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Worklife and Disability: Confronting the Myths[1]

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Abstract

A variety of research has shown an employment discrepancy between people with and without disability. This includes research on work disability produced by the U.S. Census Bureau in its Current Population Survey (CPS). CPS data are used in the production of *The New Worklife Expectancy Tables* (Gamboa, 2002) that are used frequently in tort cases involved loss of lifetime earnings. This article identifies and responds to each of the key issues in the debate regarding use of these tables. The issues are categorized into two basic groups, those dealing with the validity of the CPS data itself, and those dealing with more general worklife expectancy issues.

This article identifies the key issues in the debate regarding *The New Worklife Expectancy Tables* (The Tables; Gamboa, 2002). The issues can be categorized into two basic groups, those dealing with the validity of data from the U.S. Census Bureau's Current Population Survey (CPS) upon which the worklife expectancies are based, and those dealing with more general worklife expectancy issues. Following a brief discussion of research providing broad support to the reduction of employment for those with disability, issues pertaining to these two main groups will be discussed.[3]

Disability Status

The presence of a disability is widely known to affect worklife expectancy, regardless of the definition of disability used. Nonforensic researchers have used data from various studies to measure the effect of disability on employment. Even those studies using definitions that are not specific to work disability have found that disability negatively impacts employment. Kaye (1998) summarized findings from various surveys, including the CPS, SIPP, NHIS, and Harris Survey, and noted the existence of an employment discrepancy between people with and without disability.

McCollister and Pflaum (2004), using data from the National Health Interview Survey (NHIS), found a worklife drop for those with back pain and noted that this discrepancy increases with age. Pflaum, McCollister, Shavelle, Strauss, and DeVivo (2003) also found a drop in

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3 Further information on the issues and challenges surrounding the worklife tables can be found on the Vocational Economics, Inc. website at: http://www.vocecon.com/technical

employment for those with a spinal cord injury and noted that the more severe the injury, the lower the probability of finding and maintaining employment.

Trupin and Yelin (1999) used data from the California Work and Health Survey, which defined disability as existing in those with physical functional limitation. They found that people with disability had a lower labor force participation rate, were more likely unemployed, and more likely to be employed in part-time or temporary jobs.

Gamboa, Gibson, and Tierney (1996), using the CPS, and DeLeire (2000), using the SIPP, found that people with a disability work less than people with no disability. Also, in the few years following passage of the ADA, men with disability were less likely to be employed relative to men with no disability than they had been in the few years prior to passage of the ADA. In the few years prior to the ADA, men with disability had employment rates that were 63% as high as the rate for men without disability. In the few years after the ADA, this rate dropped to 53% (DeLeire, 2000). McNeil (2001b) used SIPP data collected in 1997 and again found reduced employment for persons with both severe and nonsevere disability.

Employment levels at various ages, when added together and combined with the probability of life, are the building blocks of worklife expectancy. All research here, therefore, concludes that persons with a permanent disability affecting ability to work are likely to have some degree of reduction in worklife expectancy. Assuming the same worklife expectancy pre and post-injury as a standard procedure on permanent partial disability cases is not supported by research in the field. The issue is not if there is typically a reduction in worklife due to permanent work disability, but rather the best way to measure it with existing data. Though no known data are perfect, usable data, such as that found in the Current Population Survey, do exist.

Current Population Survey

Caveat on the Census Bureau Website

Myth. The contention is that the presence on the Census Bureau website ("Uses and limitations," n.d.) of a document discussing possible limitations of CPS work disability data precludes use of the data (http://www.census.gov/hhes/www/disability/cps/cpstableexplanation.pdf).

Reality. As titled, the document does discuss "Uses and limitations of CPS data on work disability." As noted in the text, however, this is intended to be a caveat regarding the data, not a document precluding their use. As noted on page 3 of the paper, "data users have to look at the questions and the use to which they plan to put the data to determine the adequacy for the purpose at hand." Therefore, the paper simply cautions the user to be aware of the impact of potential errors in the survey, a wise caution before using any survey data.

Similar caveats apply to any survey. In fact, the Bureau of Labor Statistics has an even stronger warning regarding the widely-used *Occupational Outlook Handbook* (OOH). This caveat states that the OOH should not be used to compute future lost earnings in adjudication proceedings. Despite this, many expert witnesses continue to see the earnings data as valuable and continue to use them, in combination with their experience and expertise, to calculate lost

earnings. Just as we recommend with the CPS data, the user must understand the source and limitations of the data and adjust their use of it accordingly.

