

**The Effect of the Death of a Parent on the Future Earnings of a Minor Child
(DRAFT: PLEASE DO NOT QUOTE WITHOUT PERMISSION—11/19/2004)**

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Abstract

Forensic economists are often called upon to estimate the economic losses arising from the injury or death of a spouse and parent. A methodology exists for valuing these losses. Receiving much less attention is the effect of the death of a parent on the future earnings of a minor child. The purpose of this paper is to examine this issue. We first review some other literature in economics and psychology that directly or indirectly bears the on question of how losing a parent impacts a child's future educational attainment and earnings. We then attempt to quantify the effect of the death of a parent on a child's future earnings by using one of the models that has been proposed for estimating the educational attainment of a minor child, based on the child's personal and family characteristics and the socioeconomic circumstances of the child's parents. After this quantitative exercise, we next discuss some problems and issues that arise with this approach. We were surprised to find that the results of our own approach and the few other econometric studies that examined this issue did not show any long term negative economic consequences to the minor children when a parent dies.

I. Introduction

Forensic economists are often called upon to estimate the loss of services, guidance and income to minor children resulting from the personal injury or death of a parent. A methodology exists for valuing these losses.¹ Receiving much less attention is the effect of the death of a parent on the future earnings of a minor child. The reason this topic has not received much attention in the forensic literature is no doubt that a child's future loss of earnings due to the death of a parent is not an element of damages in cases involving the wrongful death of a parent. Should it be one of the elements of damage? If the death of a parent has a large negative effect on the future earnings of the decedent's children, then it could be argued that good public policy would require such a loss to be added to the list of damages that can be claimed in such cases. The purpose of this paper is to examine how the death of a parent affects the future earnings of a minor child. In Section II, we review some other literature in economics and psychology that directly or indirectly bears on the question of how losing a parent impacts a child's future educational attainment and earnings. In Section III, we examine one approach to quantifying the effect of the loss of a parent on a child's future earnings by using one of the models that has been proposed for estimating the educational attainment of a minor child, based on the child's personal and family characteristics and the socioeconomic circumstances of the child's parents. Following this quantitative exercise, in Section IV, we discuss some problems and issues that arise with the approach described in Section III. We conclude in Section V where we express our surprise in finding that the results of our own approach and the few other econometric studies that examined this issue did not show any long-term negative economic consequences to minor children when a parent dies.

II. Studies of the Effect of the Loss of Parent on a Child's Future Earnings

A practicing forensic economist might be predisposed to think that the death of a parent would have a negative impact on educational attainment of the surviving child, and, as a consequence, the child's future earnings. This section reviews some addressing this and other linkages.

Ginther and Pollak (2003) examine the connection between family structure and the educational attainment of children. They find that children who grow up in traditional families (children that are biological children of both parents) tend to have a better educational outcome than children that grow up in single-parent and blended families. A blended family includes stepchildren and the biological children of both parents in the new family who all live together. They find that the children in a blended family have educational outcomes that are similar to each other. These results are consistent with McLanahan and Sandefure (1994) who found that children who grow up with both biological parents do better than children growing up in single-parent family or with stepparents.

The research reported in these two papers does not distinguish among blended families arising from divorce, death or some other means. Other studies have tried to make this distinction. Amato, P and K. Bruce (1991) estimated the impact of a child being separated from a

¹ See Tinari (1998) and Ireland and Depperschmidt (1999).

biological parent on adult socioeconomic attainment. Their study uses data from the National Survey of Families and Households (1987-88). The independent variables were divorce, parental death, never having a father and other separations. They find that parental divorce for white male children, white female children and black female children lowered educational attainment, earnings, the standard of living and asset ownership. They found there was no difference for black male [children] between being raised in a single parent household and being raised in an intact family. However, they found that regardless of race and gender, “No significant associations were observed for death of a parent.” (p. 196) These results are consistent with earlier studies by Amato (1988) and Wadsworth and Maclean (1986), which also found that parental divorce/separation but not the death of a parent was associated with lower educational attainment.

