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Article Tile: Worklife and Economic Damages

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Article body:

In tort cases involving personal injury, wrongful death, and wrongful termination, a common element of economic damages is a worker's loss of earnings. For example, a person physically injured by a drunk driver may seek loss of earnings or opportunity to work – in addition to compensation for medical costs. If the same person is killed by the drunk driver, the law allows recovery of lost earnings by survivors and/or the estate. For a worker fired from their job unjustly, the law likewise identifies earnings losses as damages.

With earnings taking place over a period of time, losses start at the time of the tortious act and stop at the end of worklife – or when earnings capacity is restored – whichever is sooner. To determine damages associated with earnings loss, the court often needs some notion of worklife's endpoint. Workers know a good deal about their plans and future, but the court knows less and finds itself in the uneviable position of predicting an uncertain future. Longer worklives imply more earnings and economic damages.

What is a reasonable estimate of a person's remaining work years? In this article I will discuss th issue of worklife expectancy, and identify common methods used to estimate worklife in tort cases. No method is perfect, and to illustrate this point I test some out on the problem of estimating the worklife expectancy of Supreme Court Justices. For the Justices, common methods of worklife estimation seem inadequate, but with clear goals and relevant data one can redouble one's efforts and get reasonable estimates of worklife.

The following are five talking points that bear on the worklife concept in tort cases:

1. A number assigned to "worklife expectancy" must be based on the right idea – this being the court's idea of what worklife is to mean at trial. A number that does so, in an unbiased and efficient way, is a reasonable estimate of a person's remaining work years.
2. The economics of incentives gives clues about worker plans and worklife expectancy.
3. Statistics give a "black-box" worklife estimate that can be useful when incentives are weak.
4. Sometimes standard economics and statistics fall short, and history can help.
5. The choice of worklife estimate can be important for economic damages.

Subsequent sections of this article develop these points in more detail.

The Right Idea

The right idea, when estimating worklife expectancy, is to start with a clear understanding of what is being estimated. To illustrate, consider a wrongful death case in which a 40 year-old woman, driving home at night from a wedding with her young child, is struck and killed by a horse that has wandered off a local farm. Her husband, joint survivor with her child, sues the farmer for negligent control of the horse, claiming damages that include earnings that the woman – a school teacher – could have earned but for her untimely death. Earnings loss begins in her 40^{th} year and ends at some point -- this being her worklife expectancy. As a longtime school teacher, she belonged to a union with attractive retirement benefits at age 65, and reduced benefits at earlier ages, in which case she might reasonably be expected to retire at age 65 unless early retirement , illness, death, or work termination prevent it. Here worklife expectancy would be 65 years, or perhaps a number that is adjusted downward to reflect the chances of illness/death, early retirement, and termination.

In the above example, the claim of earnings loss is made simple by an existing long history of work, and a union job that provides a strong incentives for workers to stay employed until age 65 or thereabouts. Here there is no practical distinction between the worker's expected earnings and her earnings *capacity*, because she was actually working at the time of loss, and could reasonably be expected to remain working. If, however, the woman in question was not employed at her time of death, claims to future earnings losses may be based more explicitly on the loss of opportunity – or "capacity" – to work, whether or not she might ultimately have chosen to work.

If the court's view is that earnings loss should be based on the capacity to work, regardless of whether work would ultimately be done, then reasonable estimates of worklife expectancy should target earnings capacity. Any estimate that instead targets the actual number of work years will either be the same or too low. On the other hand, if the court's position is that earnings loss be interpreted in terms anticipated work years then the estimation of worklife expectancy should follow suit, or risk the chance of producing a number too high.

If the court's views are known then filling in a number for worklife expectancy might be easy given basic case facts. In the above-mentioned wrongful death case, if the facts include records from the deceased's employer and labor union, they may show compelling (pension) incentives to remain employed until a certain age. But most U.S. workers are not union members, and their work incentives are not so easy to identify. The fuzzier are these incentives, the fuzzier is worklife expectancy.