It is important, however, for users to understand the potential imperfections in order to be able to use the data most effectively. Understanding the issues can enable an expert to use CPS (or OOH) data as one element in calculating losses in individual cases. To help with this, a fuller discussion of the specific points mentioned in the Census website document can be found in the following sections of this paper:

- Definition of Work Disability
- Lack of Exogeneity/Self-Reported Disability
- Validity/Purpose of the Data
- Validity of the First Disability Question
- Veteran's Disability

Chronic Disability

Myth. The contention is that the presence in the CPS data of people with a chronic disability, rather than a disability caused by a tort, invalidates the data for studying the effects of work disability on employment.

Reality. When looked at from a vocational perspective, many different types of conditions can result in identical work-related impairments (e.g., both a knee injury and a lung ailment can result in a restriction to sedentary work). Impairments from non-injury related causes can result in work disability of varying degrees, with minimum to maximum impact. What is relevant is the effect of the impairment, whatever the cause, on a person's capacity to work.

Some believe that a person who is disabled by a tort is more likely to be employed or seeking employment than are persons with chronic or childhood injuries or conditions. This does not mean, though, that a person injured by a tort who is seeking employment will be successful, long-term or short-term. An example is persons who have sustained traumatic brain injury. Persons with this impairment are not always realistic regarding their limitations and tend to have poorer decision-making skills than persons without brain injury. Despite their difficulties, and with the help of their pre-injury work experience, they may present well to prospective employers, enabling them to be hired. Once on the jobs, however, their impairments can prevent them from performing as well as necessary, resulting in job failure or dismissal.

Another important point is that the CPS excludes institutionalized persons. This excluded population likely holds a large fraction of the persons with chronic disability that are more likely to have no residual capacity to work. The exclusion of this group reduces the possibility of distortion in the CPS.

The only distortion of the CPS data in a vocational assessment results from an expert's use of the data. The victim of a tort is either capable or incapable of employment as a result of exertional or nonexertional limitations. In most cases, those capable of employment, if currently employed full-time, are, at worst, most like an individual with a nonsevere work disability in

terms of worklife. Those persons who are incapable of employment are unable to perform jobs existing in significant numbers in their local labor market. They are, at best, most like an individual with a severe work disability or, at worst, totally work disabled.

Definition of Work Disability

Myth. The contention is that CPS data are useless since the CPS measures work disability, not disability in a broad sense, such as that defined in the Americans with Disabilities Act.

Reality. Opponents of CPS data sometimes quote a government definition of disability not measured in the CPS (persons with a physical or mental impairment which substantially limits one or more of the major life activities). This definition is much broader than the definition of work disability. Though consistent with the Americans with Disabilities Act, it includes people who do not have limitations in the kind or amount of work they can perform. For forensic purposes, when assessing loss of lifetime earnings, work disability is the relevant focus. If there is no work disability, there is no reduction in worklife expectancy unless the probability of life is reduced.

The definition of work disability used in the Current Population Survey (CPS) can be found on the Census Bureau web site (http://www.census.gov/hhes/www/disability/cps/cpsworkd.html). This definition was created and is controlled by the Census Bureau. The Census Bureau, using research and survey work done by them and by the Social Security Administration, developed the definition of work disability for use in the CPS and began using it in the March Supplement survey in 1981 (McNeil, 2002). As early as 1983, the Census Bureau began publishing data based on this definition and continues to publish data using the definition on its website (http://www.census.gov/hhes/www/disability/disabcps.html).

Heterogeneity

Myth. The contention is that the population of those with a disability is so diverse that application to a particular individual is difficult to impossible. If used at all, it should be used only if the plaintiff's disability is "first established with specific medical and vocational scrutiny and opinion."[4]

Reality. Heterogeneity is a statistical term referring to the diversity of the population averaged to derive the disability statistics. We agree that the population of those with a specific impairment is quite diverse. However, it is incorrect to surmise that this precludes the use of a statistic drawn from this population.

We further agree that any statistic applied should be applied appropriately. In cases concerning the assessment of lost worklife, the expert should rely on medical reports verifying the impairment and apply the appropriate "vocational scrutiny" to assess the impact of the impairment, if any, on the individual's ability to work. The critical vocational issue is whether a medically determinable permanent physical or mental impairment exists that limits or is likely to

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4 Quote from an opposing expert's supporting affidavit to a motion to exclude testimony.

limit the individual in terms of the amount or kind of work he or she is capable of performing. Work disability data from the CPS regarding employment should be used only if the individual has a work disability regardless of the severity of the impairment.