Menning (2002) examined the effect of two activities of absent parents on a child’s educational attainment. The first was the effect on educational attainment of the absent parent who was involved with their child on an interpersonal level and the effect of the absent parent contributing financial support to the child. He found that both of these factors independent of each other had no affect on educational attainment. However, both activities combined (an absent parent who was involved with the child and provided financial contributions to the child) increased the probability that the child would finish high school or go on to some college.

Biblarz and Gottainer (2000) examined whether the negative effects for children are greater when single motherhood results from divorce rather than death of the father. They found that children of divorced single mothers have significantly lower levels of occupational status, education and happiness in adulthood when compared to single mother families due to death of the father. They found there was no difference between children living with two-biological-parent families and children living with widowed single-mothers.² The authors conclude that the death of a parent may have little impact on a child’s future earnings because the child typically still has the same (or perhaps even greater) financial means to acquire the human capital necessary to succeed. When a child’s father dies, the widow is likely to receive life insurance and Social Security survivor’s benefits for the minor children. These benefits help insure that the child’s educational opportunities can be maintained at the same level as is true of children from intact families. Children of divorced mothers do not have the same safety net as children of deceased parents.

Using Canadian data Corak (2001) initially found that, on average, children of divorced families had significantly lower incomes and earnings than children in families where a parent had died. However, after controlling for different background variables the differences in income and earnings were almost eliminated or much diminished. Lang, K., and J. Zagorsky, (2001) used a variety of family background control variables to see if children growing up without a biological parent do worse, on average, than other children. With the control variables they find little support that a parent’s presence during childhood affects economic well being in adulthood. This is especially true when they considered the impact of parental death.

² The only exception was that children from single others due to death of father had slightly lower odds of completing high school.

III. Assessing the Effect of Losing a Parent Via the Impact on Educational Attainment

There is a literature in discussing the factors that influence the educational attainment that a child will eventually achieve based on familial and demographic characteristics. Statistical models have been developed to provide quantitative predictions about the probability that a child will achieve various levels of educational attainment.³

The ordered probit educational attainment model from Kane and Spizman (2001) is estimated using data from the National Longitudinal Survey of Youth (NLSY). The ordered probit specification is given by:

$$Z_i = X_i\beta + \mu_i$$

The benefits and/or costs of different levels of education are represented by the unobservable variable Z_i . X is a vector of family background and demographic variables that influence Z_i . Because Z_i is unobservable, an indicator variable is used to show the actual educational level for each individual in the sample. The estimated coefficients for the ordered probit model are used to estimate the probability of the minor child reaching a given educational level.⁴ Once these probabilities are estimated, population average earnings for the particular educational category are used to estimate lifetime earnings streams for the minor child.

The variables listed in Table 1 received a one or zero. Thus if the individual was Hispanic that variable would receive a 1 or 0 otherwise. If the child lived in an urban area at age 14 the variable would receive a 1 or zero otherwise. This binary method was used for all the variables in estimating the ordered probit equation in Table 1.

One of the variables in the NLSY data set that is included in the estimation of the ordered probit model is the variable, “both parents,” a dummy variable set equal to 1 if the respondent lived with both mother and father when 14 years old and zero otherwise. This variable is statistically significant in Models II and III of the Kane/Spizman paper. The probability of educational attainment is affected by this variable. The difference in the probabilities of different levels of educational attainment for minor children who are and who are not living with both parents can be estimated using the ordered probit estimates. This difference in probabilities of educational attainment can, in turn, be used to forecast a difference in lifetime earnings.

Table 2M indicates the work life expectancies for a minor male child for six different levels of educational attainment.⁵ Table 2F indicates the work life expectancies of a female

³ The most recent papers in the forensic economic literature are Jepsen and Jepsen (2001) and Kane and Spizman (2001). The reference sections of these papers list earlier papers in the forensic economics literature and papers in the general economics journals.

⁴ For a complete discussion of the development of the ordered probit model first used by forensic economists see Spizman and Kane (1992).