A Dose of Economics

Economists are fond of the phrase "incentives matter," and an understanding of incentives is often useful for predicting economic choice and behavior. Classical economic theory posits that each person makes choices that yield the best result in terms of net benefit – the difference between benefit received and cost incurred. Applied to the labor market, the idea is that people choose a rational

amount of work to provide, and a rationally planned time span over which to work. They continue to work, from one year to the next, so long as they receive a positive net benefit from doing so. Once the net benefit becomes zero or negative, they stop working.

Classical economic theory identifies worklife expectancy as the age which an individual rationally chooses to stop working – where the (marginal) benefit of one more year of work no longer outweighs its (marginal) cost.[1] The benefit of work is the money earned, and the cost includes work-requisite personal spending plus the opportunity cost of work, the latter being the value of the best alternative use of time -- other than working. A person whose earliest possible full-time work age is 16 will start work at that age if the marginal cost of work is less than earnings at that time. The cost incorporates the foregone chance to get more education and thereby more future earnings. For many people, this cost outweighs the earnings available to 16 year olds, prompting them to delay work and get more schooling.

Economists like to illustrate their ideas with graphs, and Figure 1 presents a graph of the afore-mentioned model of worklife choice. The graph shows the (marginal) benefits and costs of working as curves, and worklife corresponds to the range of years where the benefit curve lies above the cost curve. If the benefits and costs can be articulated to a reasonable degree of economic certainty, the endpoint of planned worklife can be identified – in the graph this would be about 70 years of age – where the benefit curve crosses the cost curve from above.

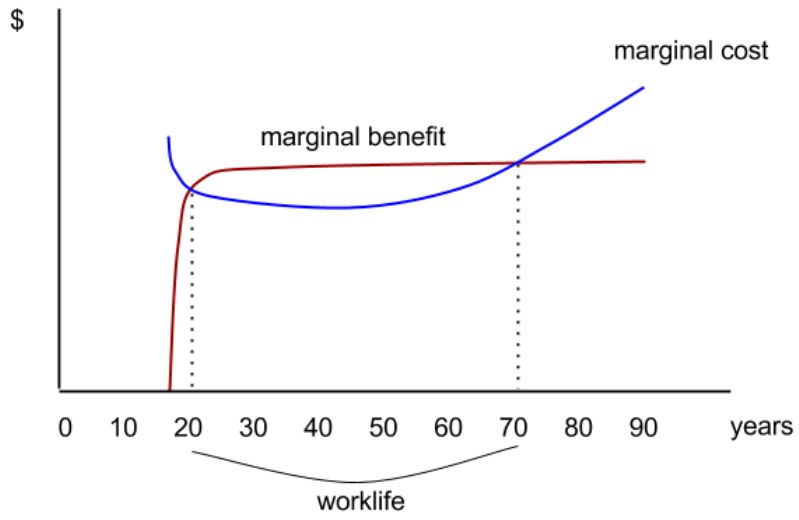

Figure 1: Economics of Planned Worklife

Economic theory conveys important ideas but requires care in application. While the benefit of work (i.e. earnings) to an individual is transparent near-term, the costs are often more subtle – reflecting foregone training and future earnings that are uncertain. In Figure 1, the (marginal) benefit curve might be viewed as “sharp” but the cost curve might be “fuzzy”, meaning that the curve could be shifted up or

down a bit without affecting its plausibility. With such fuzziness, the crossing point of the benefit and cost curves is only approximately known, as is the individual's planned worklife.

There is less ambiguity about worklife plans when there is more known about the incentives behind them. In the case of the union worker, discussed earlier, a union pension plan exists that creates incentives to retire when pension benefits kick in. In terms of benefits and costs of work, the pension plan is a sort of benefit, but for the problem of worklife planning it is best viewed as an increase in (opportunity) cost associated with continued worklife beyond the union retirement age. With this in mind, Figure 2 restates the worklife choice problem assuming that costs that have been raised at the time of union retirement – age 65, and beyond.[2] Knowledge of the union contract sharpens the relevant notion of cost, and the estimation of worklife.