The solution for some critics of disability statistics is to use worklife statistics that are not specific to disability at all. It is clear that this is not a reasonable solution as it uses statistics from a much broader and more diverse population than the disability specific worklife expectancies. Most importantly, it ignores what is known about persons with a disability. They experience lower levels of employment and, hence, a reduction in worklife expectancy.

When predicting the height of a 5-year-old boy, should one use an average of all people or of 5-year-old boys? Similarly, when predicting the employment experience of, for instance, a female with a nonsevere work disability, should one use an average of all people or of females with a nonsevere work disability?

Most forensic economists routinely project earnings and employment based upon education. Categorization by education results in averages from diverse populations. Imagine, for example, averages for persons with a baccalaureate degree. These degrees may range from an Accountant/CPA or Mechanical Engineer to a Social Worker, or lead to occupations ranging from a CEO of a large corporation to a minister. Obviously, these occupations have a wide range of expected earnings. Yet, despite the diversity, this average is accepted and used by many economic and vocational experts, as it is the most appropriate predictor in many cases – such as a college freshman who had not yet determined an area of focus. Allowing use of a broad education average while not allowing a more narrowly defined disability-specific education average is a nonsensical double standard.

Lack of Exogeneity/Self-Reported Disability

Myth. The contention is that, since work disability for those responding to the CPS is self-reported and not independently verified, one cannot say with certainty that the work disability data are accurate. Respondents could be influenced by other factors, such as current employment status.

Reality. What the opposition suggests in this position is a study that would be so enormous as to be impossible. Acquiring independent verification from the thousands of people interviewed would be very difficult, at best, and probably impossible. In those cases of persons identified as having physical or mental impairment, it would require an independent medical evaluation of the selected sample in order to resolve the bogus issue of "lack of exogeneity." All survey research of a macro nature lacks exogeneity, but the large sample size reduces, if not eliminates, the supposed problem regarding exogeneity.

The CPS relies upon answers from respondents to questions administered by trained Census personnel (self-reporting). As such, the criteria used by the Census Bureau to classify a respondent's disability status depends upon

- the respondent's ability to recognize the disability, and
- the truthfulness of the response

Critics speculate that one or both of these requirements are not met in enough cases as to skew the results. The Current Population Survey is the *primary* source of employment data for the United States. The entire survey is self-reported, or lacking exogeneity. Despite this, it is relied upon by researchers, economists, demographers, and other scientists across the world for measurements of employment, earnings, education status, age, and other characteristics of the U.S. economy.

The government does not require a CPA to verify the income reported, employers to verify employment status, or birth certificates to verify age. Yet, vocational and economic experts and social scientists in general routinely rely upon the resulting income, employment, and age statistics both in forensic and nonforensic settings. However, when it comes to the CPS question on whether the respondents have any physical or mental limitation in the kind or amount of work they can do, challengers contend that respondents are incapable of or unwilling to give an accurate response. As with the heterogeneity issue, this is a nonsensical double standard. Those who contend that lack of exogeneity is a problem themselves routinely use such data specific to earnings, level of education, and age.

Multi-Year Data Averaging

Myth. The contention is that averaging multiple years of CPS data to derive statistics regarding people with a work disability is inappropriate.

Reality. It is most appropriate! In fact, one of the significant advantages of using CPS data is that they allow multiple years of grouping data since many of the survey questions have been identical for more than 20 years. It is an excellent, if not the only, source of data specific to work disability that exists at a macro level.

To compute the worklife expectancies in *The New Worklife Expectancy Tables* (Gamboa, 2002), PE rates were extracted from the March supplements of the CPS for 1992 through 2001. Data from these 10 years were averaged by weighting the individual rates of participation and employment by the estimated population size in each year. Use of a 10-year weighted average provides two benefits:

- Individual cells with small sample sizes are aggregated, making the statistic more robust.
- Economic cycles are averaged, limiting distortion by using a single favorable or unfavorable employment market as a predictor of future expectancies.

