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**In the Circuit Court for the Sixteenth Judicial Circuit  
Kane County, Illinois**

Emily Celarek,	)	
	)	
Plaintiff,	)	
	)	Case No. L KA 99 0140
vs.	)	
	)	
Rutland Dundee Township Fire Protection District	)	
and Dennis Demes,	)	
	)	
Defendants.	)	

**Affidavit of Anthony M. Gamboa, Jr., PhD, MBA**

COMES NOW, Anthony M. Gamboa, Jr., being first duly sworn upon his oath states the following:

Defense has filed a motion to bar my testimony. This motion centers on the following key areas:

1. My being Barred from Testifying Regarding Earning Capacity
2. *The New Worklife Expectancy Tables*
3. Use of Underlying Data by Disability Researchers
4. Vocational Economic Assessment Regarding Ms. Celarek
5. Dr. Skoog Affidavit

Each of these points is refuted in the discussion that follows.

**1. Background**

This challenge, as well as the included deposition from Dr. Gary Skoog, centers around my estimate of Ms. Celarek’s post-injury earning capacity and my use of a post-injury worklife expectancy specific to persons with a work disability. Specifically, the challenge repeatedly refers to the worklife expectancy data as *The New Worklife Expectancy Tables*. *The New Worklife Expectancy Tables* is a publication I authored that meshes two key sets of government statistics together to generate worklife expectancies by age, gender, education, and level of work disability. Despite defense claims to the contrary, I did not use this publication in my analysis. However, I did use a subset of the two government data sources utilized in the publication to explore the probability that Ms. Celarek would be employed in each future year of potential earnings.

## Affidavit of Anthony M Gamboa

The method I used in my analysis is known as the Life, Participation, and Employment (LPE) model for computing worklife expectancy. This model compounds the probability that a person will be alive (L) at each future year with the probabilities he or she will be active in the labor market (P) and employed (E). The probability of life is extracted from the *United States Life Tables* developed by the National Center for Health Statistics.<sup>1</sup> The data I used to project the probability of employment were developed by the US Census Bureau from its Annual Demographic Survey, as published on the Census Bureau website.<sup>2</sup> It is these employment data from the Annual Demographic Survey that are the focus of the defense motion.

The Annual Demographic Survey is conducted in March of each year by the US Census Bureau as a supplement to its monthly Current Population Survey (CPS). 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 definition of work disability used in the Annual Demographic Survey can be found on the Census Bureau web site.<sup>3</sup> This definition was created and is controlled by the Census Bureau. As part of this definition, the government also created the sub-categories of severely and not severely disabled.

## 2. Barred from Testifying

Defendants appear to be intentionally misleading on page 3 of their Memorandum when they state, "Dr. Gamboa acknowledges that he has not been allowed to testify in court as to an individual's earning capacity in several cases." Their expansion of my inability to testify to "several" cases is blatantly false.

On page 44-45 of my deposition, I did note one instance in which I was not allowed to testify regarding a child's earning capacity. In this case, the judge did not feel that it was possible for any expert to accurately estimate the loss of earnings for a young child. This case is on appeal. Defendants focus on this isolated instance in an effort to discredit my methodology. The only other instance in which I was not allowed to testify in front of the jury was later appealed and reversed (deposition, page 45).

Over the past two years, I have been admitted 35 times to testify in various state and federal courts across the country. If my methodology was unsound, I would not be allowed to testify as many times and in as many different courts as I have.

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<sup>1</sup> <http://www.cdc.gov/nchs/products/pubs/pubd/lftbls/life/1966.htm>

<sup>2</sup> <http://www.census.gov/hhes/www/disable/disabcps.html>

<sup>3</sup> <http://www.census.gov/hhes/www/disable/cps/cpsworkd.html>

### **3. *The New Worklife Expectancy Tables***

Defendants voice several complaints that they have regarding the data I used for estimating Ms. Celarek's worklife expectancy. As noted in the Background section, I did not use *The Tables*, but did use the same underlying data. My responses, therefore, will focus on the data used to derive my opinion.