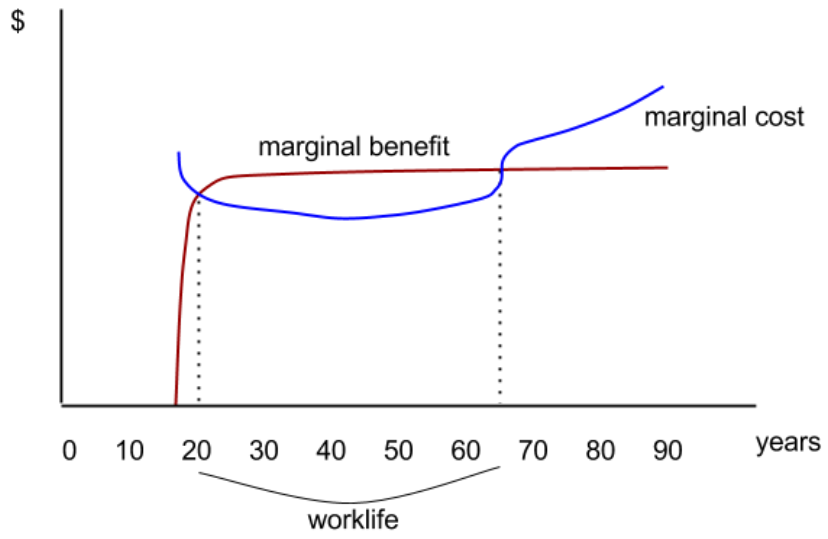

Figure 2: Worklife and Union Pension

The Golden Years

Incentives matter, and they are key to the estimation of worklife and economic damages stemming from lost earnings. Most American workers are not union members, and their retirement choices are not made with a pension incentive in mind, but they likely reflect some expectation of Social Security retirement benefits.

For a person that reaches Social Security full benefits retirement age, if the benefits equal or exceed their labor earnings then they might stop work at that point, similar to a pensioner. Knowledge of the Social Security (full) retirement age then makes it easy to estimate planned worklife for such people. The court, in determining damages from earnings loss, might reasonably take the (full benefits) Social Security retirement age as an estimate of worklife expectancy.[3]

The economics of using Social Security retirement for worklife estimation is useful but subject to more caveats than the use of pension retirement, largely because the incentive effect of Social Security is less than that of pensions. To illustrate, for a 48 year-old working male like myself, full-retirement Social Security benefits at age 67 would be at or above my (current) earnings only if those earnings were $12,912 or less per year,[4] whereas the current average earnings for U.S. males is $42,350.[5] Too, recipients of full Social Security benefits need not stop working to receive their benefits, so the opportunity cost associated with continued work is less than for the pensioner. Moreover, in this example full retirement occurs in the year 2033, at which point recent projections suggest that Social Security will no longer be sufficiently funded to deliver full benefits.[6]

The best possible use of Social Security retirement for worklife estimation if for low-wage workers, since for them the incentive effects are clearest. At the other extreme, for high-earning people Social Security incentives are weak and unreliable as an indicator of worklife plans.

To illustrate the problem of worklife estimation via Social Security retirement, consider the current Justices serving on the U.S. Supreme Court. Table 1 lists the Justices together with their predicted years of remaining worklife, based on the assumption that they will not work in any future years beyond Social Security full-retirement age. With this approach, most Justices are expected to quit immediately. An obvious problem here is that Justices' salaries are large[7] in comparison to any anticipated Social Security benefits – Chief Justice Roberts full benefits would be $32,184 at full retirement age of 66 years & 2 months, but his Court salary is $223,500.[8] Another problem is that judges appear to gain more benefit than most from their worklives, by way of additional satisfaction or utility, in which case incentives related to opportunity cost may be weak.[9] As proof, at age 65 the Supreme Court Justices qualify for a pension equal to their highest full salary,[10] yet most are older than that and continue to work.

