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Time Valuation as an Alternative to Lost Enjoyment of Life in Determining Wrongful Death Damages

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I. Introduction

In a wrongful death case[1] the task of the jury, if liability is found, is to award those pecuniary and non-pecuniary damages to the decedent's survivor(s) that would make them whole. Steven Shavell (2004) defines pecuniary and non-pecuniary losses as follows:

Pecuniary losses are those that either are monetary or are losses of goods that can be purchased in markets, in which case the measure of the losses comprises the replacement costs. Non-pecuniary losses correspond to the losses in utility suffered when irreplaceable things have been destroyed, such as family portraits or other unique objects.

Making the survivors of a decedent whole, of course, is impossible and, in practice, testimony by a forensic economist on wrongful death damages is usually limited to calculations of lost earnings support and household work services the decedent could have provided survivors. There are other compensable pecuniary damages suffered by survivors of a decedent such as the advice, counsel, instruction, supervision, and care a decedent may have provided survivors for which a replacement cost might be calculated. Finally there are the usual non-pecuniary losses of pure companionship, consortia, love, affection, the loss of the enjoyment of the decedent's life and bereavement suffered by survivors which are usually categorized as intangibles and left to a jury to decide or are prescribed by statute. The fundamental difference between pecuniary and non-pecuniary damages is that pecuniary damages are associated with a productive use of time (such as work, offering advice and counsel, or giving care, support, or assistance) while non-pecuniary damages derive from the pure utility of relationships alone. Schwartz and Thornton (1989) suggest that economists should approach damages from a utility base which would incorporate both the tangible (pecuniary) and intangible (non-pecuniary) losses suffered by survivors of a decedent. Such a holistic approach to damages is beyond the capacity of traditional means of calculating wrongful death damages by economists. A number of states, over the past two decades, have attempted to

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[1]Two basic types of actions might be pursued in a death case depending on jurisdiction. In a few states a survival action can be pursued, allowing the decedent's claim of harm to survive the decedent. The majority of states allow wrongful death recovery to survivors of the decedent, and many states allow a survival claim from date of injury to the death of the decedent and a wrongful death recovery to survivors after death (see Ireland and Depperschmidt, 1999, for a listing of state recovery rules and case citations). In this paper we only consider recovery of losses to survivors.

refine the lists of potential pecuniary losses of survivors and to separate such losses from non-pecuniary losses by statute or case law.[2] However, forensic economic testimony in wrongful death cases outside of lost earnings and household work service losses to survivors (e.g., cooking, cleaning, home maintenance, etc.) is still infrequent despite clear case law and statute content relevant to the productive use of time.

Posner (1973), over 30 years ago, observed that "the courts have (so far) resolved the vexing problem of the proper valuation of life by ignoring it." (p. 83) A primary hurdle faced by courts or economists in addressing Posner's problem was finding common ground in defining categories of damages and deciding which of those categories can be reasonably measured by economists.[3] For example, the Missouri death statute in Mo. Stat. §537.090 specifies those wrongful death damages to be determined by the jury to consist of: (a) pecuniary losses that the survivors have suffered by reason of the death, (b) funeral expenses, and (c) the reasonable value of the services, consortium, companionship, comfort, instruction, guidance, counsel, training and support that the decedent provided to his survivors. Damages for the survivors' grief and bereavement by reason of the death are not recoverable in Missouri. Using Shavell's definitions of pecuniary and non-pecuniary damages, the losses of comfort, guidance, counsel, training and support have both pecuniary and non-pecuniary elements. Comfort consists of the action in providing care to an individual, a physical and productive activity, and it also consists of an intangible feeling of welfare, knowing someone "cares" about you. Support is both the well-being of knowing a spouse is there to support you emotionally as well as a physical activity of upholding, defending, of assisting a family member. The advice and counsel a parent gives a child involves hours of activity (production) as well as an irreplaceable source of utility to the child. Replacement costs might be offered for the activity of teaching a child, but not the intangible bond that teaching might forge with the child. Certainly companionship has two components of potential value. One might be the act of accompanying a spouse to a play, where a replacement cost of a companion exists in the market, but that replacement cost would not encompass the intangible affection of that companionship.

