

---

**VOCATIONAL  
ECONOMICS,  
INC.**

---

This document was downloaded from Vocational Economics Inc. ([www.vocecon.com](http://www.vocecon.com)). For more information on this document, visit: [www.vocecon.com//technical/Bibliography/wlbibnwt.htm](http://www.vocecon.com//technical/Bibliography/wlbibnwt.htm)

**Worklife and Disability:  
Confronting the Myths -  
Conference Handout**

**A. M. Gamboa, Jr., PhD, MBA  
Vocational Economics, Inc  
[www.vocecon.com](http://www.vocecon.com)**

**Distributed at the International Association of Rehabilitation Professionals  
Annual Conference, April 2005**

## The Posner Decision – O’Shea v. Riverway Towing

In April of 1982, an appellate decision recommended a method of estimating pre-injury and post-injury expected earnings that involves probability statistics. The decision was written at a time when few experts in the country were using probability statistics to forecast before-injury expected earnings and fewer still were using such data to forecast probable post-injury expected earnings for individuals with work limitations resulting from impairment.

The case involves Margaret O’Shea, a 57-year-old female who broke her leg in a fall while coming off duty as a cook on a towboat. The federal district court judge found Riverway negligent and damages in excess of \$150,000 were assessed. The appellate court sustained the lower court decision.

The appellate decision states that “there is no doubt that the accident disabled Mrs. O’Shea from working as a cook” but the position of Riverway is that Mrs. O’Shea “could have gotten some sort of job and that the wages in that job should be deducted from the admittedly higher wages that she could have earned as a cook on a boat.” The issue of the degree of work disability sustained by Mrs. O’Shea was dealt with as follows:

The question is not whether Mrs. O’Shea is totally disabled in the sense, relevant to Social Security Disability cases but not tort cases, that there is no job in the American economy for which she is medically fit --- It is whether she can by reasonable diligence find gainful employment, given the physical condition in which the accident left her --- here is a middle-aged woman, very overweight, badly scarred on one arm and one leg, unsteady on her feet, in constant and serious pain from the accident with no education beyond high school and no work skills other than cooking, a job that happens to require standing for long periods which she is incapable of doing. It seems unlikely that someone in this condition could find gainful work at the minimum wage. True, the probability is not zero; and a better procedure, therefore, might have been to subtract from Mrs. O’Shea’s lost future wages as a boat’s cook the wages in some other job, discounted (i.e. multiplied) by the probability – very low – that she would in fact be able to get another job.

In commenting on the analysis performed by the economist, Judge Posner notes that:

No allowance for the fact that Mrs. O’Shea, whose health history quite apart from the accident is not outstanding, might very well not have survived – let alone survived and been working as a boat’s cook or in an equivalent job – until the age of 70. The damage award is a sum certain, but the lost future wages to which that award is equated by means of the discount rate are mere probabilities. If the probability of her being employed as a boat’s cook full time in 1990 was only 75 percent, for example, then her estimated wages in that year should have been multiplied by .75 to determine the value of the expectation that she lost as a result of the accident; and so with each of the other future years. The economist did not do this and by failing to do this he overstated the loss due to the accident.

In this decision, the court defined a "better procedure" for estimating future expected earnings, that of utilizing probability statistics to better define future expected earnings in assisting the trier of fact. The procedure is identical to the method used in *The New Worklife Expectancy Tables*. The O’Shea case involves a woman with a “severe work disability.” The probability of employment for a 55 to 64 year old female high school graduate with a severe work disability is .043, compared to a probability of employment of .576 for a 55 to 64 year old female high school graduate who is not disabled.