Table 1: Worklife Based on Social Security Retirement Age[11]

Justice	Remaining Worklife	Age	Life Expectancy	Worklife Expectancy	Ratio WLE/LE
Alito, Jr., Samuel A.	2	64	82	66	81%
Breyer, Stephen	0	75	86	65	76%
Ginsburg, Ruth Bader	0	81	90	65	73%
Kagan, Elena	13	54	83	67	81%
Kennedy, Anthony	0	77	87	65	75%
Roberts, John G.	7	59	81	66	82%
Scalia, Antonin	0	78	87	65	75%
Sotomayor, Sonia	7	59	84	66	78%
Thomas, Clarence	1	65	83	66	80%

For the Supreme Court Justices, both Social Security retirement and pension plans are unreliable bases for worklife expectancy, owing to love of the job. For ordinary workers, Social Security and pension plans

(when relevant) may be useful indicators of worklife plans, but not always. Sometimes these incentives are weak -- leading to a fuzzy impression of worklife expectancy.

Bird Watching

Given that worklife expectancy is sometimes fuzzy when viewed through the lens of incentives, one can try instead to look at patterns of behavior and experience among Americans currently, much as one would view a flock of birds, and extract a composite picture of worklife. The U.S. government did just that, starting in the 1950s and running through the mid-1980s, via bulletins published by the Bureau of Labor Statistics (BLS), reporting worklife estimates based on U.S. Census survey data.[12] Since the 1980s the BLS methodology has been further adapted to worklife estimation in tort cases by independent economists.[13] [14]

The BLS statistical method estimates the progression of a typical American toward the end of worklife, by extrapolating a trend based on the myriad experiences of the current population. A randomly drawn person from the population has some statistical chance of surviving to the next year, and if they are in the labor force they have some statistical chance of remaining in it. In subsequent years, again there are chances of survival and remaining in the labor force. Taking random draws from the population, some individuals will end up working only one additional year – due to death or withdrawal from the labor force, while other individuals will work an additional 2 years, 3 years, etc. The BLS method averages the results of many draws from the population, and so estimates worklife expectancy. The idea is not unlike gauging the future path of a flock of birds, given their current position and direction.

The statistical method, initiated by the BLS and furthered by independent economists, is a black box approach to estimating worklife expectancy. It takes as inputs a person's age, sex, and education level, adds a hefty dose of national survey data, and spits out a worklife estimate. To illustrate, for a 48 year old male who (like me) is a professor with a Ph.D., the statistical method predicts an additional 21 years of worklife, till age 69,[15] without use of information on future retirement incentives such as pensions or Social Security. The prediction is reasonably close to Social Security full-retirement age (67), and even closer to Social Security's top-benefit age of 70. In my case, however, as a professor working for an Illinois state university I don't pay into Social Security, but do belong to the Illinois State University Retirement System with eligibility for full salary pension at age 62.

The best use of the statistical method, for estimating worklife, is when known incentives on work choice are weak. To further illustrate the possibilities, consider again the U.S. Supreme Court Justices. Table 2 shows remaining worklives based on the statistical method.[16] For the three oldest Justices the method is inapplicable due to insufficient survey data, but for the remaining six Justices the predictions seem more plausible than the ones based on Social Security retirement (Table 1), with typical retirement age in the 70s rather than the 60s. This is true despite the fact that the statistical method does not take into account the special work ethic of judges. Instead, adjustment for advanced education generates these longer worklife projections.

