

What's Your Life Worth?

As Published in the *Memphis Business Journal*, June 23, 2006

By Robert Vance, CPA, CVA, CFP

Attorneys must know the "replacement value" of a life in order to formulate a damage claim in personal injury, wrongful death and wrongful termination litigation. Forensic accountants calculate life worth based on the remaining work capacity that is lost after the damaging event in order to illustrate to a jury that a damage claim was formed in economic reality. A case can pivot on the calculation alone. This article explains some of the basic concepts of economic damages for individuals and illustrates a quick method to figure life worth.

Damages are generally considered to be a lump-sum amount for judgment or settlement purposes. The losses are typically calculated from the date of the damaging event and compounded with interest to the present date, then projected into the future and discounted back to present value. Individuals that can continue to work in a limited fashion produce mitigating dollars that are subtracted from a total loss.

How does one cram a lifetime of lost earning potential into a neat, single figure? The general answer includes:

- 1) Projecting the expected yearly future earning capacity, over the *work life* expectancy. The earnings can be based on the working status at the time of the damaging event, or, if the situation warrants, based on reasonable alternatives such as allowing for job promotions and attainment of higher education.
- 2) Estimating associated employer-provided fringe benefits, over the *work life* expectancy. Lost benefits can represent a large portion of the damages suffered. A recent U.S. Chamber of Commerce study reports that Social Security taxes, paid holidays and vacations, medical insurance and 401(k) plan (typical large company benefits) can be worth up to 26% of earnings.
- 3) Figuring the yearly value of household services that can no longer be performed over the *life* expectancy. The services include the unpaid tasks that maintain and enhance the lives of those that occupy the household, such as food preparation, laundry, cleaning, auto and yard maintenance, and child care. The loss of the production, even though not directly compensated like regular employment, has value to the household nonetheless since the tasks will: a) not be done at all or not as often, b) be done by someone else in the household (at the expense of other things the "someone else" might have been doing), or c) require outside assistance which may have to be compensated. Since most individuals do not keep hourly logs, published studies, like "The Dollar Value of a Day," help to quantify the hours that typical Americans spend performing the unpaid household tasks and present an hourly rate to measure the value. This loss category is usually considered in a personal injury and wrongful death case and applies to the employed, the unemployed and homemakers.
- 4) Discounting the annual sums for earnings, benefits, and services to a single present value for the desired lump-sum number.

Many analysts grow the earnings figures each year to account for merit raises using a "real" wage growth rate of around 1% and discount to present value using a "true" interest rate of around 3%. Why such low rates? A method accepted by the U.S. Supreme Court known as "constant-dollar" is often used by analysts to estimate future lost earnings and interest by removing inflation from current rates. Removing inflation, which has hovered around 3% in recent history, eliminates the nearly impossible task of predicting future inflation rates and gives the dollars to be received in the future the same average purchasing power as dollars received today.

The concepts discussed can be best explained with an illustration. In order to simplify the calculations, the earnings are not grown for merit raises and only the future damages are considered. The merit raise growth is accomplished, however, by using a 2% discount rate derived from subtracting the real wage growth rate of 1% from the true interest discount rate of 3%. The Tables referenced allow the reader to calculate his or her own life worth and can be downloaded from www.valuationlitigation.com/downloads.asp.

Sarah, a forty-year old, white, female engineer is permanently injured in a car accident and will be unable to work on the job and perform regular household chores and family duties for her husband and two children. She was earning \$80,000 annually at the time of injury and enjoyed all of the fringe benefits listed above at 26% of pay, or \$20,800 annually (no Table to download for fringe benefits, so use between 20-26% for your own calculation). Sarah's pre-injury *life* expectancy (see Table 1) is 42 years, thus she would have statistically been expected to live until age 82. Her pre-injury *work life* expectancy (see Table 2a) is 21 years, thus she would have statistically been expected to work until age 61. Since Sarah did not keep records of time spent with household chores (and who does?), Table 3 shows that someone with Sarah's family makeup would typically have worked 32.5 hours per week in the household, valued at \$9.97 per hour, or \$16,849 annually.

The goal is to figure the yearly future losses and discount them to present value. Table 4 lists factors for the 2% discount rate that will transform an annual payment into a single, lump-sum present value figure. Add together Sarah's lost earnings and benefits for a total of \$100,800. Multiply that figure by the present value factor of 17.011 found in the 21 year row of Table 4 to equal \$1,714,708. Multiply Sarah's lost household services of \$16,849 by the present value factor of 28.235 found in the 42 year row to equal \$475,731. Add the two figures together to arrive at the total economic damages for Sarah's lost earning and production capacity of \$2,190,439. If you have a financial calculator, solve for present value by entering a payment of \$100,800 at 2% for 21 periods, then a payment of \$16,849 at 2% for 42 periods. What's your life worth? Using the Tables, find your own life and work life expectancies, household service hours and rate, and present value factors, then plug your numbers into the "formula" found in the illustration.