## Calculating the Probability of Life

Probability of living from the base age through a given age

# of survivors at base age (age 57)      92556

Age	# Survivors at Given Age	Calculation	Probability of Life
57	92556	91982 / 92556	0.994
58	91982	91356 / 92556	0.987
59	91356	90677 / 92556	0.980
60	90677	89939 / 92556	0.972
61	89939	89134 / 92556	0.963
62	89134	88259 / 92556	0.954
63	88259	87310 / 92556	0.943
64	87310	86283 / 92556	0.932
65	86283	85179 / 92556	0.920
66	85179	83991 / 92556	0.907
67	83991	82711 / 92556	0.894
68	82711	81331 / 92556	0.879
69	81331	79843 / 92556	0.863
70	79843	78251 / 92556	0.845
71	78251	76555 / 92556	0.827
72	76555	74747 / 92556	0.808
73	74747	72813 / 92556	0.787
74	72813	70741 / 92556	0.764
75	70741	68535 / 92556	0.740
76	68535	66199 / 92556	0.715
77	66199	63726 / 92556	0.689
78	63726	61104 / 92556	0.660
79	61104	58317 / 92556	0.630
80	58317	55365 / 92556	0.598
81	55365	52249 / 92556	0.565
82	52249	48965 / 92556	0.529
83	48965	45518 / 92556	0.492
84	45518	41923 / 92556	0.453
85	41923	38253 / 92556	0.413
86	38253	34551 / 92556	0.373
87	34551	30865 / 92556	0.333
88	30865	27248 / 92556	0.294
89	27248	23749 / 92556	0.257
90	23749		

**Joint Participation/Employment Rate  
Female, High School Degree**

<b>Age Range</b>	<b>Not Disabled</b>	<b>Severely Disabled</b>	<b>Not Severely Disabled</b>
55 - 64	0.576	0.043	0.359
65 - 74	0.155	0.004	0.072
75 - 84	0.045	0.000	0.029
85 - 89	0.011	0.000	0.009

Source: U.S. Census Bureau, Current Population Survey March Supplement, 1992-2001.

**Worklife Probability  
Computation of Lost Worklife and Earnings  
Margaret O'Shea - Severely Disabled**

Pre-Injury Base Earnings                    21967  
Post-Injury Base Earnings                10712

Age	Years	Pre-Injury					Post-injury				
		Prob Life	Prob PE	Prob Worklife	Base Earnings	Adj Earnings	Prob Life	Prob PE	Prob Worklife	Base Earnings	Adj Earnings
57	1	0.994	0.576	0.573	21,967	12,587	0.994	0.043	0.043	10,712	461
58	1	0.987	0.576	0.569	21,967	12,499	0.987	0.043	0.042	10,712	450
59	1	0.980	0.576	0.564	21,967	12,389	0.980	0.043	0.042	10,712	450
60	1	0.972	0.576	0.560	21,967	12,302	0.972	0.043	0.042	10,712	450
61	1	0.963	0.576	0.555	21,967	12,192	0.963	0.043	0.041	10,712	439
62	1	0.954	0.576	0.550	21,967	12,082	0.954	0.043	0.041	10,712	439
63	1	0.943	0.576	0.543	21,967	11,928	0.943	0.043	0.041	10,712	439
64	1	0.932	0.576	0.537	21,967	11,796	0.932	0.043	0.040	10,712	428
65	1	0.920	0.155	0.143	21,967	3,141	0.920	0.004	0.004	10,712	43
66	1	0.907	0.155	0.141	21,967	3,097	0.907	0.004	0.004	10,712	43
67	1	0.894	0.155	0.139	21,967	3,053	0.894	0.004	0.004	10,712	43
68	1	0.879	0.155	0.136	21,967	2,988	0.879	0.004	0.004	10,712	43
69	1	0.863	0.155	0.134	21,967	2,944	0.863	0.004	0.003	10,712	32
70	1	0.845	0.155	0.131	21,967	2,878	0.845	0.004	0.003	10,712	32
71	1	0.827	0.155	0.128	21,967	2,812	0.827	0.004	0.003	10,712	32
72	1	0.808	0.155	0.125	21,967	2,746	0.808	0.004	0.003	10,712	32
73	1	0.787	0.155	0.122	21,967	2,680	0.787	0.004	0.003	10,712	32
74	1	0.764	0.155	0.118	21,967	2,592	0.764	0.004	0.003	10,712	32
75	1	0.740	0.045	0.033	21,967	725	0.740	0.000	0.000	10,712	0
76	1	0.715	0.045	0.032	21,967	703	0.715	0.000	0.000	10,712	0
77	1	0.689	0.045	0.031	21,967	681	0.689	0.000	0.000	10,712	0
78	1	0.660	0.045	0.030	21,967	659	0.660	0.000	0.000	10,712	0
79	1	0.630	0.045	0.028	21,967	615	0.630	0.000	0.000	10,712	0
80	1	0.598	0.045	0.027	21,967	593	0.598	0.000	0.000	10,712	0
81	1	0.565	0.045	0.025	21,967	549	0.565	0.000	0.000	10,712	0
82	1	0.529	0.045	0.024	21,967	527	0.529	0.000	0.000	10,712	0
83	1	0.492	0.045	0.022	21,967	483	0.492	0.000	0.000	10,712	0
84	1	0.453	0.045	0.020	21,967	439	0.453	0.000	0.000	10,712	0
85	1	0.413	0.011	0.005	21,967	110	0.413	0.000	0.000	10,712	0
86	1	0.373	0.011	0.004	21,967	88	0.373	0.000	0.000	10,712	0
87	1	0.333	0.011	0.004	21,967	88	0.333	0.000	0.000	10,712	0
88	1	0.294	0.011	0.003	21,967	66	0.294	0.000	0.000	10,712	0
89	1	0.257	0.011	0.003	21,967	66	0.257	0.000	0.000	10,712	0
<b>33.0</b>		<b>6.1</b>			<b>133,098</b>		<b>0.4</b>			<b>3,920</b>	
<b>Total Loss</b>										<b>129,178</b>	