Table 2: Worklife Based on the Statistical Method[17]

Justice	Remaining Worklife	Age	Life Expectancy	Worklife Expectancy	Ratio WLE/LE
Alito, Jr., Samuel A.	8	64	82	72	88%
Breyer, Stephen	4	75	86	79	92%
Ginsburg, Ruth Bader		81	90		
Kagan, Elena	14	54	83	68	82%
Kennedy, Anthony		77	87		
Roberts, John G.	12	59	81	70	
Scalia, Antonin		78	87		
Sotomayor, Sonia	11	59	84	70	83%
Thomas, Clarence	8	65	83	73	88%

Drilling Down

Knowledge of incentives and statistics is an aid to worklife estimation, but there is always room for improvement . Invoking the economic mantra of cost-benefit analysis, a standard worklife estimate is preferred unless the cost of its imprecision outweighs the cost of gathering and using more data. To illustrate the latter possibility, consider again the Supreme Court. Data on all 112 historical Justice appointments to the Court is available costlessly, including Justice birth years and dates spent on the Court.[18] From this data one can compute various statistics, in effect "drilling down" from the huge national group of workers to the tiny group of Supreme Court Justices.

Judges love their work more than most, and so devote more of their lives to it. In other words, the ratio of retirement age to lifespan is likely closer to 1 for them than it would be for most Americans. With this in mind, a simple prediction is that judges will continue to act this way, and plan to devote a proportion – call it p – of their lives to work, with p close to 1. One way of stating the shortcomings of the Social Security retirement model of Justice behavior is that the model predicts values of p which are too small, as indicated in the last column of Table 1 – with an average of 0.78, or 78 percent. The statistical approach, shown in Table 2, does better, with an average of 87 percent.

Historical data, for each Supreme Court Justice that has already served and passed away, sheds further light on the typical ratio p of retirement age to lifespan. For each such Justice appointment, one can compute the ratio of the Justice's age at termination to the age at death. With 102 appointments, the average of these ratios is 0.94, or 94 percent.[19] Lifespan has increased since the initial Court appointments in 1789, but the ratio p appears stable across the first and second half of the Justices – sorted by birth year.

Assuming that each Justice plans to continue work until 94 percent of his/her lifetime is complete, and that we have available an unbiased measure of life expectancy, Table 3 shows worklife estimates (p multiplied by *life expectancy*) with most Justices expected to work until their late seventies or early 80s.[20]

Table 3: Worklife Based on Judge History & Period Life Expectancy[21]

Justice	Remaining Worklife	Age	Life Expectancy	Worklife Expectancy	Ratio WLE/LE
Alito, Jr., Samuel A.	13	64	82	77	94%
Breyer, Stephen	6	75	86	81	94%
Ginsburg, Ruth Bader	4	81	90	84	94%
Kagan, Elena	24	54	83	78	94%
Kennedy, Anthony	4	77	87	82	94%
Roberts, John G.	17	59	81	76	94%
Scalia, Antonin	4	78	87	81	94%
Sotomayor, Sonia	20	59	84	79	94%
Thomas, Clarence	12	65	83	78	94%

The results are more complete than those based on the national statistical survey method (Table 2), and more in line with the historical behavior of Justices. They serve to demonstrate the appeal of drilling down into historical data when standard economics and statistics fall short.

Back to Basics

Economics, data, and statistics are great tools for determining economic damages, but at some point it's necessary to revisit the question of interest. In tort cases involving lost earnings, what is a reasonable estimate of a person's remaining worklife? The methods we've discussed provide answers, but with different shades of meaning.

Methods based on economic incentives assume that we know enough about labor's costs and benefits to determine a worker's plans. For those with union contracts, our ability to identify work plans may be good. For low-wage workers anticipating Social Security retirement benefits, the same may be true. However, for workers without strong retirement incentives, our ability to guess the future is weaker.