Unfortunately, the damage categories enumerated in many state's wrongful death statutes and case law do not directly distinguish between pecuniary and non-pecuniary damages.[4] Rather, they open the door to an expanded definition of economic damages based on the whole value of life and the valuation of productive time spent on virtually all human activity as they relate to

[2]As an example the Kansas Supreme Court, through *Wentling v. Medical Anesthesia Services*, 237 Kan. 503 (Kan., 1985) and *Cleveland v. Wong*, 237 Kan. 410 (Kan., 1985) has held that pecuniary losses include: services, attention, marital care, parental care, filial care, advice, protection, moral training, social training, educational assistance, nurturing, guidance, counseling, and matrimonial, conjugal and connubial acts and duties, including social obligations, affection, and sexual relations. Non-pecuniary losses include: mental anguish, suffering, bereavement, society, comfort, and companionship. (Krueger and Ward, 2005)

[3]See Ireland, Thomas, "Categories of Time Use for Forensic Economics," *Journal of Forensic Economics*, 14(2), 2001, 23-34 for a discussion of the concept of leisure and its valuation.

[4]For an excellent reference to the various compensable components in wrongful death by state, see this journal's series of "Assessing Economic Damages by State" series.

losses to survivors. The purpose of this paper is to examine two responses to Posner's challenge to expand the scope of wrongful death damages that have been advanced in our forensic economic literature: the hedonic (whole-life) approach to valuating life and the "whole-time" approach to valuing losses to survivors in wrongful death actions. The objectives of the discussion that follows are to focus on the relevance of the whole-life and whole-time methodologies to the valuation of non-market losses to survivors in death actions and to introduce one approach to such a valuation, the use of the American Time Use Survey, as a considerable advance over other approaches.

II. Whole Life and Whole Time

There is little disagreement among economists that the enjoyment of life is a component of the value of life, along with the value of work and home services. The enjoyment of life usually is equated with the value of leisure and we are constantly engaged in making trade-offs between work, services and leisure in an attempt to maximize our welfare. The study of how those trade-offs are made is a fundamental part of human capital theory. Because of these trade-offs there is the potential of measuring the value of the enjoyment of life. This paper focuses on two ways of estimating the value of life and its component, the enjoyment of life. The first method involves the indirect calculation of the value of the enjoyment of life through willingness to pay estimates of the value of life. This is the hedonic or whole-life approach. The second method can be described as a whole-time approach involving the direct measurement of the three components of life: work, services, and the enjoyment of life.

The hedonic approach rests on the concept that there is a whole value of life that can be estimated by observing the compensation paid to people to assume increases in risk of death or injury, or expenditures by people to avoid the risk of death or injury in employment or the consumption of goods. An example of a risk premium payment would be that each of 10,000 workers in a plant receives an annual premium of $3,000 for assuming an additional risk of death of one worker per year translating to an imputed value of one life of $30 million ($3,000 × 10,000 workers). An example of a risk avoidance payment might be payments of $3,000 per year for individual radiation detectors for each of 10,000 workers in a plant that will save the life of one additional worker each year. The value of life is assumed to be measured by such small risk avoidance or assumption valuations. Presumably this value of life incorporates the pecuniary and non-pecuniary values of life.

Ted Miller (1990) performed an analysis of 67 studies of the value of a statistical life, categorized by the methodologies employed in the studies: wage-risk studies of compensation associated with risky jobs, market studies of products affecting safety, risk-avoidance behavioral studies and contingent valuation studies based on willingness to pay to avoid risk of harm. Miller concluded that 47 of these studies were reasonably sound and the median value of the studies was $2.2 million for a statistical life in 1988.[5] Using the median age

[5]More recent work by Kip Viscusi would place the value of life in range of $300,000/year, or $7 million for the statistical person. See his "Age Differences in the Value of Statistical Life: Revealed

of the samples, Miller disaggregated the whole value of life into its components. In his analysis the enjoyment of life of the reference 37-year-old male equaled the whole value of life ($2.2 million) minus the present value of earnings and household work services and minus the value of financial security since a damage award would prevent a loss of insecurity (actuarial reductions for probabilities of death or disability). The resultant $1.35 million in 1988 dollars, invested over the life expectancy of the reference male yielded a value of $55,000/year at a 2.5% discount rate that Miller suggested might be used to represent the loss of enjoyment of life in a courtroom.