Joining multiple years of data was supported by John McNeil (2000b), a retired Special Assistant for Disability Statistics with the Census Bureau, in “Roundtable on Earnings and Work Experience of Disabled Workers - Data for Assessment” at a presentation given during the Southern Economic Association Annual Meeting in November 2000. Skoog & Toppino (1999) reviewed the six years of data used in the 1998 edition of *The New Worklife Expectancy Tables* and tested for a trend in employment rates (Gamboa, 1998). Not surprisingly (in years of increasing economic prosperity), they found a time factor with statistical significance. They claim this to be a trend that invalidates the data, maintaining that the years must display a constant mean to be usable.

This statistical testing, however, is inappropriate. To use six data points from a prosperous economy and claim that the results constitute a trend, as opposed to a cycle, defies logic. Six years are certainly insufficient to differentiate between the two. To point out that the trended data cannot be used implies one of two remedies:

- The Tables should use only the most recent data. This would suggest that if The Tables were developed in a year with an unusually favorable economy, that economy should be used to predict all the remaining years of a person's worklife.

- The Tables should include a trend prediction. Again, in favorable economic times, this might have the current conditions continuing ad infinitum, potentially projecting 101% employment at a future date.

Obviously, the statistical test and resulting conclusions are both inappropriate.

Sample Selection Bias

Myth. The contention is that, since the CPS does not randomly and independently sample people with a work disability, the data derived from it are invalid.

Reality. It is true that people with a work disability are not randomly sampled. The CPS in general, however, is based on a large sample size that is statistically stratified (over 50,000 households and 100,000 people). The overall sample size is large enough that data from the subpopulation is reliable. If this were a problem, we would expect to see greater variability in employment rates from year to year. The stability of these rates over time lends credence to the value of the work disability sample.

The criticism contradicts the frequent use that many vocational and economic experts make of the CPS data. The sampling and weighting procedures in the CPS are based primarily on geographic area, household type, unemployment ratios, age, gender, race, and Hispanic origin. Education is not a part of this procedure. Despite this, many forensic experts value the CPS data and use average earnings and employment by education level in order to estimate lifetime earning capacity. Based on the Skoog and Toppino (2002) criticism, however, this is wrong. This criticism, then, appears to be carrying the sampling need to extremes with the sole purpose of denigrating the CPS disability data.

Skoog and Toppino (2002) state that disability surveys are only useful if they are extremely specific in their sampling methods. They note:

> For their Tables to have any validity, their statistics must be based on sensible (read statistically *consistent* at a minimum, if not statistically *unbiased or efficient*) structural parameter estimates. They must answer the question *if one has this education, sex, age, and impairment/condition, what is the conditional probability such a person will be employed*? (Emphasis in original; p. 85)

This is an impossible solution to the issue. First, the sample size would have to be enormous in order to accommodate this desire – probably a sample size much larger than even the 5% sample of the Decennial Census! Even if this could be accomplished to any degree, it

would be impossible to anticipate every combination of age, gender, education level, and impairment that might arise in a forensic setting.

Temporary Disability

Myth. The contention is that the presence in the CPS data of people with a temporary disability invalidates the data for studying the effects of permanent disability on employment.

Reality. For the existence of temporary disability within the CPS to distort worklife expectancy, one must assume that persons with temporary disability have a significantly different rate of employment during the disability period than persons with permanent disability. Gibson (2001) used CPS data from 1996 through 1999 to study changes in disability status from year to year and concluded that potential exists for some segment of the disabled categories to be only "temporarily" disabled. However, the potential for distortion of the overall rates of participation and employment was minimal.

Validity/Purpose of the Data

Myth. The contentions are that the CPS data are not valid for studying the employment experiences of people with a disability and that they were not intended to identify people with a work disability.

Reality. The CPS survey is the primary source of employment data for persons in the United States, and the source of the government's monthly unemployment rates that are widely quoted by the media.

The Census Bureau website contains a page dedicated to disability data. In it, the Bureau notes three sources for disability statistics for the United States workforce: CPS, Survey of Income and Program Participation (SIPP), and the decennial census. Here, in terms of the disability questions asked, it notes that the sources range from limited (decennial census) to most expansive (SIPP). Most importantly, the site notes that the CPS focuses on work disability – a pivotal measure for disability-specific worklife expectancy computations necessary in forensic settings.

In March of each year beginning in 1981, the CPS has been expanded to collect more information on income and employment. This supplement forms the basis for the rates of participation and employment used in the worklife expectancy tables through expanded questions that specifically address work disability.