When the economic approach provides fuzzy answers to the worklife question, we can try the statistical approach -- specifically the "black box" statistical method developed by the BLS and others. As sketched earlier, this method builds a pool filled with simulated worklives, seeded by experiences of people today. Drawing person after person from the simulation pool, and averaging their worklife lengths, we get an estimate of worklife expectancy. This method is premised on the idea that experiences of people today are similar to what can be expected in the future.

A basic problem with the BLS-type statistical method is that, as people live longer over time, life experiences change foreseeably yet the method assumes a perfectly stable, or "stationary" pool of people. Because the BLS method is not forward looking, it may not provide a reasonable estimate of a person's remaining worklife. This is true particularly for younger people, for whom current human longevity is likely far less than their own. For them, the BLS method may greatly underestimate worklife.

The population from which the BLS-type method draws for its simulations is the *current* U.S. population. This approach to estimating *work*life expectancy is a logical extension of the Census Bureaus' approach to estimating life expectancy. The latter estimates lifespans via simulated draws from a stationary pool of people, and will tend to underestimate the life expectancy of real people who experience conditions supportive of better health in the future. A fix for this bias problem is to extrapolate forward reasonable progress, with survival chances that improve over time. The Social Security Administration (SSA), which amasses funds to pay Social Security benefits now and into the future, performs such a fix via its "cohort" life expectancy estimate. It also computes a *current* estimate, similar to the Census Bureau's, with the *cohort* approach generally yielding longer life expectancies than the *current* approach.

A logical extension of the forward-looking approach to estimating life expectancy is an estimate of worklife expectancy -- with built-in increases in survival chances over time. This has not yet been attempted in the academic literature, but we can illustrate the possibilities in the context of the Supreme Court Justices.

Earlier I used the history of all Justices to estimate the ratio of retirement age to lifespan, then multiplied this ratio times Justices' life expectancies to estimate their worklives. The logic of this approach relies on an unbiased measure of life expectancy. I used the Census Bureau's *current* life expectancy estimates, which are likely downward-biased for reasons just discussed, but can easily replace these with the SSA's *cohort* estimates.[22] Table 4 shows the results, with all Justices expected to work into their 80s.

Table 4: Worklife Based on Judge History & Modified Life Expectancy

Justice	Remaining Worklife	Age	Life Expectancy	Worklife Expectancy	Ratio WLE/LE
Alito, Jr., Samuel A.	17	64	85	80	94%
Breyer, Stephen	8	75	89	84	94%
Ginsburg, Ruth Bader	6	81	92	87	94%
Kagan, Elena	28	54	87	81	94%
Kennedy, Anthony	7	77	90	84	94%
Roberts, John G.	21	59	85	80	94%
Scalia, Antonin	6	78	89	84	94%
Sotomayor, Sonia	23	59	88	83	94%
Thomas, Clarence	16	65	86	81	94%

Compared to the worklife estimates in Table 3, those in the more forward-looking Table 4 are an average of three years longer, a substantial difference. To the extent that the latter numbers more adequately address the question of interest, they are better.

The Bottom Line

In tort cases involving the loss of a person's earnings or earnings capacity, the point of estimating worklife is to find the time window over which to compute economic damages. Let's now apply our understanding of worklife to compute damages associated with lost earnings. To simplify matters, suppose we want to find the present value of future earnings (only). This present value is the sum of expected discounted earnings in each future period. Assume that the relevant period-specific discount rate is that on a risk-free government bond.

Table 5 shows earnings losses associated with four different assumptions about worklife, corresponding to the four worklife tables shown earlier (Tables 1 through 4).[23]

Table 5: Present Value of Future Earnings, via Four Worklife Assumptions

Justice	Social Security	black-box	drill-down	modified drill-down
Alito, Jr., Samuel A.	440,514	1,826,985	2,989,249	3,871,525
Breyer, Stephen	0	894,568	1,358,277	2,061,718
Ginsburg, Ruth Bader	0		894,568	1,358,277
Kagan, Elena	2,989,249	3,215,396	5,218,169	5,843,069
Kennedy, Anthony	0		1,125,501	1,592,304
Roberts, John G.	1,663,768	2,884,127	4,045,282	4,887,464
Scalia, Antonin	0		894,568	1,592,304
Sotomayor, Sonia	1,592,304	2,528,939	4,484,571	5,218,169
Thomas, Clarence	218,492	1,826,985	2,760,245	3,657,024

