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Disability and Worklife Expectancy Tables: A Response

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I. Introduction

Expert vocational and economic testimony concerning loss of earning capacity in cases of partial disability necessarily involves merging the experts' experiences with various studies and statistics in an inexact science. Through its decisions in *Daubert v. Merrell Dow Pharmaceuticals* (1993) and *Kumho Tire v. Patrick Carmichael* (1999), the United States Supreme Court made it clear that this testimony must have sound scientific foundations.

Quantifying lifetime expected earnings pre- or post-injury requires exploration of two key factors: the plaintiff's annual earnings and his or her worklife expectancy. Sources to develop scientifically sound estimates for annual earnings are abundant, but very few published statistics exist for worklife expectancies.¹ Moreover, there is only one source of worklife expectancies for persons with a partial work disability: *The New Worklife Expectancy Tables* (Gamboa, 1998). Derived from government statistics, these tables establish average worklife expectancies categorized by age, gender, level of education, and work disability status. The subcategories for work disability are Not Disabled, Not Severely Disabled, Average Disabled,² and Severely Disabled.

Use of The Tables offers a basis from which an expert can mold an opinion. As with any statistic, these worklife expectancies reflect an average for the measured population. It is up to the expert, using his or her experience and research on the disabled population, to apply and adjust the statistic to meet the specific circumstances of the individual plaintiff. The precision of predictive statistics can be gauged only against the population from which they are drawn. When applying these statistics to an individual, the user must determine how the individual matches the population, and adjust the statistic if and where necessary.

In the Fall 1999 issue of the *Journal of Forensic Economics*, Gary R. Skoog and David C. Toppino offer a critical analysis of The Tables. Skoog and Top-

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¹*Life and Worklife Expectancies* (Richards & Abele, 1999) discusses various methods for computing worklife expectancies and references the known published statistics.

²Average Disabled results from combining the employment experience of Not Severely Disabled and Severely Disabled persons. The focus of this response is on the Not Severely Disabled and Severely Disabled categories, recognizing that all analyses also impact Average Disabled.

pino (hereinafter, "S&T") opine that use of The Tables is inadmissible under *Daubert*. They go on to suggest that The Tables are improperly defined and derived from unreliable data (Current Population Survey). S&T review several areas of potential bias in The Tables, but fail to offer any substantive statistical evidence to support their theories. This response reviews and rebuts the claims postulated by S&T.

II. Disability and the Current Population Survey

The Current Population Survey (CPS) is the source of the probabilities of participation and employment for The Tables, which use the LPE model³ to compute worklife expectancies (Brookshire & Cobb, 1983). A pivotal criticism of S&T is that the CPS was never intended as a tool to measure the existence or impact of disability. Consequently, they contend that the survey data and The Tables are corrupted. S&T are incorrect.

A. Purpose of the Current Population Survey

Conducted monthly by the Bureau of the Census, the CPS is used for a wide variety of purposes within the Federal government. Although disability is not specifically included in the stated purpose of the CPS, neither is determination of unemployment rates, even though the CPS is the official source for these data. In addition, state and local governments and private agencies rely upon it to develop numerous reports, studies, and decision-making aids, none of which is specifically included as a purpose for the CPS. The CPS interviewers' manuals list several specific uses.⁴

We note another significant use of the CPS in forensic economics—the worklife expectancy tables from the Department of Labor (1986). Interestingly, S&T seem to give these tables implicit approval through their description of them as the "now classic BLS Bulletin 2254" even though the explicit purpose of the CPS is not for the development of worklife expectancies.

In March of each year, the CPS is expanded to collect more information on income sources for the average American. The stated purpose for the supplement is as follows:

The annual Demographic Survey or March CPS supplement is the primary source of detailed information on income and work experience in the United States... The labor force and work experience data from this survey are used to profile the U.S. labor market and to make employment projections. (www.bls.census.gov/cps/ads/adsdes.htm)

³The LPE model computes worklife expectancy by summing the joint probabilities of Life, Participation, and Employment. The tables summed these probabilities from the stated age through the age of 75.

⁴See www.bls.census.gov/cps/intmana1.htm and www.bls.census.gov/cps/ads/1995/sintrins.htm

This supplement forms the basis for the rates of participation and employment used in The Tables through expanded questions that specifically address work disability. These questions were *explicitly* added to screen for work disability and to identify potential recipients of disability income. This is documented in the Census publication, *Labor Force Status and Other Characteristics of Persons With a Work Disability: 1982*, as indicated in the following quotes (U.S. Bureau of the Census, 1983, pp. 1-3):

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....The purpose of adding questions about disability status was to identify those persons who should be asked about their receipt of disability income.

Thus, the S&T contention that the CPS was not intended to identify work disability is clearly wrong. S&T expand their criticism to claim that persons identified through questions to screen disability income do not form an appropriate sample to measure rates of participation and employment. However, *Labor Force Status: 1982* also addresses this issue, contradicting S&T (U.S. Bureau of the Census, 1983, p. 1):

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.

Finally, the Census publication, *Labor Force Status and Other Characteristics of Persons With a Work Disability: 1981 to 1988*, expands on the reasoning behind these questions (U.S. Bureau of the Census, 1989, p. 1):

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.

