURE 7–2
Entry Fee/Monthly Fee Trade-off



derived using the actuarial pricing equation. Any point along the line in Figure 7–2 represents an acceptable entry fee and monthly fee combination. In this example, the trade-off between monthly fees and entry fees is such that for every $1 increase in monthly fees, entry fees can be reduced by $143. The final selection of an entry fee/monthly fee combi-

[8] This value is determined by dividing the PVMF by the product of 12 times the present value of $1 increasing annually for inflation, or 12 × 11.92 in this example.

nation depends on marketing considerations and management's philosophy regarding the expenses to be covered by entry fees and those to be covered by monthly fees. However, the authors strongly discourage the policy of charging only an entry fee because the risks associated with misestimation of assumptions are extremely large, and if only an entry fee is charged, the community has no way to adjust fees to compensate for misestimation or variations due to random fluctuations in experience.

Entry Fee/Monthly Fee Trade-off

The issue regarding those expenses that should be covered by entry fees versus those that should be covered by monthly fees can also be viewed simply as what portion of the PVFE should be allocated to entry fees and what portion should be allocated to monthly fees. Clearly, the larger the portion of the PVFE allocated to entry fees, the more the community is exposed to risks of underpricing due to misestimation of assumptions such as inflation, mortality, and morbidity. On the other hand, one advantage of collecting as much as possible in entry fees is that residents will not be able to divest themselves of those funds, thus minimizing the community's financial aid risk.

Alternatively, the community could collect most of its revenues through monthly fees and minimize its inflation risk. The extreme example of this alternative is the case where monthly fees are the only charges. The advantage of covering a larger portion of the PVFE by monthly fees is that such fees can be adjusted to cover unfavorable deviations in the underlying assumptions. One disadvantage, again, is that the financial aid risk is increased, since monthly fees are more likely to exceed the monthly income of some residents and eventually exhaust all of their financial resources.

One approach to the entry fee/monthly fee trade-off is to combine the real estate concept of pricing with the actuarial concept. Under this approach, entry fees are set to cover capital expenses, which initially increase less than inflation. Monthly fees are set to cover the residual operating expenses. The advantage of this approach is that since entry fees are set to cover relatively fixed expenses, the required increase in entry fees is substantially less than the overall inflation rate, thereby minimizing the community's exposure to inflation misestimation. The disadvantage is that the level of entry fees is somewhat predetermined by capital expenses and may not give management sufficient flexibility in selecting fees.

Another approach to minimizing the community's inflation exposure, as well as the risk associated with unfavorable mortality and morbidity experience, is to limit the portion of the PVFE allocated to entry fees. No objective guidelines can be given for the correct propor-

tion that should be allocated to entry fees, but the authors believe that this percentage probably should not be less than 20 percent or more than 50 percent to minimize the inflation risk without unduly increasing the financial aid risk. A possible disadvantage is that there is no clear identification regarding the expenses to be covered by each revenue component, although this does not affect actuarial adequacy.

An example of fees under two approaches for an age-75 female entrant is given in Table 7–8. In both cases, it is assumed that the

TABLE 7–8
Illustrative Comparison of Actuarially Adequate Fee Structures under Real Estate/Actuarial and Percentage of PVFE Pricing Approaches *(age-75 female entrant)*

	Entry fees		Monthly fees	
Apartment type	Real estate/ actuarial approach	30 percent of PVFE approach	Real estate/ actuarial approach	30 percent of PVFE approach
Studio	$42,180	$39,619	$628	$646
One bedroom	53,846	45,585	686	744
Two bedrooms	65,511	51,551	743	841

resident pays the same monthly fee after permanent transfer to the health care center, although this assumption is not necessary. The entry fee under the percentage approach is set to cover 30 percent of the total PVFE.

In this example, the entry fees under the real estate/actuarial approach are consistently more than those under the 30 percent of PVFE approach, while the reverse is true for monthly fees. The point of this illustration is that actuarial theory provides a multitude of ways for management to set fees that are actuarially adequate, while selecting an entry fee/monthly fee combination that meets other criteria in addition to actuarial adequacy.