#### **3.1. Definition of disability**

Apparently, defendants are confused by the fact that definitions of disability vary by organization and by purpose. I will briefly describe some of the varying definitions and the definition that is appropriate for evaluating loss of lifetime earnings.

##### *3.1.1. Varying definitions of disability*

Before measuring the effect of disability on earnings and employment, it is necessary to define what is meant by disability. Depending on the desired focus, different groups and surveys will define disability differently. The Veterans Administration (VA) and the Social Security Administration, for instance, each have their own definitions, which vary considerably. Males considered disabled by the VA who do not otherwise have a work disability enjoy levels of employment comparable to males without a work disability (Gibson, 2001; see Attachment A), whereas individuals found to be disabled under Social Security law are unable to perform any type of substantial, gainful work activity. Other organizations have definitions that may not consider work effects, except within the context of the overall social effects of impairment.

Another popular definition comes from the Americans with Disabilities Act (ADA), which defines disability as existing in persons with a physical or mental impairment that substantially limits one or more of the major life activities. The ADA definition, however, is not the appropriate definition of disability to use in tort cases involving lost earnings. The ADA definition is too broad in that it includes people who do *not* have limitations in the kind or amount of work they can perform, i.e., they do not have a work disability. For forensic purposes, when assessing loss of lifetime earnings, the most relevant data pertain to those persons who have a work disability, the definition used in the US Census Bureau's Current Population Survey (CPS).<sup>4</sup> This is the exact issue addressed by Mr. John McNeil, formerly with the Census Bureau, in an affidavit (Attachment B).

##### *3.1.2. Definition of Work Disability*

Defendants' confusion continues when they object to the worklife expectancy statistics I used because they "have not been corrected to apply to disabled persons with a work disability" (Memorandum, page 4). This is exactly what *The Tables* do and have always done. The worklife expectancy statistics I use in my vocational economic analyses have always been based on the US Census Bureau's definition of work disability (see previous paragraph). Defendants' statement is simply incorrect.

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<sup>4</sup> See footnote 3.

## Affidavit of Anthony M Gamboa

### 3.1.3. Source of Disability Data

Defendants state that both the Census Bureau and disability researchers prefer using the Survey of Income and Program Participation (SIPP) when studying disability effects. This may be true when the purpose is to study the impact of the more-broadly defined ADA. It is certainly not true as a statement of preference for disability research in general. (Section 4 demonstrates this in detail.)

As noted previously, the appropriate definition for use in defining lost earnings is *work disability* – the definition which is the focus of the CPS disability criteria. As discussed in the Background section, this survey is the source of my data for earnings and worklife expectancy in this case.

The Census Bureau website contains a page dedicated to disability data.<sup>5</sup> 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 – the 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 Annual Demographic Survey forms the basis for the rates of participation and employment used in the worklife expectancy tables through expanded questions that specifically address work disability. As early as 1983, the Census Bureau itself supported the validity of the CPS data for studying the effects of work disability, and published *Labor Force Status and Other Characteristics of Persons with a Work Disability: 1982* (see Attachment C). 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.

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<sup>5</sup> <http://www.census.gov/hhes/www/disable/intro.html>

## **Affidavit of Anthony M Gamboa**

In the 1989 publication *Labor Force Status and Other Characteristics of Persons With a Work Disability: 1981 to 1988* (see Attachment C), Census expanded 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.

Finally, John McNeil (2002), the former Special Assistant for Disability Statistics with the US Census Bureau expands on the origins and intent of the CPS disability questions in the attached article (see Attachment C). This article provides further verification that the use to which I apply the CPS disability statistics is both appropriate and in keeping with the underlying criteria.

The defendants' claim that the CPS data are not appropriate for studying the effects of work disability is clearly incorrect.