Fair or not, the "replacement value" of some individuals is worth more than others due to the loss of a greater working capacity. No one can state with absolute certainty that an individual would have earned "X" amount of dollars for "Y" amount of years, however, if a person is unable to fully work or has died, a forensic accountant can reasonably estimate the life worth by using known facts, statistical estimates and professional judgment.

TABLE 1
Life Expectancy Based on Current Age*

Current Age	All	Male	Female	All White	White Male	White Female	All Black	Black Male	Black Female
25	54	51	56	54	51	56	49	46	52
26	53	50	55	53	51	55	48	45	51
27	52	49	54	52	50	54	47	44	50
28	51	48	53	51	49	53	47	43	49
29	50	47	52	50	48	52	46	43	48
30	49	46	51	49	47	51	45	42	47
31	48	45	50	48	46	50	44	41	46
32	47	44	49	47	45	49	43	40	46
33	46	44	48	46	44	48	42	39	45
34	45	43	47	45	43	47	41	38	44
35	44	42	46	44	42	46	40	37	43
36	43	41	45	43	41	45	39	36	42
37	42	40	44	42	40	45	38	35	41
38	41	39	43	42	39	44	37	35	40
39	40	38	42	41	38	43	37	34	39
40	39	37	41	40	37	42	36	33	38
41	38	36	40	39	37	41	35	32	37
42	38	35	40	38	36	40	34	31	36
43	37	34	39	37	35	39	33	30	35
44	36	34	38	36	34	38	32	29	35
45	35	33	37	35	33	37	31	29	34
46	34	32	36	34	32	36	31	28	33
47	33	31	35	33	31	35	30	27	32
48	32	30	34	32	30	34	29	26	31
49	31	29	33	31	29	33	28	25	30
50	30	28	32	31	29	32	27	25	30
51	30	27	31	30	28	31	27	24	29
52	29	27	30	29	27	31	26	23	28
53	28	26	30	28	26	30	25	22	27
54	27	25	29	27	25	29	24	22	26
55	26	24	28	26	24	28	23	21	25
56	25	23	27	25	24	27	23	20	25
57	24	23	26	25	23	26	22	20	24
58	24	22	25	24	22	25	21	19	23
59	23	21	24	23	21	24	21	18	22
60	22	20	24	22	20	24	20	18	22
61	21	19	23	21	20	23	19	17	21
62	20	19	22	21	19	22	19	16	20
63	20	18	21	20	18	21	18	16	19
64	19	17	20	19	17	20	17	15	19
65	18	17	20	18	17	20	17	15	18
66	18	16	19	18	16	19	16	14	17
67	17	15	18	17	15	18	15	14	17
68	16	15	17	16	15	17	15	13	16
69	15	14	17	15	14	17	14	12	15
70	15	13	16	15	13	16	14	12	15
71	14	13	15	14	13	15	13	11	14
72	13	12	14	13	12	14	12	11	14
73	13	11	14	13	11	14	12	10	13
74	12	11	13	12	11	13	11	10	12
75	12	10	12	12	10	12	11	10	12

* "Arias, E., United States Life Tables, 2002, National Vital Statistics Reports, Vol. 53, No. 6. Hyattsville, MD, National Center for Health Statistics, 2004".