The contention that the CPS was not intended to identify work disability is clearly wrong. The Census Bureau began publishing data from the March Supplement in 1983 in a publication entitled *Labor Force Status and Other Characteristics of Persons with a Work Disability: 1982*. The beginning of the publication addresses the issue of measuring the experiences of persons with disability:

> One of the issues that this country has tried to address through the Federal statistical system is the extent to which persons with a disability are able to participate in the labor force. Programs and policies have been established to

> discourage discrimination and encourage training and rehabilitation, but the success of these programs and policies cannot be measured without some type of statistical monitoring system. Statistics on persons with a disability are obtained from two sources: program statistics and household surveys. While the former source is critical for certain purposes, the basic unit in a statistical monitoring system must be household surveys. Only through household surveys is it possible to obtain estimates of the number of persons with a disability and learn how their situation changes over time.
>
> Recent changes to the questionnaire used in the March Income Supplement to the Current Population Survey (CPS) make it possible for the March CPS to be used as a source of information on the labor force status and other characteristics of noninstitutional persons with a work disability. (p. 1)

In the 1989 publication *Labor Force Status and Other Characteristics of Persons With a Work Disability: 1981 to 1988*, the Census Bureau expands on the reasoning behind these questions:

> According to Saad Nagi, a major figure in the development of survey data on persons with disabilities, a person has a disability if he or she has a limitation in the ability to perform one or more of the life activities expected of an individual within a social environment. The primary way this basic concept is operationalized in the March CPS is to ask whether any household member has a health problem or disability which prevents them from working or which limits the kind or amount of work they can do. (p. 1)

Various independent researchers use CPS data in research on the employment experiences of persons with a work disability. In a presentation before the National Association of Forensic Economics (NAFE) in November 2000, John McNeil (2000a), a special assistant for disability statistics for the U.S. Census Bureau, now retired, reaffirmed the application of CPS data for the study of persons with a work disability. As part of the presentation, he produced a study entitled “Employment and Earnings of Individuals 18 to 64 by Disability Status: Data from the March 2000 Current Population Survey.” The study explores the participation and employment rates for persons with work disability using the same data used in *The New Worklife Expectancy Table*s. In addition, he signed an affidavit stating he sees no reason why the CPS data for work disability cannot be used in the manner applied by Vocational Econometrics, Inc. He also authored an article further supporting use of CPS data for studying worklife issues for people with a work disability (McNeil, 2002).

Miller (2001) functioned as the chief of the Population Division of the Census Bureau. He has also signed an affidavit noting that the CPS data are "the most appropriate source for studying the employment experiences of people with a work disability."

Private researchers also use CPS data to study employment patterns of the U.S. population. Burkhauser, Daly, and Houtenville (2001), for example, used data from the March supplement of the CPS to compare the employment experience of people with and without disability during the 1990s business cycle. This paper was published through the Rehabilitation

Research and Training Center (RRTC) for Economic Research on Employment Policy for People with Disability at Cornell University (http://www.ilr.cornell.edu/ped/dep/dep_pubs.html?cat_id=7). The Cornell RRTC has also published several other papers using CPS data on persons with a work disability. These include multiple papers (e.g., Houtenville, 2000a, 2000b, 2000c) that studied the prevalence, employment rates, and household income of people with disability, as well as a paper by Burkhauser, Houtenville, and Wittenburg (2003) that compared the employment trends of persons with work limitations using the CPS and two other government surveys.

The extensive use of the CPS data for research on employment issues and the similar findings from other disability data provides corroborative evidence of the validity of the CPS data. Independent researchers from various institutions and with various purposes would not all use the CPS data unless the data are meaningful.

In addition, research using data other than the CPS shows similar impacts in employment for those with a disability. Pflaum, et al. (2003) for example, found a drop in the probability of employment using data pertaining to individuals with a spinal cord injury. McCollister and Pflaum (2004) discussed use of the National Health Interview Survey for studying the effects of disability on employment and offered specific examples for those with back pain. Discussion of other research can be found in the Disability Status section at the beginning of this article.

Validity of the First Disability Question

Myth. The contention is that the first work disability question used in the CPS (prevented from working or limited in terms of the amount or kind of work) is invalid because it is ambiguous and that people may knowingly or unknowingly respond incorrectly.