### **3.2. Temporary Disability**

Defendants object to the influence that persons with temporary disability might have on worklife statistics. For the existence of temporary disability within the CPS to distort worklife expectancy, however, 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; see Attachment A) 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, especially for those with a non-severe work disability.

### **3.3. Supposed Assumption that All Disability is Permanent**

Another claim made by defendants is that the worklife expectancy statistics assume that all disability is permanent. No expert should use any statistic unless there is a thorough understanding of the meaning of the statistic and how it should be applied. The worklife expectancy statistics I used in my analysis look at the work and earnings experience of people with a work disability. Experts should apply these statistics only to those whose work disability is permanent. Applying them to a person whose disability is temporary would do exactly what defendants object to and could overstate the worklife reduction resulting from disability. Ample medical evidence exists to demonstrate the permanence of Ms. Celarek's condition. In my analysis of her lost earnings, I have taken these issues into consideration and applied the worklife expectancy statistics based on the permanence and the nature of her work-related impairments.

## Affidavit of Anthony M Gamboa

### 3.4. Probability of Disability for Persons without Disability

Defendants note the fact that the nondisabled worklife expectancy statistics I use do not consider the possibility of future disability. Though this is true, it misses a crucial point that needs to be considered. Gibson (1998; see Attachment A) 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.

Defendants offer this criticism with no suggested solution. The fact is, there is no source for computing such probabilities. One could potentially be derived for the nondisabled population, but such statistics are beyond modern science for the population with disabilities. To factor it 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 of lost earnings:

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.

Granted, I factor the probability of the plaintiff's death at each future age. However, death is certain. Divorce or (further) disability is not.

### 3.5. Condition-specific Worklife Statistics

Defendants object to the worklife expectancy statistics I used because they are not specific to particular conditions or types of impairment. In short, they object to the fact that the statistics are derived from an average for females with a not severe work disability and an education level equivalent to Ms. Celarek's. They feel the group of "not severely disabled" is too broadly defined. They offer no alternative measure that meets their condition-specific criteria. There is none.

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. For example, economists (forensic and otherwise) commonly make inferences on expected income based upon a person's level of education. Yet, education is obviously a very broad classification. People with a baccalaureate degree can have vastly divergent results in the labor market. Following this, it is not true that disability data would

## Affidavit of Anthony M Gamboa

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.

Also, 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 and earn money.

What the criticism does point to 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 and earn money as well as the experiences of persons with disability in the labor market. In assessing the impact of Ms. Celarek's future capacity to work and earn money, I have considered all of the relevant vocational factors in estimating her earning capacity and worklife expectancy.

### 3.6. Phillips v. Industrial Machine

Defendants use a Nebraska Supreme Court opinion in an effort to invalidate my use of employment statistics for estimating Ms. Celarek's worklife expectancy. In doing this, they demonstrate their misunderstanding of the issues involved. As I noted in my deposition (page 46-47), I agree with the Nebraska decision.

In *Phillips*, there was no medical opinion supporting the expert's opinion that the plaintiff had a disability. The court stated that "without any evidence that Phillips was in fact disabled, Marchisio's opinion, which relied on the conclusion that Phillips was disabled, lacked foundation and probative value."

The worklife tables used by the expert in *Phillips* were an older version of the tables that did not break out disability into severe and not severe categories. Despite an apparently minor disability, the expert in *Phillips* used an average disabled statistic without regard for how the plaintiff may differ from that statistic, in stark contrast to the guidance printed in the tables. Therefore, based on an insufficient medical foundation and on his inappropriate use of the worklife tables, his opinion was not relevant to the case.

As detailed in my analysis, there is extensive medical support to show that Ms. Celarek has a work disability, unlike the *Phillips* case. In addition, the data I used in my analysis regarding Ms. Celarek are newer and have specificity lacking in the *Phillips* analysis. Finally, when

## Affidavit of Anthony M Gamboa

using the disability-specific worklife expectancy statistics, I considered the specifics of the plaintiff's situation, such as age, education, and work-related limitations, before placing her on the disability continuum.