The first case in the United States where an economist attempted to use the concept of lost enjoyment of life and whole life was *Sherrod v. Berry* (1985), a case in Illinois where an economist presented testimony on the lost value of life of a deceased, young male, and a jury awarded damages for that loss. The *Sherrod v. Berry* decision was overturned by an appellate court in 1987 but the use of the hedonics literature and the concept of the loss of enjoyment of life in the courts expanded in the following decade. An extensive collection of the hedonics literature, with papers by W. Kip Viscusi, Lauraine G. Chestnut, Daniel Violette, William Becker and Ted Miller on the theoretical and statistical constructions and interpretations of the whole-life surveys, and papers of support and criticism of the application of whole-life measures in the courts is found in *A New Hedonics Primer for Economists and Attorneys,* edited by Ireland and Ward (1998). There are a number of criticisms of the concept that expenditures to avoid or assume small changes in risk of death or injury can be equated with the value of life such as Dickens (1998) and even more criticisms of the application of hedonics to litigation, especially wrongful death cases. Certainly whole-life valuation is useful in evaluating projects in cost/benefit analysis, but how can a dead person recover for the loss of the value of their life in a wrongful death action? Thomas Havrilesky (1998) and Ireland (1998) raised this and other questions about the use of whole-life and enjoyment of life concepts in the courts.

If you begin with the value of a whole life, subtract out values of financial risk (eliminated by award), earnings and household work services you have a residual, which has been called the enjoyment of life. As such, that residual would include all tangible and intangible values of advice, counsel, care, and instruction as well as the value of such non-pecuniary values of life as love and companionship. No further disaggregation of the value of the enjoyment of life is possible using whole value of life measures. So, in a wrongful death action where loss is to survivors, how can a decedent's value of enjoyment of their life be a loss to survivors? Some portion of that enjoyment of life is a loss, representing the value of the decedent's time spent with survivors providing instruction, counsel and advice, and in providing non-pecuniary benefits to survivors in the forms of love, affection and companionship, but there is no logical way to disaggregate such losses to survivors from the enjoyment of life to the decedent. Thus, while the hedonic approach to valuing human life and the enjoyment of life has application in cost/benefit analysis involving the cost of lives

Preference Evidence," with Joseph E. Aldy, *Review of Environmental Economics and Policy*, Vol. 1, No. 2 (Summer 2007), pp. 241-260.

lost, and potentially in personal injury cases, it clearly is not useful in calculating damages to survivors in a wrongful death action.

In contrast, the whole-time approach to valuing losses to survivors is additive and consists of the market values or replacement costs of time that the decedent could have contributed to the support of survivors.[6] Time spent at work is valued by wages the decedent could provide survivors. Time spent at household work services is valued at the replacement cost of those services lost to survivors.[7] Time spent with survivors in providing them other services such as advice, care, counsel, training and support can be valued at the replacement costs of such time, irrespective of the intangible (non-pecuniary) values of such activities.

III. Whole Time Valuation

Death means the loss of 168 hours per week of life for the deceased person. For a male, aged 37, with a remaining normal life expectancy of 41 years, an accidental death at age 37 represents a loss of 358,176 hours of ability to work, rest, perform services and enjoy life and family. For survivors, only a portion of that time has value to them as a compensable pecuniary loss.

The beginning point for a discussion of time allocation is Gary Becker's "Theory of the Allocation of Time" (1965) which advanced a theory of how individuals and families allocate their time to maximize individual and family utility functions based on the premise that households are producers, as well as consumers, and that the household seeks to maximize its utility by combining inputs of market goods (X_j) and time (T_j) to produce and consume commodities (Z_j). The household production function is ($Z_j = f_j(X_j, T_j)$, subject to a goods constraint (w^*T_w) determined by wage (w) and hours at work (T_w), and a time constraint (T-T_w). Household utility (U) maximization is represented by maximizing the function $U = U(Z_1, ..., Z_m)$ such that the marginal value of time in each activity is equalized. Time and goods are intertwined in producing and consuming commodities. A movie is the price of a ticket and pop-corn and two hours of time. A happy spouse is $100 for dinner and three hours of time. A well-adjusted child represents a string of commodities of time (training, teaching, counseling and comforting) and goods (computers, soccer-balls and books).