TABLE 2a
Work Life Expectancy Based on Current Age-Females*

Current Age	Active	Inactive	Females									
			Less Than HS		High School		Some College		Bachelors Degree		Graduate Degree	
			Active	Inactive	Active	Inactive	Active	Inactive	Active	Inactive	Active	Inactive
25	29	27	21	20	31	26	30	29	32	30		
26	28	26	21	19	30	25	30	28	31	29	34	32
27	27	25	20	19	29	24	29	27	30	28	33	32
28	27	24	20	18	28	24	28	26	29	27	32	32
29	26	24	19	17	27	23	27	25	29	26	31	29
30	25	23	19	17	26	22	27	25	28	25	31	28
31	24	22	18	16	25	21	26	24	27	24	30	27
32	24	21	18	15	24	20	25	23	26	23	29	26
33	23	20	17	15	23	20	24	22	26	23	28	25
34	22	20	17	14	22	19	24	21	25	22	27	24
35	22	19	16	14	21	18	23	20	24	21	26	23
36	21	18	16	13	20	17	22	20	24	20	26	23
37	20	17	15	12	19	16	21	19	23	19	25	22
38	19	16	14	12	18	15	20	18	22	19	24	21
39	19	15	14	11	17	15	20	17	21	18	23	21
40	18	15	13	11	16	14	19	16	21	17	22	20
41	17	14	13	10	15	13	18	15	20	16	22	19
42	16	13	12	9	14	12	17	15	19	15	21	18
43	16	12	12	9	13	11	17	14	18	14	20	17
44	15	11	11	8	12	10	16	13	17	13	19	16
45	14	10	11	7	11	9	15	12	17	13	18	15
46	13	9	10	7	10	9	14	11	16	12	17	14
47	13	9	10	6	9	8	14	10	15	11	16	13
48	12	8	9	5	9	7	13	9	14	10	16	12
49	11	7	9	5	8	6	12	8	14	10	15	11
50	11	6	9	4	7	5	11	7	13	9	14	10
51	10	5	8	4	7	5	11	6	12	8	13	9
52	9	5	8	3	6	4	10	6	11	7	12	8
53	9	4	7	3	6	4	9	5	11	7	11	7
54	8	4	7	3	5	3	9	4	10	6	11	6
55	8	3	6	2	4	3	8	4	9	5	10	6
56	7	3	6	2	4	3	7	3	9	4	9	5
57	6	2	6	2	3	2	7	3	8	4	9	5
58	6	2	5	1	3	2	6	2	7	3	8	4
59	6	2	5	1	3	2	6	2	7	3	7	4
60	5	2	4	1	2	1	5	2	6	2	7	3
61	5	1	4	1	2	1	5	2	6	2	6	3
62	4	1	4	1	2	1	4	1	6	1	6	2
63	4	1	4	1	2	1	4	1	5	1	5	2
64	4	1	3	1	1	1	4	1	5	1	5	2
65	4	1	3	0	1	1	4	1	5	1	4	1
66	3	1	3	0	1	1	3	1	4	1	4	1
67	3	1	3	0	1	1	3	1	4	1	4	1
68	3	0	3	0	1	0	3	1	4	1	4	0
69	3	0	3	0	1	0	3	1	4	1	3	0
70	3	0	2	0	1	0	3	0	3	1	3	0
71	3	0	2	0	0	0	3	0	3	0	3	0
72	2	0	2	0	0	0	3	0	3	0	2	0
73	2	0	2	0	0	0	2	0	2	0	2	0
74	2	0	2	0	0	0	2	0	2	0	2	0
75	2	0	2	0	0	0	2	0	2	0	2	0

* The Markov (Increment-Decrement) Model of Labor Force Activity: New Results Beyond Work-Life Expectancies, Gary Skoog and James Ciecka, Journal of Legal Economics, Spring-Summer 2001.

TABLE 2b
Work Life Expectancy Based on Current Age-Males*

Current Age	Active	Inactive	Males									
			Less Than HS		High School		Some College		Bachelors Degree		Graduate Degree	
			Active	Inactive	Active	Inactive	Active	Inactive	Active	Inactive	Active	Inactive
25	34	32	29	27	32	31	34	33	37	35		
26	33	31	28	26	32	30	33	32	36	34	38	36
27	32	30	27	26	31	29	32	31	35	34	37	36
28	31	30	26	25	30	28	32	30	34	33	36	35
29	30	29	26	24	29	27	31	29	33	32	35	34
30	29	28	25	23	28	26	30	28	32	31	34	33
31	28	27	24	22	27	25	29	27	31	30	33	32
32	28	25	23	20	27	24	28	27	30	29	32	30
33	27	24	22	19	26	23	27	25	29	28	31	29
34	26	23	22	18	25	22	26	24	29	27	30	28
35	25	22	21	17	24	21	25	23	28	26	29	27
36	24	21	20	16	23	20	24	22	27	25	29	26
37	23	20	19	15	22	19	23	21	26	24	28	25
38	22	19	19	14	22	18	23	20	25	23	27	24
39	22	18	18	13	21	17	22	19	24	22	26	23
40	21	17	17	13	20	16	21	18	23	21	25	22
41	20	16	16	12	19	15	20	17	22	20	24	21
42	19	15	16	11	18	14	19	16	21	19	23	21
43	18	14	15	10	18	13	18	15	20	18	22	20
44	17	13	14	9	17	12	17	14	20	17	22	19
45	17	12	14	9	16	11	17	13	19	16	21	18
46	16	11	13	8	15	10	16	12	18	15	20	18
47	15	11	12	7	14	9	15	11	17	14	19	17
48	14	10	12	7	14	9	14	10	16	13	18	16
49	13	9	11	6	13	8	13	9	15	12	17	15
50	13	8	10	6	12	7	13	8	14	11	16	15
51	12	7	10	5	11	7	12	7	14	10	15	14
52	11	7	9	5	11	6	11	7	13	9	15	12
53	10	6	8	4	10	6	10	6	12	8	14	11
54	10	5	8	4	9	5	10	5	11	8	13	10
55	9	5	7	3	9	4	9	4	10	7	12	9
56	8	4	7	3	8	4	8	4	10	6	11	8
57	8	4	6	3	7	3	8	3	9	6	10	7
58	7	3	6	2	7	3	7	3	8	5	10	6
59	6	3	5	2	6	3	7	3	8	4	9	5
60	6	3	5	2	6	2	6	2	7	3	8	5
61	6	2	4	2	5	2	6	2	6	3	8	4
62	5	2	4	1	5	2	5	2	6	2	7	4
63	5	2	4	1	5	2	5	2	6	2	7	4
64	4	2	3	1	4	1	5	1	5	2	6	3
65	4	1	3	1	4	1	4	1	5	2	6	3
66	4	1	3	1	4	1	4	1	5	2	6	2
67	4	1	3	1	4	1	4	1	4	1	5	2
68	4	1	3	1	4	1	3	1	4	1	5	2
69	3	1	3	1	4	1	3	1	4	1	4	2
70	3	1	3	0	3	1	3	1	4	1	4	1
71	3	0	3	0	3	0	3	1	4	1	4	1
72	3	0	2	0	3	0	3	0	3	1	4	1
73	3	0	2	0	3	0	2	0	3	1	3	1
74	2	0	2	0	3	0	2	0	3	1	3	0
75	2	0	2	0	2	0	2	0	3	1	3	0