**Worklife Probability  
Computation of Lost Worklife and Earnings  
Margaret O'Shea - Not Severely Disabled**

Pre-Injury Base Earnings                    21967  
Post-Injury Base Earnings                10712

Age	Years	Pre-Injury					Post-injury				
		Prob Life	Prob PE	Prob Worklife	Base Earnings	Adj Earnings	Prob Life	Prob PE	Prob Worklife	Base Earnings	Adj Earnings
57	1	0.994	0.576	0.573	21,967	12,587	0.994	0.359	0.357	10,712	3824
58	1	0.987	0.576	0.569	21,967	12,499	0.987	0.359	0.354	10,712	3792
59	1	0.980	0.576	0.564	21,967	12,389	0.980	0.359	0.352	10,712	3771
60	1	0.972	0.576	0.560	21,967	12,302	0.972	0.359	0.349	10,712	3738
61	1	0.963	0.576	0.555	21,967	12,192	0.963	0.359	0.346	10,712	3706
62	1	0.954	0.576	0.550	21,967	12,082	0.954	0.359	0.342	10,712	3664
63	1	0.943	0.576	0.543	21,967	11,928	0.943	0.359	0.339	10,712	3631
64	1	0.932	0.576	0.537	21,967	11,796	0.932	0.359	0.335	10,712	3589
65	1	0.920	0.155	0.143	21,967	3,141	0.920	0.072	0.066	10,712	707
66	1	0.907	0.155	0.141	21,967	3,097	0.907	0.072	0.065	10,712	696
67	1	0.894	0.155	0.139	21,967	3,053	0.894	0.072	0.064	10,712	686
68	1	0.879	0.155	0.136	21,967	2,988	0.879	0.072	0.063	10,712	675
69	1	0.863	0.155	0.134	21,967	2,944	0.863	0.072	0.062	10,712	664
70	1	0.845	0.155	0.131	21,967	2,878	0.845	0.072	0.061	10,712	653
71	1	0.827	0.155	0.128	21,967	2,812	0.827	0.072	0.060	10,712	643
72	1	0.808	0.155	0.125	21,967	2,746	0.808	0.072	0.058	10,712	621
73	1	0.787	0.155	0.122	21,967	2,680	0.787	0.072	0.057	10,712	611
74	1	0.764	0.155	0.118	21,967	2,592	0.764	0.072	0.055	10,712	589
75	1	0.740	0.045	0.033	21,967	725	0.740	0.029	0.021	10,712	225
76	1	0.715	0.045	0.032	21,967	703	0.715	0.029	0.021	10,712	225
77	1	0.689	0.045	0.031	21,967	681	0.689	0.029	0.020	10,712	214
78	1	0.660	0.045	0.030	21,967	659	0.660	0.029	0.019	10,712	204
79	1	0.630	0.045	0.028	21,967	615	0.630	0.029	0.018	10,712	193
80	1	0.598	0.045	0.027	21,967	593	0.598	0.029	0.017	10,712	182
81	1	0.565	0.045	0.025	21,967	549	0.565	0.029	0.016	10,712	171
82	1	0.529	0.045	0.024	21,967	527	0.529	0.029	0.015	10,712	161
83	1	0.492	0.045	0.022	21,967	483	0.492	0.029	0.014	10,712	150
84	1	0.453	0.045	0.020	21,967	439	0.453	0.029	0.013	10,712	139
85	1	0.413	0.011	0.005	21,967	110	0.413	0.009	0.004	10,712	43
86	1	0.373	0.011	0.004	21,967	88	0.373	0.009	0.003	10,712	32
87	1	0.333	0.011	0.004	21,967	88	0.333	0.009	0.003	10,712	32
88	1	0.294	0.011	0.003	21,967	66	0.294	0.009	0.003	10,712	32
89	1	0.257	0.011	0.003	21,967	66	0.257	0.009	0.002	10,712	21
<b>33.0</b>		<b>6.1</b>			<b>133,098</b>		<b>3.6</b>			<b>38,284</b>	
<b>Total Loss</b>										<b>94,814</b>	