The Census Bureau web site contains a page dedicated to disability data.⁵ This site notes three sources for disability statistics for the United States workforce: CPS, SIPP (Survey of Income and Program Participation), and the decennial census. The site notes that the CPS focuses on work disability-the pivotal measure for disability-specific worklife expectancy computations.

B. Current Population Survey Limitations

S&T refer to a 1994 letter written by Harvey Hamel, an economist at the Bureau of Labor Statistics, criticizing the disability data in the CPS. S&T offer his comments as further evidence that the CPS is invalid for the purposes of worklife expectancy computation.

However, S&T confuse the issues. They go to some length to detail Dr. Hamel's criticism of the *monthly* survey, without recognition that The Tables use the March supplement, not the standard monthly survey. This is also the supplement, otherwise known as the March Income Supplement discussed earlier, that the Bureau of the Census used in its *Labor Force Status and Other Characteristics of Persons With a Work Disability* publications.

On the March supplement, Dr. Hamel notes that the data "...would not provide overall estimates of the disabled population or workforce." This noted limitation is consistent with what is noted in *Labor Force Status and Other Characteristics of Persons With a Work Disability: 1981 to 1988* (U.S. Bureau of the Census, 1989, p. 1, emphasis added):

CPS data are not the best source for *prevalence* estimates. Their importance lies in the fact that they provide a reasonably consistent set of time series data on the labor force activity and earnings status of persons with a work disability.

Note that this caveat for use of the data is that the CPS should not be used to measure the size (prevalence) of the disabled population. Hamel notes that this arises from the fact that the CPS does not attempt to measure persons with a non-work disability.

The Tables do not use the CPS for prevalence measures, but for descriptive statistics of the work-disabled population. Thus, the caveat does not limit the worklife expectancy estimates. We should note that the Hamel letter is quoted out of context. S&T provide several references to other documents from the Bureau of the Census and Department of Labor, implying that these agencies have discredited use of the CPS for development of work-disabled worklife expectancies. This is incorrect. There is no government article, statement, or publication indicating such. In fact John McNeil (2001), author of many of these publications, has stated that he sees no reason why the CPS should not be used to compute such statistics. Moreover, the agencies have developed

⁵See www.census.gov/hhes/www/disable/intro.html

analyses of the work-disabled population and worklife tables using CPS data, including papers as recent as 2000.⁶

Finally, we note another advantage of the CPS for use in calculating The Tables. The rates of participation and employment used in the calculation require that the survey results be divided into 144 distinct cells. When the data are classified to this level of detail, sample sizes for many of the cells have the potential to be quite small. In order to accommodate this challenge, the source of the data must have a large overall sample size. The Current Population Survey and the decennial census are the only sources that meet this restriction. Of these, only the CPS offers the detailed questions and the recency adequate for The Tables. Moreover, the consistency of the CPS allows multiple year groupings of the data to help reduce the problems of a small sample size.

III. CPS Disability Criteria

A review of CPS data clearly shows that the following S&T criticisms of the Census disability criteria do not withstand serious scrutiny.⁷

A. Source of Criteria

S&T maintain that the author of *The Tables* or *Vocational Econometrics*, the publisher, developed these criteria (pages 244-245). In fact, the U.S. Department of Commerce, Bureau of the Census, developed the definition of disability used by *The Tables* and has continued use of the definition through the current date.⁸

B. Out of Labor Force

One of the criteria for severe disability is based upon the respondent's being out of the labor force at the time of survey and for a minimum of another six months. S&T criticize this variable as substantially skewed by persons with minor injuries (page 242). However, the overwhelming majority of them (88%) qualify as Severely Disabled using one of the other three criteria. Only 3% fail to meet any of the other criteria (Gibson, 2001).

⁶"Employment and Earnings of Individuals 18 to 64 by Disability Status: Data from the March 2000 Current Population Survey" (McNeil, 2000) explores the participation and employment rates using the same criteria used in *The Tables*. In work funded by the Department of Education, National Institute on Disability and Rehabilitation Research, researchers at Cornell University have published multiple papers using the March CPS, including Burkhauser (2000) and Houtenville (2000).

⁷In a separate monograph, *Daubert, Disability, and Worklife Expectancies* (Gibson, 2001), we present the seven criteria used by the Bureau of Census to screen for work disability and to classify persons with either a severe or not severe disability. Using these categories, combined with age, gender, and education, the Bureau of the Census cross-tabulates the rates of participation and employment for civilian workers, as published in its web site:

<http://www.census.gov/hhes/www/disable/disabcps.html>.

⁸"Employment and Earnings of Individuals 18 to 64 by Disability Status: Data from the March 2000 Current Population Survey" (McNeil, 2000) uses these criteria for measuring work disability as recently as November of 2000.

C. Health Problem Vague

S&T go to considerable lengths to attack the validity of the core work disability question of the CPS, also the cornerstone for the SIPP, and other key surveys.⁹ However, 81% of those responding positively to this question also responded positively to one of the other six questions (with 70% responding affirmatively to the Severe Disability criteria). If the question were as ambiguous as implied by S&T, one would not expect such consistency.