* The Markov (Increment-Decrement) Model of Labor Force Activity: New Results Beyond Work-Life Expectancies, Gary Skoog and James Ciecka, Journal of Legal Economics, Spring-Summer 2001.

TABLE 3
The Dollar Value of an Hour of Household Production*

Activity	Household=2+ Adults, Males working full-time, with 1 Child				Household=2+ Adults, Males working full-time, with 2 Children				Household=2+ Adults, Males working full-time, with 3 Children			
	Hours per Week	Hours per Year	Value per Day	Value per Hour	Hours per Week	Hours per Year	Value per Day	Value per Hour	Hours per Week	Hours per Year	Value per Day	Value per Hour
Household Production	10.4	540.8	\$15.44		15.6	811.2	\$23.21		15.5	806.0	\$23.22	
Providing Care	4.6	239.2	\$7.13		5.0	260.0	\$7.63		9.3	483.6	\$14.50	
Total	15.0	780.0	\$22.57	\$10.56	20.6	1,071.2	\$30.84	\$10.51	24.8	1,289.6	\$37.72	\$10.68

Activity	Household=2+ Adults, Females working full-time, with 1 Child				Household=2+ Adults, Females working full-time, with 2 Children				Household=2+ Adults, Females working full-time, with 3 Children			
	Hours per Week	Hours per Year	Value per Day	Value per Hour	Hours per Week	Hours per Year	Value per Day	Value per Hour	Hours per Week	Hours per Year	Value per Day	Value per Hour
Household Production	19.8	1,029.6	\$27.93		23.5	1,222.0	\$32.51		20.1	1,045.2	\$27.82	
Providing Care	6.7	348.4	\$10.24		9.0	468.0	\$13.63		12.9	670.8	\$19.67	
Total	26.5	1,378.0	\$38.17	\$10.11	32.5	1,690.0	\$46.14	\$9.97	33.0	1,716.0	\$47.49	\$10.10

*The Dollar Value of a Day: summarizing the EPA NHAPS time-diary survey.

DVD Table 13: Average hours of activities in a week by persons employed full-time, 2+ Adults, With Kids by Number of Kids, and DVD Table 14: 1999 dollar value of a day based on hours of activities in a week by persons employed full-time, 2+ Adults With Kids by Number of Kids.

TABLE 4
Present Value Factor for an
Annual Amount or Payment
For 2% Rate

	Years Until Retirement	Factor For 2%
	10	8.983
	11	9.787
	12	10.575
	13	11.348
	14	12.106
	15	12.849
	16	13.578
	17	14.292
	18	14.992
	19	15.678
	20	16.351
Sarah's remaining Work Life Expectancy	21	17.011
	22	17.658
	23	18.292
	24	18.914
	25	19.523
	26	20.121
	27	20.707
	28	21.281
	29	21.844
	30	22.396
	31	22.938
	32	23.468
	33	23.989
	34	24.499
	35	24.999
	36	25.489
	37	25.969
	38	26.441
	39	26.903
	40	27.355
	41	27.799
Sarah's remaining Life Expectancy	42	28.235
	43	28.662
	44	29.080
	45	29.490
	46	29.892
	47	30.287
	48	30.673
	49	31.052
	50	31.424