### 3.7. General Acceptance

Defendants claim that the methodology and data that I used in estimating Ms. Celarek's post-injury worklife expectancy do not have general acceptance in the relevant scientific community. In making this claim, they again show a misunderstanding of the issues involved in estimating loss of lifetime earnings.

Forecasting a plaintiff's future earnings stream 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 lost earnings. This is true of defining earning capacity, computing worklife expectancy, projecting earnings growth, and determining discount rates.

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.

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 LPE model used in my analysis.

The methodology used to develop my estimate of Ms. Celarek's worklife expectancy was developed by Michael Brookshire and William Cobb (1983) and was further refined by Brookshire, Cobb, and Gamboa (1987). In a 1991 article in the *Journal of Legal Economics*, Gary Albrecht applied this methodology to assessments of earnings for partially disabled individuals. My opinions in this case are consistent with this methodology (see Attachment D).

The worklife tables, as well as the data and methodology underlying them, have been the subject of many articles, lending credence to their overall acceptance. Section 4, Use of Underlying Data by Disability Researchers, describes in more detail the use made by various researchers of the data I used to estimate Ms. Celarek's worklife expectancy.

## Affidavit of Anthony M Gamboa

### 4. Use of the Underlying Data by Disability Researchers

Defendants object to my use of the Census Bureau's CPS data, saying, "Researchers studying disability statistics rely on the Survey of Income and Plan [sic] Participation (SIPP) over the CPS." This is untrue.

There are researchers who use the SIPP to study the effects of disability. As noted in section 3.1.3, Source of Disability Data, however, these are researchers who are interested in a broader definition of disability than is appropriate in a forensic setting when studying loss of lifetime earnings. Contrary to defendants' belief, there are numerous government and independent researchers who use CPS data for studying the effects of disability. Attachment C contains a partial list of this research, some of which is described in the paragraphs that follow.

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, 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 Tables*. In addition, he signed an affidavit (Attachment B) stating he sees no reason why the CPS data for work disability cannot be used in the manner applied by Vocational Econometrics. He also authored an article further supporting use of CPS data for studying worklife issues for people with a work disability (McNeil, 2002).

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

In addition, both government and non-government researchers rely on the CPS employment rates and earnings figures for non-forensic purposes. Burkhauser, Daly, and Houtenville (2000), 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 Persons with Disabilities at Cornell University. The Cornell RRTC has also published several other papers using CPS data on persons with a work disability. These include three papers by Houtenville (2000) that studied the prevalence, employment rates, and household income of people with disability, as well as a paper by Burkhauser, Houtenville, and Wittenburg (2001) that compared the employment trends of persons with work limitations using the CPS and two other government surveys.

Daly, Burkhauser, and Houtenville (2000) published a paper through the Federal Reserve Bank of San Francisco that used CPS data to study the work and income of men with disability. Acemoglu and Angrist (1998), both with the Department of Economics at MIT, published a paper through the National Bureau of Economic Research that used CPS data to study the impact of the ADA on the employment of people with disability.

## **Affidavit of Anthony M Gamboa**

Researchers at the University of California, San Francisco, also use CPS data to study persons with a disability. This work includes an article published in the U.S. Bureau of Labor Statistics' *Monthly Labor Review* (Yelin and Katz, 1994) that used both the CPS and the National Health Interview Survey to study the participation trends of people with and without disability during the period from 1970 to 1992. Yelin (1996) and Yelin and Trupin (1997) used the CPS to study the participation and employment of people with and without disability during the mid-1990s.

Government researchers have also used CPS data to study the experiences of people with and without work disability. The U.S. Census Bureau measured the participation and employment rates and average earnings of people with and without disability and published the results in two key documents (1983 and 1989). In 2001, the Census Bureau issued a press release that included basic information from the CPS on the prevalence, employment, earnings, and education of people with a work disability.