⁵ The six levels split the “some college” category into two parts, one for those having “some college but no degree” and one for those having an “associate degree.” The probabilities of attaining these two levels are derived by splitting the probability of “some college” into two parts in proportion to the number of persons in the “some college” category who have “some college but no degree” and those who have an “associate degree.” The master’s

child.⁶ Tables 3M and 3F show median male and female earnings adjusted for place, time and unemployment. Table 1 shows the values of the coefficients estimated for Model II of the Kane/Spizman model. Table 4 illustrates the way the educational attainment probabilities are combined with the lifetime earnings estimates to produce an expected value of future earning capacity.⁷ These lifetime earnings estimates are “projected flat” using total offset for simplicity. Because the primary interest is in the percentage differences between lifetime earnings when a child lives with both parents and lifetime earnings when a child does not live with both parents, the distortion from failing to discount future earnings to present worth is of little or no consequence.

Table 5 shows the results of the computations. The model predicts that lifetime earnings for a minor living with both parents at age 14 will be approximately 4% to 6% higher than the lifetime earnings of minors not living with both parents at age 14. The reduction in lifetime earnings is due to the lower likelihoods of educational attainment at the higher levels of attainment and higher likelihoods of the lower levels of educational attainment for a child not living with both parents.

IV. Problems of Interpretation

There are ambiguities arising from the fact that "not living with both parents" can cover many very different kinds of situations: (a) there may have been a divorce; (b) one parent may have died; (c) the parents may be estranged and temporarily separated but are nevertheless trying to work out getting back together; (d) one parent may be working in a separate city (e.g., Baghdad) and be temporarily away from home, or (e) one parent may be in prison. Furthermore, "not living with both parents" can refer to a situation where a child is not living with both biological parents, or it can refer to a situation where only one adult is raising the child.

There can also be wide differences in the age of the child when the "not living with both parents" condition begins. The variable in the data used for estimation relates to the parental situation when the child is 14 years of age. However, it could make a difference whether (a) the mother never even knew who the father was, with the child being born not living with both parents, as compared to (b) having one parent disappear from the household when the child is older, say, age 7, and (c) the other extreme, where the "not living with both parents" condition did not begin until the child was age 14. And for some children living with both parents at age 14, the child may not have been living with both parents at some later time, e.g., at age 15 or at age 17, prior to graduating from high school. Such a child would be lumped together with children who always lived with both parents until completing high school. The SK coefficient, while significant at the 1% level, is not able to distinguish among these various situations.

and Ph.D. degree categories are combined into one “master’s degree” category since the probability of obtaining a Ph.D. degree is very small.

⁶ The work life expectancy of males is used to better capture female earning capacity. For a discussion supporting this approach, see Corcione and Thornton (1991)

⁷ Only one table is shown for illustrative purposes. A table calculation like that shown in Table 4 was made for each of the 28 lifetime earnings amounts shown in Table 5.

Because of these ambiguities, there is considerable uncertainty as to what can really be learned from the exercise that produced Table 5 about the effect of one parent being deceased. On the surface, at least, it does still appear that the effect of not living with one parent at the age of 14 is relatively small, constituting a loss of earnings of 4% to 6%. This estimate presumably reflects an amalgam of the effects of the various possible circumstances and could reflect a kind of weighted average of a larger negative effect of living with only one parent due to divorce and a negligible effect of living with only one parent due to the death of one parent. These results are consistent with the results found in the studies by economists and psychologists reviewed above.

V. Conclusion

Our initial inquiry into the question of the effect of a parent's death on the future earnings of a minor child as an adult was based on the presumption that there would be some reduction of lifetime earnings of the adult when as a child one of the parents died. We also believed that a practicing forensic economist might want to explore the magnitude of this loss in wrongful death cases involving the death of a parent. If there was a substantial future loss to a child resulting from the death of a parent, an argument could be made that this type of loss should be included among the elements of damage in wrongful death cases, and children of deceased parents should be compensated for that future earnings loss in addition to other more traditional losses forensic economists compute in such cases.

Using the Kane/Spizman ordered probit model we found that a child's loss of lifetime earnings when a parent is absent (for any reason including death) is between approximately 4 and 6 percent. Other research on this issue which we have reviewed finds the loss due to death of a parent is almost nonexistent and any loss due to the absence of a parent is mostly attributed to those of children of single divorced mothers. Because a child's loss of lifetime earnings as a result of the death of a parent appears to be small, the common practice of not estimating this loss appears to be sensible and defensible. However, it should be appreciated that the research results reported in this paper are not exhaustive of the literature, nor do the calculations made using the Kane/Spizman model exhaust the kind of investigation that could be made for other scenarios and using other educational attainment models (e.g., Gill and Foley and Jepsen and Jepsen). In addition, the results of this paper are not intended to imply that there cannot exist specific circumstances in which a child will suffer a loss of lifetime earnings as a result of the death of a parent. But in general such losses appear to be quite small.