So, just as time spent at work produces earnings that can be used to purchase goods and services, time spent with family can produce such commodities as a good marriage, successful children and the illusive happy family. With the death of a family member, the survivors lose those commodities that the decedent could have provided them, and one component of those commodities is

[6]See Krueger, Ward and Albrecht, "Economic Valuation of Life: A Cumulative Approach," *A New Hedonics Primer for Economist and Attorneys,* 1998, for an expanded discussion of the whole-time valuation concept.

[7]It might be argued that opportunity costs of time of the decedent could also be used to value lost services to survivors. The simple Becker example of time allocation uses such a valuation looking at the allocation of time for an individual at the margin. However, the replacement cost approach is more appropriate to losses to survivors in a death action where the issue is valuation rather than allocation.

time in the activity itself. Valuing the hours of time that a decedent father might have spent helping children with homework, attending church with family or providing advice to a spouse can be approached in several ways. In the real world, time cannot be perfectly substituted into goods and our use of time is not fully discretionary, so the wage of work is not an appropriate unit value of time spent in advice. To a family member, the relational value of that time might be very large, but not calculable using economic reason. All we can measure is a replacement cost for the physical activity itself. Assuming that you do attempt to place a replacement value on the loss of guidance, advice, counsel, care or instruction, etc. to the survivors of a deceased family member, where do you begin?

IV. Time Use Valuation Models

A beginning point for extending wrongful death damages beyond lost earnings support and household services of the decedent to survivors would be to have survivors enumerate the hours the decedent spent with them in other service activities of advice, counsel, care, comfort, support, instruction, etc. while alive. Such a recall of time spent together by activity is difficult. Also, such a measure would be static and not account for changes in such services as the decedent would have aged, children left the home, or the husband and wife retired. Nevertheless, such foundation could give a jury a basis for making an award. An economist might put a value on such hours for illustration and even calculate a present value of loss to survivors over the life of the decedent.

Olson (1998) offered an alternative way for valuing the loss of such services by suggesting an average annual replacement cost for the skills inherent in providing advice, counsel care and other such services. Using an average of wages of social workers, psychologists, teachers and counselors he placed a value of $31,941/year on the loss of such services to survivors in wrongful death cases. Implicitly, Olson assumes that survivors collectively received 2,080 hours of such services from the decedent.

Tinari (1998) put forth a methodology to measure advice and counsel in response to the admissibility of such damages in New Jersey established by *Green v. Bittner* (1980) where the New Jersey Supreme Court ruled that advice, counsel, guidance and companionship were recoverable damages and could be measured through appropriate replacement costs. Tinari described the measures of valuation accepted by the courts (companionship being valued at the wage of a paid companion) and offers his own hourly valuations of such services based of corresponding hourly wages in occupations providing such services. Writing in 1998, Tinari observed that no existing studies were available to establish a statistical average of hours of advice, counsel or guidance for valuation, so he offered *suggested quantities* of such hours by category for members of the family based on his review of what the limited studies provided.

Tinari states that, in practice,

> (w)hen the value of these services is added to the value of the physical household services lost, the total expanded value of the loss of household services becomes significantly greater in magnitude and, in many cases, may be comparable to the measured loss of earned income of the decedent. (p. 263)

A conceptual concern with such measures is whether an hour of concurrer advice to two members of a family counts as two hours or one hour of loss to th family. If the services are not jointly consumed, but are independently cor sumed, loss numbers would be significantly higher.

Ireland (2007) voiced the concern that the *Green v. Bittner* damages se forth by Tinari were being misused in personal injury cases and were being expanded beyond their limits by some economists. He voiced particular concern with the valuation of companionship, which he defines as largely relationa and beyond valuation, and the pricing of advice and counsel with inappropriate replacement costs (costs reflecting skill content). Ireland also provides a sum mary of admissibility of damages for advice, counsel and other non-market services by state (12 states and Federal decisions are included).