The research list above is not meant to be complete. It does, however, give an idea of the variety of researchers using CPS data. The use of the CPS by this sampling of government and non-government researchers corroborates the validity of the CPS for the purpose of studying the work experience of people with a work disability.

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

### **5. Vocational Economic Assessment Regarding Emily Celarek**

In conducting an assessment of loss of lifetime earnings, an expert needs to consider a variety of factors, some of which are age, education, previous work experience, and work-related limitations. Because of her young age, the most appropriate measure of Ms. Celarek's earning capacity is related to education level in that it includes the wide variety of work opportunities available. When applying average earnings by education level, however, it is essential that the expert take important vocational factors into consideration.

In assessing Ms. Celarek's post-injury earning capacity, I considered the effects of her head injury and the impact that these limitations are likely to have on her capacity to work and earn money in the future. Just because Ms. Celarek might be able to make it through college and earn a degree does not mean that the average earnings for those with a bachelor's degree is the most appropriate measure of her post-injury earning capacity. Contrary to defendants' statement on page 7 of the Memorandum, I did not use high school statistics in this case.

The impact of her head injury will make it more difficult for Ms. Celarek to find and maintain the types of employment usual for those with a bachelor's degree. In considering her difficulties, I determined that the average earnings for those with some college, but no degree, is a more appropriate measure of her earning capacity. This measure takes into consideration personal vocational factors that will impact her ability to work.

## Affidavit of Anthony M Gamboa

In stating that “this testimony is irreconcilable with his use of the Tables and other statistical analysis” (Memorandum, page 6), defendants forget the importance of applying statistics appropriately. Average statistics are only useful if the person using them understands what they are and how to apply them. Not all statistics are appropriate in all instances. From a vocational perspective, because of the nature of her work-related impairments, an appropriate estimate of Ms. Celarek’s earning capacity cries out for a use of statistics that is more case specific than the one apparently desired by the defendants.

### 6. Dr. Skoog Affidavit

The defense motions incorporate a deposition by Gary R. Skoog, Ph.D. Dr. Skoog goes to great lengths to discredit the use of the disability worklife statistics employed in my analysis, claiming no knowledge of any scientific support for the data. Dr. Skoog’s claims are disingenuous at best, and quite likely intentionally misleading.<sup>6</sup> Unfortunately, almost all of these claims are founded in emotion, rather than science. Each claim is addressed separately in the following subsections.

#### 6.1. Sample Selection Bias

Dr. Skoog spends considerable space *speculating* that the CPS sample utilized to assess the impact of work disability on employment is biased as non-random. This assertion is based upon his claim that the CPS was not designed to capture this impact. First, assuming his claim of inadequate survey design is correct, we note that any resulting bias is mere speculation on his behalf. He offers no scientific evidence that such bias actually exists at all, let alone to a material degree.

Further, his contention that disability was not considered in the design of the Annual Demographic Survey is clearly wrong. Section 3.1.3, Source of Disability Data, discusses the intent of the Census Bureau in its use of CPS data in studying the effects of disability on work experience.

Dr. Skoog continues his erroneous assertions by suggesting that most disability researchers seek data on work disability from other data sources. These assertions are addressed separately in sections 3.1.3, 3.7, and 6.12 of this affidavit. In addition, he references work by a Nobel Laureate, inferring this person’s agreement with the criticism. This is addressed in section 6.10.

#### 6.2. Heterogeneity

Dr. Skoog correctly observes that the population of those with a specific impairment is quite diverse. However, he incorrectly surmises that this precludes the use of a statistic drawn from this population. He states that use of such a statistic should only be done if the plaintiff’s

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<sup>6</sup> Dr. Skoog has seen every response through other cases we have in common or various articles and web sites. Yet, he continues to pretend ignorance to the contradictory information, presenting only one skewed viewpoint.