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Table 1

Spizman/Kane Ordered Probit Equation – Model II (a)

Variables	Males	Females
Constant	0.134	0.189
Hispanic	-0.072	0.016
Black	0.083	0.14
Urban14	-0.008	-0.112
Mother's Education		
High School	0.34	0.389
Some College	0.583	0.552
College	0.898	0.818
Father's Education		
High School	0.244	0.25
Some College	0.464	0.423
College	0.788	0.645
Adult's Occupation		
Professional	0.281	0.39
Sales or Clerical	0.148	0.126
Religion Raised		
Baptist	0.399	0.492
Protestant	0.541	0.734
Catholic	0.489	0.661
Jewish	0.926	1.271
Other	0.494	0.524
Only Child	0.175	0.228
Living With Both Parents	0.225	0.194
Mu (1)	2.034	1.996
Mu (2)	2.305	2.384
Mu (3)	3.297	3.398
Mu (4)	3.396	4.295

(a) Source: John Kane and Lawrence M. Spizman, "An Update of the Educational Attainment Model for a Minor Child," *Journal of Forensic Economics*, Spring/Summer, 2001, Vol. 14, No. 2, pp. 155-66, Table 4, showing estimates for Model II.

TABLE 2M
RELEVANT DATES AND EXPECTANCIES - MALE CHILD

	DATE	YEAR AND FRACTIONAL EQUIVALENT	NUMBER OF YEARS	AGE	50% OF GROUP WILL HAVE EXPECTANCY BETWEEN APPROXIMATELY AGE (LOW) (a) AGE (HIGH) (a)	
1. Date of Birth	1-Jan-1991	1991.000	--	--	--	--
2. Date of Parent's Death	1-Jan-2004	2004.000	13.000	13.000	--	--
3. Date of This Report	1-Jan-2005	2005.000	1.000	14.000	--	--
4. Age 67	Jan-2058	2058.000	54.000	67.000	--	--
5. Statistical Life Expectancy (a)	Apr-2066	2066.300	62.300	75.300	68.022	86.008

(1)	(2)	(3)	(4)	(5)	(6)
LEVEL OF EDUCATIONAL ATTAINMENT	LABOR MARKET ENTRY DATE	ENTRY AGE	STATISTICAL WORKLIFE EXPECT-ANCY (b)	PROBABILITY OF LIVING FROM AGE AT PARENT'S DEATH TO ENTRY AGE (a)	ADJUSTED STATISTICAL WORKLIFE EXPECT-ANCY (4) x (5)
As a high school dropout	2008.000	17.000	33.920	0.99824	33.860
With a high school diploma	2009.000	18.000	37.970	0.99733	37.869
With some college, no degree	2011.000	20.000	37.620	0.99474	37.422
With an associate degree	2011.000	20.000	37.620	0.99474	37.422
With a bachelor's degree	2013.000	22.000	38.980	0.99192	38.665
With a master's degree	2015.000	24.000	39.530	0.98914	39.101

(a) Computed from Baby Male's age as of the date of his parent's death using Elizabeth Arias, "United States Life Tables, 2002," National Vital Statistics Reports, Vol. 53, No. 6, November 10, 2004, U.S. Dept. of Health and Human Services, Table 2.

(a) Computed from Baby Male's age as of the assumed date of entry into the labor force using Gary R. Skoog and James E. Ciecka, "A Markov (Increment - Decrement) Model of Labor Force Activity: Extended Tables of Central Tendency, Variation, and Probability Intervals," Journal of Legal Economics, Vol. 11, No. 1, Spring/Summer, 2001, Tables 2, 3, 4, 5 and 6. This paper updates with recent data the older worklife expectancy estimates found in U.S. Dept. of Labor, Bureau of Labor Statistics, "Worklife Estimates: Effects of Race and Education," Bulletin 2254, (Feb. 1986).