ACTUARIALLY EQUITABLE FEE DIFFERENTIALS

The concept of fee equity is not well defined, depending primarily on management philosophy. Actuarial theory can provide actuarially equitable fee differentials for a given set of demographic, contractual, accounting, and economic factors, as well as a specific pricing philosophy. However, management may choose to ignore the actuarial differentials and simply use actuarial theory to establish a fee structure that is, overall, actuarially adequate (i.e., each group of residents is antici-

pated to pay its own way) while meeting other specific objectives. Many communities choose to establish fee differences along the lines of apartment type and number of occupants, ignoring sex and age differences.[9] These two dimensions are discussed in the following paragraphs.

It will be noted that the fee differentials shown in Table 7–8 for different apartment types vary according to the pricing philosophy assumed. The real estate/actuarial approach has entry fee differentials (or ratios) for studio, one-bedroom, and two-bedroom units of 1.00, 1.28, and 1.55[10] compared to the square footage differentials among the units, which equal 1.00, 1.50, and 2.00. The reason the fee differentials do not equal the square footage differentials is that some of the capital expenses allocated to entry fees are shared equally among all residents and are therefore allocated on a per capita basis. The monthly fee differentials under the real estate/actuarial approach are 1.00, 1.09, and 1.18. These differentials are less than the entry fee differentials since more of the operating expenses are allocated on a per capita basis than was the case for capital expenses. Entry fee and monthly fee differentials are identical under the percentage of PVFE approach, equal to 1.00, 1.18, and 1.33 for studio, one-bedroom, and two-bedroom units, respectively.

Even though the two pricing approaches generate different fee differentials, both are correct for the approach assumed. Moreover, other pricing philosophies will generate a different set of differentials. It should also be noted that even though a community's pricing structure may not be in actuarial balance (i.e., the PVFR is not equal to the PVFE), these actuarial differentials can still be applied to that structure. Finally, the actuarial differentials may change as the community's expense pattern matures or if some of the underlying assumptions are changed; hence, they should be reassessed periodically.

Couples pose a special problem for CCRCs. Not only is the last survivor of a couple expected to occupy an apartment longer than a single resident, but the community is also exposed to approximately twice the health care utilization, affecting two critical financial factors of the community. Currently, most communities differentiate monthly fees by the number of occupants, while few differentiate entry fees. Charging the same entry fee regardless of the number of entrants is reasonable, provided that the differential in monthly fees is adequate or that the shortfall is made up elsewhere in the community's pricing structure.

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[9] Less than 10 percent of the CCRCs responding to the Wharton School survey said that they varied fees by age or sex.

[10] These differentials are determined by dividing fees for all units by the studio fee.

TABLE 7–9
Illustrative Comparison of Actuarially Based Second-Person Fee Differentials*

Variation	Entry fee differential	Monthly fee differential
Equal entry fee and monthly fee differentials	51%	51%
Zero entry fee differential	0	91
Zero monthly fee differential	118	0

* Based on age-75 entrants to one-bedroom units.

Table 7–9 contains the appropriate fee differentials for three variations.[11] The first variation is based on the assumption that the differential between one- and two-person entry fees is the same as the monthly fee differential. This example shows that two-person monthly and entry fees should be 51 percent more than one-person fees. The second variation is based on the assumption that entry fees are the same for one or two entrants (i.e., 0 percent entry fee differential). The required monthly fee differential in this case is 91 percent. The third variation is based on the assumption that monthly fees do not change with the number of entrants. This case requires that the entry fee differential be 118 percent.

Actuarial theory can be used to determine an infinite set of actuarially fair fee differentials.

Summary

This chapter described the theory and implications of the actuarial liability associated with a continuing care contract and methods for setting fees to actuarially fund that liability. The actuarial liability (PVFE) is dependent on demographic, contractual, accounting, and economic factors. For a given set of factors, the liability is fixed and cannot be altered by management. However, the fee structure used to fund the liability can be adjusted by management to match its objectives regarding equity, marketability, and so forth.

In summary, the methodology for funding the actuarial liability does not require that specific characteristics (e.g., sex, age, and apartment

[11] These differentials are independent of the pricing philosophy used.

type) be incorporated in designing a CCRC fee structure. The guidelines set forth in this chapter require that, for a group of new entrants, fees in aggregate be actuarially adequate. Actuarial theory can be used by management to develop a fee structure that reflects its philosophy without jeopardizing the community's long-term financial soundness. ■