Reality. A key criterion in screening for work disability is this question from the Current Population Survey (CPS) survey:

> (Do you/Does anyone in this household) have a health problem or disability which prevents (you/them) from working or which limits the kind or amount of work (you/they) can do?

Some doubt the validity of this question. This question, however, was based on work done by the Social Security Administration (McNeil, 2002) and is accepted as a valid one as shown by the fact that an almost identical question is used as the cornerstone in another major survey, the Survey of Income and Program Participation (SIPP), also conducted by the Census Bureau. Similar questions are asked in the National Health Interview Survey, conducted by the U.S. Census Bureau for the U.S. Department of Health and Human Services, and the Panel Study of Income Dynamics, conducted at the Survey Research Center, Institute for Social Research, University of Michigan.

Statistical analysis of CPS data (Gibson, 2001) demonstrates that 81% of those responding positively to this question also responded positively to one of the other six questions comprising the complete work disability definition. Of the remaining 19%, the overall rate of employment is .77 – in line with the overall Not Severely Disabled rate of .73, and well below

the Not Disabled rate. If the question were as ambiguous as sometimes implied, one would not expect such consistency in responses specific to probability of employment.

Veteran's Disability

Myth. The contention is that the presence in the work disability data of those with a veterans' disability skews the data, making it unusable.

Reality. As noted in Gibson (2001), work disability statistics do include people with a veterans' disability. Those who meet no other work disability criteria have an employment rate of .91 (consistent with nondisabled employment rates), whereas those who do meet other nonsevere work disability criteria have an employment rate of .71 (consistent with nonsevere employment rates). The presence of the veterans' disability group could slightly skew the nonsevere employment rates upward. A close look at Gibson (2001), however, reveals that only 4% of the nonseverely disabled male group meets the veterans' disability criteria, but no other. Therefore, the impact of their presence is minimal. There is practically no impact from this question for the female population with disabilities.

Worklife Expectancy

Daubert/Kumho Standards

Myth. The contention is that *The New Worklife Expectancy Tables* fail to meet the Daubert/Kumho standards for expert testimony.

Reality. The U.S. Supreme Court's opinions in Daubert v. Merrell Dow (1993) and Kumho v. Carmichael (1999) require that all expert testimony meet the general tests of "reliability" and "relevancy."

Reliability - *Daubert* provides four flexible factors to determine if the evidence qualifies as reliable: testing, peer review and publication, error rates, and general acceptance in the relevant community. As updated by *Kumho*, the Court stressed that not all factors may apply with every case, especially in the social sciences. The trial court is left as the gatekeeper using the factors as flexible guidelines to assure the expert employs the same level of intellectual rigor as he or she would outside the courtroom when working in the relevant discipline. The applicability of each of the four factors is discussed below.

- Testing - The scientific testing criteria is directed more toward the "hard" sciences (e.g. engineering) than toward vocational and economic testimony, since such testimony is concerned with the future experience of people, which can never be tested or known with absolute certainty. Data from the CPS, however, are produced and extensively tested by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics. The probabilities of life are drawn from the life tables from the U.S. Department of Health and Human Services, National Center for Health Statistics, which produces and extensively tests the tables.

- Peer Review and Publication – Worklife tables and the CPS data used to measure employment rates of persons with a work disability are the subject of multiple articles.

The worklife tables have been reviewed in professional journals, and the CPS data have been used by researchers for both forensic and nonforensic purposes.

- Error Rates and Standards - This criterion is primarily intended to apply to the "hard" sciences in conjunction with the testing performed there (e.g., reliability of a bolt securing a heavy sheet of metal). Standards for controlling the technique's operation were developed by Brookshire and Cobb (1983). The method was further refined by Brookshire, Cobb, and Gamboa (1987) to adjust for work disability, and is one of multiple widely accepted methods to compute worklife expectancies discussed in Life and Worklife Expectancies (Richards & Abele, 1999).

- General Acceptance – Forecasting a plaintiff's future worklife expectancy is not an exact science. There is no single step in the loss computation process that enjoys universal acceptance in the relevant community. As such, it is predictable that experts will disagree on the method for computing worklife. This is true of defining earning capacity, computing worklife expectancy, projecting earnings growth, and determining discount rates.

  However, there is wide acceptance of use of the CPS data to define work disability. In addition, a 1999 publication by Richards and Abele, Life and Worklife Expectancies, looks at several generally accepted ways of computing a statistical worklife, including the method used in The Tables.