TABLE 2F
RELEVANT DATES AND EXPECTANCIES - FEMALE CHILD

	DATE	YEAR AND FRACTIONAL EQUIVALENT	NUMBER OF YEARS	AGE	50% OF GROUP WILL HAVE EXPECTANCY BETWEEN APPROXIMATELY	
					AGE (LOW) (a)	AGE (HIGH) (a)
1. Date of Birth	1-Jan-1991	1991.000	--	--	--	--
2. Date of Parent's Death	1-Jan-2004	2004.000	13.000	13.000	--	--
3. Date of This Report	1-Jan-2005	2005.000	1.000	14.000	--	--
4. Age 67	Jan-2058	2058.000	54.000	67.000	--	--
5. Statistical Life Expectancy (a)	Jul-2071	2071.500	67.500	80.500	73.695	90.183

	(1)	(2)	(3)	(4)	(5)	(6)
LEVEL OF EDUCATIONAL ATTAINMENT		LABOR MARKET ENTRY DATE	ENTRY AGE	STATISTICAL WORKLIFE EXPECTANCY (b)	PROBABILITY OF LIVING FROM AGE AT PARENT'S DEATH TO ENTRY AGE (a)	ADJUSTED STATISTICAL WORKLIFE EXPECTANCY (4) x (5)
As a high school dropout		2008.000	17.000	33.920	0.99896	33.885
With a high school diploma		2009.000	18.000	37.970	0.99852	37.914
With some college, no degree		2011.000	20.000	37.620	0.99760	37.530
With an associate degree		2011.000	20.000	37.620	0.99760	37.530
With a bachelor's degree		2013.000	22.000	38.980	0.99664	38.849
With a master's degree		2015.000	24.000	39.160	0.99572	38.993

(a) Computed from Baby Male's age as of the date of his parent's death using Elizabeth Arias, "United States Life Tables, 2002," National Vital Statistics Reports, Vol. 53, No. 6, November 10, 2004, U.S. Dept. of Health and Human Services, Table 3.

(a) Computed from Baby Male's age as of the assumed date of entry into the labor force using Gary R. Skoog and James E. Ciecka, "A Markov (Increment - Decrement) Model of Labor Force Activity: Extended Tables of Central Tendency, Variation, and Probability Intervals," Journal of Legal Economics, Vol. 11, No. 1, Spring/Summer, 2001, Tables 2, 3, 4, 5 and 6. This paper updates with recent data the older worklife expectancy estimates found in U.S. Dept. of Labor, Bureau of Labor Statistics, "Worklife Estimates: Effects of Race and Education," Bulletin 2254, (Feb. 1986).

TABLE 3M

EARNINGS BY LEVEL OF EDUCATIONAL ATTAINMENT
 MALES AGED 18 AND OVER WORKING FULL TIME, YEAR ROUND IN 2001-02
 AND ESTIMATED FOR 2004 WITH AN ADJUSTMENT FOR UNEMPLOYMENT

(1)	(2)	(3)	(4)	(5)	(6)
Level of Educational Attainment	2001-2002 Number Working Full-Time Year-Round (a)	2001-2002 U.S. Median Earnings (a) (2002\$s)	2004 Estimated U.S. Median Earnings (3) X 1.05447 (b)	Unemployment Rate (c)	2004 Median Earnings Adjusted For Unemployment (4) X (5)
High School Dropout	4,379,835	\$25,738	\$27,140	10.4%	\$24,314
High School Diploma	14,587,199	\$31,915	\$33,654	6.6%	\$31,443
Some College, No Degree	3,387,637	\$36,344	\$38,324	4.5%	\$36,602
Associate Degree	11,067,178	\$39,806	\$41,974	4.5%	\$40,089
Bachelor's Degree	9,869,192	\$53,525	\$56,441	3.1%	\$54,697
Master's Degree	3,479,356	\$65,621	\$69,196	2.9%	\$67,182

(a) Source: Expectancy Data, "Full-time Earnings in the United States: 2002 Edition. Shawnee Mission, Kansas, 2004, pp. 15-18.

(b) Sources: CPI in June, 2004 divided by CPI for 2002; CPI found at <http://data.bls.gov/cgi-bin/surveymost>.