The first column of numbers in Table 5 consists of earnings losses computed under the assumption that Social Security retirement benefits induce people to stop work at (full) retirement age. The second column is based on the black-box (BLS-type) statistical approach, and – when available – generates much higher dollar values of earnings losses. The third column applies the drill-down method of harnessing historical data on Supreme Court Justices, as does the fourth but with modified life expectancy estimates.

The court's choice of worklife assumption can have an enormous impact on estimated future earnings, as illustrated in Table 5. In application to tort cases, careful consideration of worklife is a necessary chore when estimating damages associated with foregone future earnings. The five talking points, listed at the beginning of this article and subsequently discussed in detail, provide a conceptual framework that can make this chore manageable.

[1] This theory operates under the simplifying assumption that the worker has total control over worklife choice, whereas they actually incur risks of unemployment, incapacitating illness, and death before planned retirement. These risk factors can be built into the analysis, with the end result that both incentives and risk impact worklife expectancy.

[2] In the figure, after age 65 each additional year of work offers less benefit than cost, consistent with a pension plan that provides earnings equal to those available from work at age 65.

[3] The court might also consider some downward adjustment in worklife expectancy, for the risk of incapacity to work. Interestingly, however, the Social Security Administration makes no such adjustment in benefits estimated via its online Retirement Estimator – its stated assumption is continued work until retirement.

[4] Source: Social Security Retirement Estimator online (ssa.gov/estimator). At a federal minimum wage of $7.25 per hour, full-time work produces $14,500 per year, so a person earning $12,912 per year full-time is not legally possible.

[5] Average weekly earnings for U.S. males are $847 in 3rd quarter of 2013, and at 50 weeks per year the annual earnings are $847*50 = 42,350. Source: Bureau of Labor Statistics online (Weekly and hourly earnings data from the Current Population Survey , data.bls.gov/cgi-bin/surveymost).

[6] The 2013 OASDI report (www.ssa.gov/OACT/TR/2013) predicts a 22 percent shortfall in benefit funding by the year 2033.

[7] The salary of Chief Justice Roberts is currently $223,500 per year, while that of the eight Associate Justices is $213,900. Source: Federal Judicial Center online (www.fjc.gov/history/home.nsf/page/js_1.html)

[8] Source: Social Security Quick Calculator Benefit Estimates (www.ssa.gov/cgi-bin/benefit6.cgi).

[9] For commentary on the judicial work ethic see chapter 2 of *How Judges Think* by Richard A. Posner (Harvard University Press, 2008).

[10] See Title 28 of the U.S. Code, section 371(c), with the stipulation that judges can retire at age 65 or beyond at full salary if the sum of their age and years of service is 80 years or more. By that standard, five of the Justices currently qualify for full pension, while the remaining four do not (Alito, Kagan, Roberts, Sotomayor).

[11] Notes: Ages of justices are as of November 1st 2013, based on birth dates obtained from the Federal Judicial Center database online (fjc.gov/history/home.nsf/page/export.html). Life expectancy for each Justice is set equal to that reported in the U.S. Census Life Tables, by sex and current age (Source: U.S. National Vital Statistics Reports, Volume 61, Number 3, September 2012). For each Justice, given their current age I obtain age at Social Security full retirement via the Social Security Retirement Planner online (www.ssa.gov/retire2/retirechart.htm).

[12] The earliest of these bulletins are Bulletin 1001: "Tables of Working Life. Length of Working Life for Men," and Bulletin 1204: "Tables of Working Life for Women (1950)," both published in the 1950s, and the last is Bulletin 2252: "Worklife Estimates: Effects of Race and Education," published in 1986.