The whole-time valuation approach to wrongful death damages, like hedonic damages, has represented an effort to expand the concept of damages beyond traditional pecuniary damages of lost earnings and household work services. While hedonics offers the advantage of theoretically valuing both the pecuniary and non-pecuniary losses resulting from death, it does not pertain to losses suffered by survivors in a wrongful death action. Efforts to directly value non-market services such as advice, counsel, care and instruction have the advantages of being specific to losses suffered by survivors. Moreover losses are segregated by pecuniary and non-pecuniary content. However, until the American Time Use Survey individual valuations of non-market time, as offered by Olson and Tinari, had the disadvantage of having no comparative statistical benchmarks from a U.S. federal government administered survey data source.

In 2004, the ability to value non-market services took a substantial leap forward with the publication of the first results of the 2003 American Time Use Survey (ATUS) conducted by the Bureau of Labor Statistics (BLS). The ATUS sample is drawn from households that have completed their final month of participation in the Current Population Survey. The first ATUS survey was completed by approximately 21,000 individuals and the surveys of 2004 through 2007 have now expanded the survey results to nearly 73,000 individuals. Because of the scope of questions asked in the ATUS survey and the size of the sample population, most of the prior deficiencies of valuing non-market service time can now be corrected. The ATUS study provides specific information on the daily hours of time spent by individuals in work, services and leisure by a variety of demographic and employment states. Moreover, the ATUS provides measures of that time spent with family—the survivors in a wrongful death action. The results of the ATUS study are available from the BLS webpage (www.bls.gov/tus/). The results of the ATUS surveys from 2003 through 2007 have also been summarized and published in *The Dollar Value of a Day (DVD),*

published by Expectancy Data located in Shawnee Mission, Kansas. The *DVD* data and approach are often cited in the forensic economic community and have been utilized by federal government agencies such as the Centers for Disease Control, U.S. Department of Transportation, and in the U.S. Department of Justices' September 11th Victim Compensation Fund. The ATUS and economic reports such as the *DVD* are instruments in development. As the ATUS expands, greater detail can be achieved in specifying time use by demographic category. As tools, they offer the ability to value whole time for a "statistically average" individual by a variety of characteristics.

V. The Dollar Value of a Day

The Dollar Value of a Day 2007 provides a concise source for the direct measure of services provided to family by individuals by gender, marital status, age categories, employment status, children and children's age categories. The 2007 edition of *DVD* is the fifth in a series beginning with the 2003 ATUS survey. The *DVD* provides hours of services by category spent with family and hours of secondary child care spent along with appropriate replacement cost or shadow prices.

The 2007 *DVD* relies on pooled time-diary data from the 2003 to 2007 American Time Use Survey (ATUS) and May 2007 occupational wage data from the Occupational Employment Statistics program of the Bureau of Labor Statistics (OES/BLS). The ATUS provides detailed information on how 72,922 persons have spent the minutes of their interviewed day. With the passage of each year, the survey base expands with the addition of new ATUS data.

The *DVD* organizes the hours-of-time allocation into 27 activity groupings with five major activity headings: Household Services, Care, Personal Time, Leisure time and Work. Hours of time in each category are valued using market replacement costs drawn from wages from the May 2007 Occupational Employment Statistics survey of the BLS. Wages are drawn from 53 occupational categories reflecting the activities in the categories of time. Mandatory employment costs are added to base wages and within categories of activity, wages are weighted by the proportion of workers in an individual employment category to all workers in all occupations used to price that activity. Occupational categories generally are chosen at the lowest skill levels for an activity. So, the hourly wages of religious and social workers rather than a psychologist are used in calculating the replacement costs for counsel or advice. Since most people have no formal training in providing such services, this valuation approach is reasonable. One might argue that the decedent, in a specific case, was a terrible parent with no skills in providing any useful advice or counsel. Such direct evidence should be used by the trier of fact to weigh the appropriateness of the statistical valuations of the *DVD*.

The *DVD* allows a researcher to directly value services that a statistically average decedent could have provided to family members but for his or her death. Household services can be separated from other non-market service categories. Secondary child care can be captured across all categories of activity, but adding such hours of care to hours of activity spent with family in the same category would be double-counting. In the examples below, hours of activity are only counted once in each category. If one believed that losses of time with a decedent would be unique for each family member, double-counting might be considered appropriate. However, at this point the *DVD* only identifies time spent with family, not the numbers of members of a family. The category of Leisure is the source of non-market time spent with family valued as advice, assistance, counsel, care, support, and instruction. Certainly time spent in companionship would also be included in that category, but only the replacement cost of the supportive time is provided, not the non-pecuniary value of that time.