(c) Source for unemployment adjustment: Tables A-16 and A-17 of USDL, BLS, "Employment and Earnings," various issues. Rates in Column (5) are computed as a weighted average of the rates for the under 25 age group and the 25 and over age group, where weights are the proportion of the working life under and over 25. Covering period Jan., 2001 to July, 2004.

TABLE 3F

EARNINGS BY LEVEL OF EDUCATIONAL ATTAINMENT
 FEMALES AGED 18 AND OVER WORKING FULL TIME, YEAR ROUND IN 2001-02
 AND ESTIMATED FOR 2004 WITH AN ADJUSTMENT FOR UNEMPLOYMENT

(1)	(2)	(3)	(4)	(5)	(6)
Level of Educational Attainment	2001-2002 Number Working Full-Time Year-Round (a)	2001-2002 U.S. Median Earnings (a) (2002\$)	2004 Estimated U.S. Median Earnings (3) X 1.05447 (b)	Unemployment Rate (c)	2004 Median Earnings Adjusted For Unemployment (4) X (5)
High School Dropout	2,339,899	\$19,182	\$20,227	12.3%	\$17,736
High School Diploma	10,213,023	\$23,679	\$24,969	6.3%	\$23,386
Some College, No Degree	2,958,664	\$27,258	\$28,743	3.9%	\$27,616
Associate Degree	9,193,700	\$29,235	\$30,828	3.9%	\$29,619
Bachelor's Degree	7,566,389	\$39,122	\$41,253	2.9%	\$40,048
Master's Degree	3,048,773	\$47,449	\$50,034	2.8%	\$48,637

(a) Source: Expectancy Data, "Full-time Earnings in the United States: 2002 Edition. Shawnee Mission, Kansas, 2004, pp. 19-22.

(b) Sources: CPI in June, 2004 divided by CPI for 2002; CPI found at <http://data.bls.gov/cgi-bin/surveymost>.

(c) Source for unemployment adjustment: Tables A-16 and A-17 of USDL, BLS, "Employment and Earnings," various issues. Rates in Column (5) are computed as a weighted average of the rates for the under 25 age group and the 25 and over age group, where weights are the proportion of the working life under and over 25. Covering period Jan., 2001 to July, 2004.

Table 5
Comparison of Undiscounted Lifetime Earnings Using Kane/Spizman Model*

Socioeconomic Situation	Male Living With Both Parents At Age 14	Male Not Living With Both Parents At Age 14	Percentage Penalty For Not Living With Both Parents	Female Living With Both Parents At Age 14	Female Not Living With Both Parents At Age 14	Percentage Penalty For Not Living With Both Parents
Both Parents High School Dropouts, Occupation not Professional, Sales or Clerical	\$1,327,443	\$1,271,391	4.22%	\$998,695	\$960,767	3.80%
Both Parents High School Graduates, Occupation not Professional, Sales or Clerical	\$1,503,091	\$1,429,113	4.92%	\$1,149,673	\$1,098,598	4.44%
Both Parents High School Graduates, Occupation Sales or Clerical	\$1,557,153	\$1,476,726	5.17%	\$1,185,841	\$1,131,159	4.61%
Both Parents with Some College, Occupation not Professional, Sales or Clerical	\$1,688,525	\$1,592,354	5.70%	\$1,251,770	\$1,190,613	4.89%
Both Parents with Some College, Occupation Sales or Clerical	\$1,758,231	\$1,654,278	5.91%	\$1,294,767	\$1,229,635	5.03%
Both Parents with College, Occupation Sales or Clerical	\$2,107,283	\$1,977,467	6.16%	\$1,482,556	\$1,404,399	5.27%
Both Parents with College, Occupation Professional	\$2,185,545	\$2,053,640	6.04%	\$1,593,144	\$1,511,552	5.12%

*John Kane and Lawrence M. Spizman, "An Update of the Educational Attainment Model for a Minor Child," Journal of Forensic Economics, Spring/Summer, 2001, Vol. 14, No. 2, pp. 155-66. The lifetime earnings estimates are based on the educational attainment probabilities estimated for Model II, shown in Table 4 of the paper.