## Affidavit of Anthony M Gamboa

disability is “first established with specific medical and vocational scrutiny and opinion.”<sup>7</sup> The diversity of the population and the application of the statistic shall be addressed separately.

### 6.2.1. Application of Disability Statistic

Dr. Skoog’s statement about when application of the CPS disability statistics is appropriate only demonstrates his lack of familiarity with this case. He reviewed no medical records associated with the case, yet appears to have ignored the fact that I did, as documented in my report.<sup>8</sup> The medical opinions clearly demonstrate a permanent limitation in the kind and amount of work Ms. Celarek can perform – a common element in numerous definitions of work disability.

I am qualified as a vocational expert (unchallenged by the defense), and have provided the described vocational scrutiny. Thus according to Dr. Skoog’s own definition of when application of these disability statistics is appropriate (“established with specific medical and vocational scrutiny”), his arguments are without merit.

### 6.2.2. Diversity of Population

Heterogeneity is a statistical term referring to the diversity of the population averaged to derive the disability statistics. This was explored in detail in section 3.5. Here, however, I note that Dr. Skoog’s solution to this perceived problem is to gauge the worklife of a person with a work disability by applying a statistic from the total population.<sup>9</sup> This is almost as absurd as it is hypocritical! Dr. Skoog feels that he has the ability to adjust a statistic from a much broader universe (everybody, including those without disabilities and those in a vegetative state) to meet the circumstances of a particular plaintiff. Yet, he damns my attempt to use a statistic derived from females defined by the US Census Bureau as having a non-severe work disability as being overly broad!

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 a female with a non-severe work disability, should one use an average of all people or of females with a non-severe work disability?

Most forensic economists, including Dr. Skoog and me, routinely project earnings and employment based upon education. This is further indication of Dr. Skoog’s double standards. Categorization by education results in averages from extremely 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. Obviously, these occupations have a wide range of expected earnings. Yet, this average is the most appropriate predictor in

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<sup>7</sup> Page 4, line 6 of Dr. Skoog’s affidavit.

<sup>8</sup> See pages 1 and 2 of my report for a listing of the documents reviewed.

<sup>9</sup> Page 6, lines 21-22 of Dr. Skoog’s affidavit.

## Affidavit of Anthony M Gamboa

many cases – such as a college freshman with a disability who had not yet determined an area of focus.

### 6.3. Exogeneity

Dr. Skoog's next issue deals with the fact the Current Population Survey is self-reported. The CPS relies upon answers from respondents to questions administered by trained Census personnel (self-reporting). As such, the seven criteria used by the Census Bureau to classify a respondent's disability status depends upon

- 1 the respondent's ability to recognize the disability and
- 2 the truthfulness of the response.

Dr. Skoog speculates that one or both of these requirements is not met in a material quantity of responses. He further speculates that this impact is significant. The word "speculate" is used here, because he once again offers an emotional criticism with no scientific support.

As mentioned in the overview to this affidavit, the Current Population Survey is the *primary* source of employment data for the United States. The entire survey is self-reported, or in Dr. Skoog's terms, lacking exogeneity. 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 US economy:

- Researchers rely upon current employment status, but nobody verifies this with the respondents' employers.
- Earnings information is relied upon, but CPAs do not verify the respondents' tax returns. The surveyors do not even glance at them.
- Education status is taken as truthful, but nobody examines the respondents' diplomas.
- Classifications by age are routinely made, but not a single birth certificate is reviewed.

Now, with respect to whether the respondent has limitation in the kind or amount of work he or she can perform, Dr. Skoog contends the average US citizen is either ignorant or a liar. In addition Dr. Skoog again throws in the name of two Nobel Laureates, implying some connection with his claims. This is addressed in section 6.10.