The U.S. Supreme Court recognized the inexact nature of assessments for lost earnings in its 1983 decision in *Jones and Laughlin Steel Corporation v. Howard E. Pfeifer* 462 U.S. 523. The Court stated that

> By its very nature the calculation of an award for lost earnings must be a rough approximation. Because the lost stream can never be predicted with complete confidence, any lump sum represents only a 'rough and ready' effort to put the plaintiff in the position he would have been in had he not been injured.

Relevancy – The CPS data used in The Tables are averages for the applicable disability population – those people with a work disability. For forensic purposes, when assessing loss of worklife expectancy, a relevant and direct focus is on persons who have a work disability.

Averages from various populations have long been accepted as a means for prediction – life expectancy, earnings, and others – and have long been accepted for use in the courts. No statistic, no matter how fine-tuned, can provide an exact predictor of an individual's future. This is as true of worklife expectancies as it is of various measures of annual earnings, growth rates, and discount rates.

Experts, however, must not blindly apply data to a plaintiff without consideration of how it matches the plaintiff's circumstances. The expert must apply data from The Tables with intellectual rigor, applying the available statistics about the work-disabled population and molding them to meet the specifics of the case. If the plaintiff is unlike the statistical cohort, the

statistic should be adjusted, or the analysis of lost earnings should be presented in a range, using two different worklife expectancies.

Definition of Worklife Expectancy

Myth. The contention is that the definition of worklife expectancy used in *The New Worklife Expectancy Tables* is inappropriate because it does not match the conventional or Markov models used by the U.S. Bureau of Labor Statistics.

Reality. Worklife expectancy tables using the Markov model were last produced by the government in 1986. Worklife production was intentionally dropped by BLS because they did not want to be involved in litigation. Prior to this, BLS used the conventional model, which considered the probabilities of life and participation (working or looking for work), but did not consider the possibility of unemployment. The method used in The Tables is similar to the conventional model, except that it does consider the possibility of unemployment. Many experts use a worklife expectancy that does not consider unemployment, but factor it in as a separate calculation. Worklife statistics found in The Tables simply combine these two important elements of calculation of lifetime earnings by including unemployment from the beginning.

Worklife expectancy tables using the Markov model have been produced by independent researchers (e.g., Skoog and Ciecka, 2001). Since none of the Markov-based tables publish annual employment rates, discounting lifetime earnings to present value must be done using worklife as a set of continuous years. It is not possible to discount properly using the probability of employment by year, accounting for periods of labor force inactivity. This could result in a lifetime loss of earnings that is significantly different than the more appropriate, activity-based figure.

External Validation in Error

Myth. The contention is that comparison between *The New Worklife Expectancy Tables* and other worklife expectancy tables is not possible because of differences in the definition and calculation of worklife expectancy.

Reality. Gibson (2001) validates the worklife expectancies in The Tables, in part by comparing them with figures from other tables. It was acknowledged at that time that this was a rough comparison, for the very reasons offered by the critics. The general pattern and consistency found in the worklife expectancies from the varying publications, however, helps to support the validity of The Tables.

Life, Participation, Employment Method Not Generally Accepted

Myth. The contention is that the Life, Participation, Employment method (LPE) used to generate the worklife tables is not generally accepted among forensic economists, and, therefore, cannot be used in tort cases.

Reality. No one method is universally accepted as “the” way to calculate worklife expectancy. The LPE method has been written up in at least one forensic journal (Albrecht,

1991; Payne and Piette, 2000). It was also included in a publication by Richards and Abele (1999) discussing various acceptable methods for calculating worklife expectancy.

The employment rates from the LPE method can be used on a year-by-year basis, which allows for proper discounting. In addition, the method allows the user to cut off the calculation at a desired age (e.g., full Social Security retirement age) to account for individual differences in career patterns or goals. The vast majority of experts cannot adjust the Markov worklife figures to consider these issues, partly because they have never been published, and partly because, even if published, they would be difficult to use.

Possibility of Future Disability

Myth. The contention is that worklife expectancy statistics are invalid because they do not factor in the possibility of future disability.