Two examples of whole-time service calculations are provided. The first example is that of the death of Mr. Smith, a 37-year-old, full-time employed, married male with a with a nine-year-old child. The second example is that of a 37-year-old, married homemaker female decedent (Mrs. Jones) with a nine-year-old child. The *DVD* data that I selected cover the life cycle time frames relevant to Mr. Smith, Mrs. Jones, and their surviving spouses and children. The *DVD* data for Mr. Smith is shown in Table A and the data for Mrs. Jones in shown in Table B. Example of present value loss calculations (Table C for Mr. Smith and Table D for Mrs. Jones) are calculated with 0%, 1%, 2.5%, and 3% net discount rates beginning at 37 for the certain period to age 75.[8]

From tables A and C, whole-time service hours for both husbands and wives fall once the youngest child reaches age 13 when secondary childcare hours are no longer measured by the ATUS. Married male whole-time service hours are fairly constant across categories of time use until retirement allows more time to spend assisting family members. Female homemakers generally spend the same amount of leisure hours with family members until retirement while their caring and helping hours decrease with age. Homemaker household production hours increase with teenagers in the home and decrease once retired females get more help around the home from their retired husbands. The May 2007 weighted average replacement cost is fairly constant for males and females ranging from $11.85 to $12.18 per hour. From tables B and D, the whole-time services-related losses average $28,620 for married males working full-time before retirement and $42,985 for married homemaker females. Present value calculations of survivor losses using a net 2.5% discount rate are $686,674 for the married male and $1,093,433 for the married homemaker female. Inflated to 2007 dollars, Miller's estimate of the enjoyment of life is $2.27 million or $92,600 annually using the same net 2.5% discount rate. The enjoyment of life estimate of Miller does not include the value of household services and is not directly comparable to the above estimates of the whole value of time for a comparable population group. The enjoyment of life estimate also includes all intangible, non-economic values of life while the whole-time values only measure productive service time.[9]

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[8]Age 75 certain is used rather than life expectancies actuarially adjusted for disability probabilities.

[9]If household production hours are omitted from the calculations in Tables C and D, the present values of survivors' losses of lifetime service values of care, personal hours at childcare and shared leisure with family members that could have been provided by the deceased are $435,014 for Mr. Smith and $577,618 for Mrs. Jones.

Table A
Life Cycle Time Use Data for a Married Male Father, Working Full-time before Retirement

Time period	Ages 37 through 40	Ages 41 through 45	Ages 46 through 61	Ages 62 through 74
DVD table number	**1**	**4**	**7**	**16**
DVD table title	Married males that work full-time			Married retired males
	Youngest child under age 13	Youngest child ages 13 to 17	No children under Age 18	No children under Age 18
Household Production Hours	12.90	14.38	13.37	22.01
Caring & Helping Hours with Family	7.67	2.67	1.36	2.43
Personal Time Hours at Childcare	5.79			
Leisure Hours with Family	20.39	20.92	20.75	35.51
Total Whole Time Hours	**46.75**	**37.97**	**35.48**	**59.95**
Household Production Value per Hour	$12.24	$12.41	$12.45	$12.55
Caring & Helping Value per Hour	$11.92	$12.55	$12.53	$12.36
Personal Time Value per Hour	$12.41			
Leisure Value per Hour	$12.01	$11.98	$11.91	$11.84
Weighted Average Value per Hour	**$12.11**	**$12.18**	**$12.14**	**$12.12**

Table B
Life Cycle Time Use Data for a Married Female Homemaker and Mother before Retirement

Time period	Ages 37 through 40	Ages 41 through 45	Ages 46 through 61	Ages 62 through 74
DVD table number	**35**	**36**	**37**	**39**
DVD table title	Married females that are not in the labor force and not disabled, husband works			Married retired females
	Youngest child under age 13	Youngest child ages 13 to 17	No children under Age 18	No children under Age 18
Household Production Hours	33.22	39.86	33.90	30.71
Caring & Helping Hours with Family	21.77	7.10	4.99	3.37
Personal Time Hours at Childcare	10.39			
Leisure Hours with Family	26.51	24.16	26.29	33.39
Total Whole Time Hours	**91.89**	**71.12**	**65.18**	**67.47**
Household Production Value per Hour	$11.46	$11.62	$11.77	$11.68
Caring & Helping Value per Hour	$11.83	$12.30	$12.27	$12.26
Personal Time Value per Hour	$12.42			
Leisure Value per Hour	$12.13	$12.18	$12.06	$11.97
Weighted Average Value per Hour	**$11.85**	**$11.88**	**$11.93**	**$11.85**