D. Temporary in Nature

Throughout their article, S&T postulate that the persons qualifying under the CPS criteria are likely to be only temporarily disabled, concluding that this distorts the extracted probabilities of participation and employment. No statistical support is offered. However, by examining respondents in two consecutive years, Gibson (2001) demonstrates two facts that debunk this speculation:

1. Persons with a work disability are more likely to move from employed to not employed and are less likely to move from not employed to employed showing deteriorating, rather than improving, employment. Moreover, this problem worsens with age. (See "Impact of Work Disability" later in this paper for other research on this issue.)
2. If the overall probabilities of employment are adjusted for persons who do report a change in disability status in the second year, there is minimal impact.

E. Chronic Disability

S&T hypothesize that the CPS disability statistics are distorted by persons with a chronic disability, rather than those disabled by a tort (242-243). S&T's speculation assumes that one group is inherently different than the other. Once again, they offer no evidence in support. In the absence of indicators to the contrary, one must assume that two persons with the same work disability, but from different causes, have equal probabilities of employment.

F. Severe Disability

On page 241, S&T question why one would assign a severe worklife expectancy of marginal duration to somebody who obviously has no capacity for work. One typically would not. Severely Disabled is presented as a category in The Tables primarily as a means to segregate those with significant disabilities prohibiting work from those with true residual capacity—resulting in the Not Severely Disabled category. An expert who believes the plaintiff is unable to work should certainly use a worklife expectancy of zero.

⁹Similar questions are asked in the National Health Interview Survey, conducted by the U.S. Bureau of the Census for the U.S. Department of Health and Human Services, and the Panel Survey of Income Dynamics, conducted at the Survey Research Center, Institute for Social Research, University of Michigan.

IV. Odds and Ends

A. Impact of Work Disability

S&T make several comments to the effect that once a person with a permanent work disability finds employment that accommodates that disability, there is no diminution in worklife (pages 243 and 244). Employers and employees no longer form lifetime relationships where the employee stays with a single employer for the duration of his or her career-whether they are disabled or not. Persons with a work disability are more likely to become unemployed and are less likely to find employment once unemployed. These conditions become more profound with age (Yelin 1996 and Yelin and Trupin 1997 and 1999).

B. Six-Year Average

To compute the worklife expectancies in The Tables, PE rates were averaged from the March Supplement for 1992 through 1997 to increase cell size and reduce cyclicity.¹⁰ S&T tested the data for the six years for a trend in employment rates. Not surprisingly (in years of increasing economic prosperity), they found a time factor with statistical significance. To use six data points from an increasingly 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.

C. Adjustment to Specific Case

Much of the S&T article centers around the fact that the worklife expectancies are derived from *average* rates of participation and employment from the various disability category populations. Their consternation seems to stem from a need for a precise formula to apply these population statistics to an individual plaintiff. This is the same quandary vocational and economic experts must face when applying any statistic, not just worklife expectancies, to predict a lifetime earning stream of an individual. Why do experts exist? If one could derive worklife expectancies in sufficient detail that each individual can be assigned a statistic to accurately predict his or her future, we can certainly eliminate the need for expert testimony!

V. Summary

When first published, *The New Worklife Expectancy Tables* (Gamboa, 1987) represented a pioneering effort. No other publication defines statistical worklife expectancies for persons with a disability. To this date, they continue to be the only published source.

¹⁰Use of joining multiple years of the CPS is supported in "Roundtable on Earnings and Work Experience of Disabled Workers-Data for Assessment" (McNeil, 2000). Here, McNeil points out that such a combination is not possible with SIPP data because of non-comparability between years.

The Tables draw from data defined, collected, summarized, and published by the Bureau of the Census. Questions in the Current Population Survey were developed at great expense and considerable scrutiny to best extract information explicitly about persons with a disability. The validity of this collection process is verified on an on-going basis by the government and various watchdog groups to assure the integrity of the information as used for critical decisions throughout government and private industry.

Skoog and Toppino offer a review of The Tables in what is termed "A Critical Analysis." Actually, it is only a polemic. The arguments presented are mere red herrings, offering no meaningful statistical support or analyses. They pose various hypotheses, all assuming the most negative light possible against The Tables, but fail in their scientific duty to substantiate a single one. Their intent can only be to offer possible groundwork for a court challenge against the use of The Tables in expert testimony.

This is both unfortunate and ironic, for The Tables provide the only published scientific basis from which to derive worklife expectancies for persons with permanent partial work disabilities. The *Daubert* and *Kumho* decisions dictate use of such a basis for an expert opinion. To suggest that these Supreme Court decisions invalidate The Tables is ludicrous. It implies that experts throw out all statistical measures and base their opinions on gut instinct. Certainly, the measures of worklife expectancy presented by The Tables are in need of expert interpretation and application to specific cases. It is this expert interpretation of the data that judges and juries must consider when determining the admissibility and weight of the expert's testimony. An assignment of a worklife expectancy that ignores either pre-injury or post-injury work disability status is lacking in the level of "intellectual rigor" required by the *Daubert* standard.

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