Reality. Though this contention is true, it misses a crucial point that needs to be considered. Gibson (1998) noted:

> A disabled person faces a risk of further disabling injuries at least as high as a nondisabled person's risk of an initial injury. Use of *The WLE Tables* is primarily intended for forensic settings where *the change* in a person's worklife from nondisabled to disabled is the primary concern. Study of the nondisabled worklife alone (in cases of partial disability) has little value without a corresponding disabled worklife. (p. 267)

In essence, just because a person has sustained one disability does not mean that the chance for another disability has suddenly disappeared. In fact, depending on the nature of the disability, chance of further injury could be even more likely (e.g., chance of falling due to knee instability). To factor the possibility of future disability on one side of the equation and not the other would be inequitable.

Finally, *Culver v. Slater Boat Company (722 F.2d 114, 5th Circuit, 1983)* notes that there are some possibilities we simply do not factor in our computations:

> Arriving at a reasonable estimate of anyone's financial future involves estimates of a whole spectrum of factors. We commonly exclude many relevant factors from consideration on the basis that they are so speculative that they cannot accurately be determined. For example, we consider only work-life expectancy and do not take into account the possibility that a worker will change to work that is more pleasurable but pays less. When considering the loss suffered as a result of the death of a wage-earner, we do not consider the likelihood that a widowed spouse may remarry. Nor do we take into account the stability of an already accomplished remarriage, or the age, appearance or personality of the surviving spouse.

Possibility of Transition Between Disability States

Myth. The contention is that the worklife expectancy statistics found in The Tables are unusable because they do not consider the possibility of an individual moving from one disability state to another.

Reality. Gibson (2001) studied this issue and found that from one year to the next, people did move from one disability state to another. He found, however, that the pattern in the employment rates for these groups was such that the impact of their movement did not appear to be significant.

Used by Plaintiffs Only and in Litigation Only

Myth. The contention is that, because The Tables are used only in litigation and only by plaintiffs that they are not valid for use in tort cases.

Reality. Experts do use The Tables when on the defense side of a case. One obvious example is if the case involves a pre-injury work disability. A work disability reduces worklife expectancy, and when such exists prior to the tort in question, it is advantageous to the defense to have a pre-injury reduction in worklife. It reduces pre-injury lifetime earnings and hence decreases the lifetime loss of expected earnings resulting from the tort.

Any expert has an obligation to use the statistics that are most appropriate for any given case. In cases of disability, it is the obligation of the expert to consider the effect of the disability on the individual's ability to work and earn money both prior to and subsequent to the tort.

It is true that The Tables are used only in litigation, but this is true also of all alternative (non-disability) tables. None of these tables are used outside litigation any more than the disability tables are. Worklife is used to measure loss of lifetime earnings, and the only place this is needed is in litigation. This ties in with the reason the government deliberately stopped publishing worklife tables—they did not want to be involved in litigation.

Use of Statistical Averages / Molding to Real World Cases

Myth. The contention is that the nature of the worklife statistic makes it difficult or impossible to apply to an individual and that the use of statistical averages for specific plaintiffs is inappropriate.

Reality. Averages from various populations have long been accepted as a means for prediction – life expectancy, earnings, and others. No statistic, no matter how fine-tuned, can provide an exact predictor of an individual's future. This is as true of worklife expectancies as it is of various measures of annual earnings and growth and discount rates. The expert must use available statistics about populations and mold them to meet the specifics of the case. Marcia Angell in *Science on Trial* (as cited in Slesnick, 1999) notes:

> Courtroom trials are not about populations, they are about individuals. . . . We have no basis, at least in the current state of knowledge, for making a judgment

> about a particular woman. We therefore *must* appeal to epidemiological data – that is, studies of populations. (p. 269)

Economists, actuaries, insurance companies, and gambling establishments use population averages when making rational bets on human outcomes. The basic belief is that in the absence of more specific and precise information, the best predictors of outcomes are statistical averages or relative frequencies. Following this, it is not true that disability data would have to be disaggregated by type, severity, or duration of disability in order to be reliable or meaningful.

Even if segregated data existed, its use would be limited at best. Persons with the same diagnosis and the same length of time since injury can have dramatically different experiences in terms of their experience in the workplace, especially when education level is factored in. Consider an example of two men with identical hand injuries resulting in reduced grip strength and limited range of motion. This injury would have an enormous impact on a carpenter, who would likely need to leave his employment. For an English professor, however, the effect may be minimal.

What the criticism does point to, however, is the fact that statistics of all sorts must be used responsibly and applied by persons familiar with issues involved. When assessing persons with disability, for instance, the user must be familiar with the effects of impairment on ability to work as well as the experiences of persons with disability in the labor market.

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