Table C
Annual and Lifetime Whole Time Service Values for a Married Male Father, Working Full-time before Retirement

Time period	Ages 37 through 40	Ages 41 through 45	Ages 46 through 61	Ages 62 through 74	Lifetime
Whole Time Service Value per Year	$29,435	$24,054	$22,393	$37,788	$28,620
Number of Years	4	5	16	13	38
Present Value Net 0%	$117,741	$120,272	$471,649	$377,883	$1,087,545
Present Value Net 1%	$116,003	$113,313	$391,882	$273,584	$894,782
Present Value Net 2.5%	$113,503	$103,774	$299,604	$169,795	$686,674
Present Value Net 3%	$112,696	$100,814	$274,625	$145,115	$633,250

Table D
Annual and Lifetime Whole Time Service Values for a Married Female Homemaker and Mother before Retirement

Time period	Ages 37 through 40	Ages 41 through 45	Ages 46 through 61	Ages 62 through 74	Lifetime
Whole Time Service Value per Year	$56,620	$43,928	$40,419	$41,584	$42,985
Number of Years	4	5	16	13	38
Present Value Net 0%	$226,481	$219,641	$771,455	$415,837	$1,633,414
Present Value Net 1%	$223,139	$206,932	$645,680	$301,062	$1,376,814
Present Value Net 2.5%	$218,329	$189,511	$498,745	$186,849	$1,093,433
Present Value Net 3%	$216,777	$184,106	$458,652	$159,690	$1,019,225

In a wrongful death action with loss to survivors, economic damages typically consist of lost earnings and benefit support to survivors and lost household services to survivors provided by the decedent. The use of ATUS and *DVD* allows a benchmark, direct measurement of other service time that the decedent could have provided to survivors. The whole-time measurement can be "tailored" for the demographic characteristics of the decedent and his survivors and the loss is specific to the survivors.

The strengths of the whole-time analysis using the ATUS and *DVD* valuations can be summarized as:

1. The ATUS is the largest time use study ever constructed in the United States. It is the only federal data source regarding time use.
2. The BLS has fully tested and documented their methodology. Data are readily available.
3. The ATUS allows flexibility and exactness in assigning hours of activity by category than any prior time-use survey.
4. Changes in the losses of whole-time services can be traced over the age and changing demographics of the decedent.
5. Using the ATUS and DVD data for valuing services such as advice, instruction, counsel, assistance, care, assistance, etc. requires no more abstraction than valuing household work services.
6. The DVD approach utilizes standard replacement cost methodology for valuing time and its data has been utilized in courtrooms and by the various federal agencies.

The weaknesses of the whole-time analysis using the ATUS and *DVD* valuations can be summarized as:

1. The valuation of whole-time services lost to survivors is based on replacement cost rather than intrinsic value to survivors. As such, it is not a full measure of the value of loss to survivors. Statements by family about the intrinsic worth of such services should supplement the valuation so that a jury might adjust loss to reflect their view of intrinsic worth.
2. By the same reasoning, the value of care provided by an uncaring decedent might be overstated in an analysis of loss. The use of approach should be accompanied by statements by family on specific hours, types and personal valuations of services that a decedent provided family, if possible.
3. While it is possible to extract a greater number of categories of characteristics of the individual or activities, field sizes are still a constraint. However, the ATUS is an ongoing survey and greater divisions will be possible in the future.
4. The hourly wages attached to hours of activity are matched to the nature of the activity. The wages of recreational workers are part of the match for certain recreational activities. While a large number of activities and occupations are included in the analysis, the user of the

analysis should be prepared to explain that this is an analysis for a statistical person that a jury can modify for a specific individual based on evidence presented.