## Worklife Expectancy Comparison

### Males

Source	Data Date	Age 25			Age 45		
		No Disability	All Males	Nonsevere Disability	No Disability	All Males	Nonsevere Disability
#1	1970		35.6			18.9*	
#2	1977		33.4			15.9	
#3	1979-80		33.1			15.7	
#4	1997-98		33.4			16.3	
#5	1995-2004	35.9	32.7	27.9	18.6	16.2	13.3
#6	2001-2003	34.3	32.0		17.7	15.9	

\* WLE for active men

1. US Bureau of Labor Statistics. *Length of working life for men and women, 1970. 1977* (Uses data from 1969 to 1971)
2. US Bureau of Labor Statistics. *Tables of Working Life: The Increment-Decrement Model. 1982* (Uses Current Population Survey, 1977)
3. US Bureau of Labor Statistics. *Worklife Estimates: Effects of Race and Education. 1986* (Uses Current Population Survey, 1979-1980)
4. Ciecka, Donley, and Goldman. *A Markov Process Model of Work-Life Expectancies Based on Labor Market Activity in 1997-98. 1999-2000* (Uses Current Population Survey, 1997-98)
5. Vocational Economics, Inc. *The New Worklife Expectancy Tables. forthcoming 2005* (Uses Current Population Survey, years 1995-2004)
6. Vocational Economics, Inc. *The New Worklife Expectancy Tables. forthcoming 2005* (Uses American Community Survey, years 2001-2003)

## Worklife Expectancy Comparison

### Females

Source	Data Date	Age 25			Age 45		
		No Disability	All Females	Nonsevere Disability	No Disability	All Females	Nonsevere Disability
#1	1977		23.0			10.5	
#2	1979-80		24.0			11.1	
#3	1997-98		28.3			13.3	
#4	1995-2004	30.4	27.8	22.4	15.6	13.6	10.7
#5	2001-2003	28.6	26.7		14.7	13.2	

1. US Bureau of Labor Statistics. *Tables of Working Life: The Increment-Decrement Model*. 1982 (Uses Current Population Survey, 1977)
2. US Bureau of Labor Statistics. *Worklife Estimates: Effects of Race and Education*. 1986 (Uses Current Population Survey, 1979-1980)
3. Ciecka, Donley, and Goldman. *A Markov Process Model of Work-Life Expectancies Based on Labor Market Activity in 1997-98*. 1999-2000 (Uses Current Population Survey, 1997-98)
4. Vocational Economics, Inc. *The New Worklife Expectancy Tables*. forthcoming 2005 (Uses Current Population Survey, years 1995-2004)
5. Vocational Economics, Inc. *The New Worklife Expectancy Tables*. forthcoming 2005 (Uses American Community Survey, years 2001-2003)