[13] The choice of the BLS to no longer publish estimates of worklife does not in itself suggest that the Bureau considered their methodology unsound, but instead may reflect some growing redundancy as other government agencies – including the Social Security Administration and the Congressional Budget Office – developed more of their own economic projections. Also, by the mid-1980s the issue of international trade and labor became increasingly important, and may have drawn the attention of the BLS away from worklife estimation. Such a shift may not have been wholly conscious – the author of last BLS worklife bulletin (Shirley J. Smith, Bulletin 2252) worked in the BLS Office of Employment and Unemployment in 1980s but shifted to the Bureau of International Labor Affairs by the end of the decade.

[14] For a recent study of worklife expectancy in the BLS tradition see "The Markov Process Model of Labor Force Activity: Extended Tables of Central Tendency, Shape, Percentile Points, and Bootstrap Standard Errors," by Gary R. Skoog, James E. Ciecka, and Kurt V. Krueger (Journal of Forensic Economics, Volume 22(2), pages 165-229, year 2011).

[15] Source: Table 11 (Characteristics for Initially Active Men with Professional or PhD Degree), page 190 of Skoog, Ciecka and Kruger (2011), op cit.

[16] Source: same as previous footnote, except that for female Justices the relevant table is Table 27.

[17] Due to rounding error, in the Table worklife expectancy need not always equal age + remaining worklife.

[18] A database of all U.S. Federal judges (1789-present) is available from the Federal Judicial Center online -- op. cit.

[19] Author's calculations, Stata dataset and program files available upon request. For each Justice appointment, I compute the ratio of age-at-termination to age-at-death, then average all the ratios to get average proportion *p*. In doing so I include some Justices for whom the termination date coincided with death or retirement from the labor force. I also include some Justices who left office and then worked elsewhere. For this reason, the estimate of *p* likely *understates* the true value. A correction would be prune the sample by omitting Justices who leave the Supreme Court but then work elsewhere. This would produce a higher *p* estimate, but there are other sources of sampling bias also, requiring more study.

[20] Denoting life expectancy by LE, and worklife expectancy by WLE, this method relies on the equation WLE = *p* LE, and provides an unbiased estimate of worklife's end-age under the following conditions: i. individuals have perfect foresight about their lifespan end-age L and choose work-life end-age WL to be WL = *p* L, and ii. LE is an unbiased estimator of L. Cleary the first condition (i) confers great mental powers on workers, even for Supreme Court Justices, while the second (ii) is hopefully feasible. It is possible to avoid reliance on (i) by estimating the relationship between WL and L via the linear regression statistical method: with this approach the estimate of *p* is 0.997 or 99.7%, higher than the one used in Table 3. However, introducing regression raises additional technical questions which I will not pursue here.

[21] As in Table 2, with rounding error the reported worklife expectancy need not always equal age + remaining worklife.

[22] The SSA Life Tables focuses on those people covered by the Social Security system, not an exact match for the U.S. population. The SSA cohort life tables are not literally based on a traditional cohort sample (a group of people born at about the same time and observed throughout their lives) but instead are based on a series of current/snapshot samples, for details see the Life Tables description online (www.ssa.gov/oact/NOTES/as120/LifeTables_Body.html).

[23] For discount rates, I set the 1-year rate and 30-year rates to be yields on zero-coupon (STRIPs) U.S. Treasury securities, which are 0.15 percent on the 1-year security and 4.07 on the 30-year security (source: Wall Street Journal online wsj.com/mdc/public/page/2_3020-tstrips.html). For simplicity, I use linear interpolation to set yields on all other securities: 2-year, 3-year, etc. I project earnings in future years by assuming that the earnings growth rate in each year matches the growth rate in U.S. average hourly earnings, with forecasts of the latter obtained from Consensus Economics online (www.consensuseconomics.com).