VI. Comments

Hedonic valuations of loss of enjoyment of life have no relevance to the loss of advice, counsel, care, assistance, etc. that survivors claim in wrongful death litigation. Unlike the derivative method of arriving at a value of enjoyment of life in a hedonic valuation, the whole-time approach to service losses does relate to the claims of survivors in a wrongful death action. Time use data and replacement-cost valuation provides a reasonable method for directly valuing total lost service to survivors in a death action. That loss is significantly less, in the two examples provided, than the Miller annual value of enjoyment of life of $92,600 in 2007 prices. In the examples, the 2007 valuation of whole-time service losses average $28,620 for a married male that works full-time to $42,985 for a married homemaker female. These figures, while including household work, are less than the Miller annual enjoyment of life estimate because loss is to the survivors rather than the decedent and replacement cost rather than intrinsic value is used in the valuation.

As the ATUS expands its base, greater demographic separation will become possible, as will the separation of categories. The use of the whole-time approach to provide projections of total available statutory and case law service losses should be viewed as a supplement to testimony directly addressing the losses of family members where possible. However, the use of the approach does bring a greater degree of statistical reliability and basis to the measurement of losses suffered by survivors in a wrongful death action as it begins to address the whole-life valuation concerns of Posner.

References

American Time Use Survey, Bureau of Labor Statistics, http://www.bls.gov/tus.

Becker, G. S., "A Theory of the Allocation of Time," *Economic Journal,* Sept 1965, 75(229), 493-517.

Dickens, William T., "Assuming the Can Opener: Hedonic Wage Estimates and the Value of Life," in *A New Hedonics primer for Economists and Attorneys*, Tucson AZ: Lawyers and Judges Pub., 103-110, 1998.

Dollar Value of a Day: 2007 Dollar Valuation, Shawnee Mission, KS: Expectancy Data, 2008.

Havrilesky, Thomas, "The Misapplication of the Hedonic Damages Concept to Wrongful Death and Personal Injury Litigation," *A New Hedonics Primer for Economists and Attorneys,* Tucson AZ: Lawyers and Judges Publishing Co., 1998, 259-263, 277-281.

Krueger, Kurt, and John Ward, "Assessing Economic Damages in Personal Injury and Wrongful Death Litigation: The State of Kansas," *Journal of Forensic Economics*, Spring/Summer 2005, 18(2-3), 211-226.

Ireland, Thomas, "Valuing Advice, Counsel and Companionship between Parents and Adult Children," *The Earnings Analyst,* 2007, 9, 35-61.

———, Walter Johnson, and James Rodgers, "Why Hedonic Measures are Irrelevant in Wrongful Death Litigation," *A New Hedonics Primer for Economists and Attorneys* , Tucson, AZ: Lawyers and Judges Publishing Co., 197-202, 1998.

Miller, Ted, "The Plausible Range for the Value of Life–Red Herrings Among the Mackerel," *Journal of Forensic Economics,* 1990, 3(3), 17-39, and *A Hedonics Primer for Economists and Attorneys,* Edited by John Ward, Tucson AZ: Lawyers and Judges Publishing Co., 69-92, 1993. A version of this paper first appeared as, "Willingness to Pay Comes of Age: Will the System Survive?," *Northwestern University Law Review,* Summer, 1989, 83(4), 876-907.

Olson, Gerald W. ,"The Value of Emotional Services," *in The New Hedonics Primer for Economist and Attorneys*, Edited by Thomas Ireland and John Ward, Tucson, AZ: Lawyers and Judges Publishing Co., 333-397, 1998.

Posner, Richard A., *Economic Analysis of Law,* Little Brown & Co., 1973.

Shavell, Steven, *Foundations of Economic Analysis of Law*, Cambridge MA: Belknap Press of Harvard University Press, 242, 2004.

Schwartz, Eli, and Robert Thornton, "Toward a Utility-Based Theory of Loss in Wrongful Death Cases," *Journal of Forensic Economics,* 1989, 2(2), 67-74.

Tinari, Frank D., "Household Services: Toward a More Comprehensive Measure," *Journal of Forensic Economics,* 1998, 11(3), 253-265.

Cases

Green v. Bittner, 85 NJ 1, 1980

Sherrod v. Berry, 629 F. Supp. 159, 162 (N.D. Ill. 1985)

———, 827 F.2d 195,206 (7th Cir. 1987)