### 6.4. Temporary Disability

Dr. Skoog's next criticism is that the population of persons with a non-severe work disability measured by the US Census Bureau includes persons that had a limitation at the time of the survey that would be corrected in time. Here, he speculates that a significant portion of the subject population is inappropriately categorized and that these people have employment experiences significantly different than those with permanent disabilities. Again, these speculations are offered with no scientific support. Further discussion can be found in section 3.2.

## Affidavit of Anthony M Gamboa

### 6.5. Survey of Income and Program Participation (SIPP)

Instead of the Current Population Survey, Dr. Skoog opines that the data source I should use to measure the impact of disability is the Survey of Income and Program Participation (SIPP). He classifies this as the “gold standard,” claiming it to be used almost universally by scientists studying the impact of disability. Once again, he offers no support for this claim.<sup>10</sup>

The existing evidence is quite to the contrary. Both government and non-government researchers rely on the CPS disability employment rates and earnings figures for non-forensic purposes. Section 4 describes some of this research and supports use of the CPS for studying the work experiences of people with a work disability.

A major reason for preferring the CPS over the SIPP for measuring worklife expectancy for persons with a disability is the differences in the definitions of disability used by the two surveys (see section 3.1). The definition of work disability used in the Current Population Survey was created and is controlled by the Census Bureau. It focuses exclusively on disability as it limits a person’s ability to work and earn money – they key focus of this and most cases for lost earnings.

The SIPP, however, is targeted to measure disability as defined in the Americans with Disabilities Act (ADA). This act defines a disability as a limitation in any major life activity - a much broader definition than work disability. ADA disability includes activities that have nothing to do with employment (e.g., a sexual dysfunction). This is the exact issue addressed by Mr. John McNeil, formerly with the Census Bureau, in his attached affidavit (Attachment B), discussed in more detail in section 6.11.

### 6.6. Generally Accepted Definition of Worklife Expectancy

Dr. Skoog claims that concept of worklife expectancy employed in my analysis differs from the “generally accepted” definition used by the Bureau of Labor Statistics (BLS) and in the forensic economics literature. He does not detail this claim, but I assume he is referring to the fact that the statistics I employed adjust for the probability that Ms. Celarek will be unemployed at any stage of her career by using the Life, Participation, and Employment (LPE) model.<sup>11</sup>

Tables published in 1986 by BLS (see Attachment A) used the “Increment-Decrement” model, and ignored the probability of unemployment. BLS has discontinued publication of these tables and offers no support of them. Users of this model typically compute earnings using the unadjusted worklife statistic, then reduce for an assumed probability of unemployment. The LPE model merely simplifies the steps.

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<sup>10</sup> In fact, in section 6.11, he cites research that calls the validity of the SIPP disability measures into question.

<sup>11</sup> See the overview section of this affidavit.

## Affidavit of Anthony M Gamboa

The attached bibliography (Attachment D) details multiple forensic articles dealing with the LPE model. In *Life and Worklife Expectancies*, Richards and Able detail multiple models for computing worklife expectancy, including the LPE model. An upcoming edition of the *Journal of Econometrics* will feature a paper by Millimet, Nieswiadomy, and Slottje, detailing yet another model which also factors the probability of unemployment. Thus Dr. Skoog's claim that incorporation of the rate of unemployment in a worklife statistic is not supported in forensic literature is incorrect.

### 6.7. Not Replicated

Dr. Skoog also claims that the method used to derive the worklife expectancies used in my analysis has not been replicated by any independent researcher. Dr. Skoog is confused on the concept of replication. As detailed in the attached bibliography (Attachment D), the model I use for my analysis (LPE) has been written about by many independent researchers.

The data I use to derive the probability of life was developed by the National Center for Health Statistics, as published in the *United States Life Tables*.<sup>12</sup> The data I used to project the probability of employment was developed by the US Census Bureau from its Annual Demographic Survey, as published on the Census Bureau website.<sup>13</sup> Both of the supplying agencies extensively test and verify their data, which is relied upon by economists and researchers around the world – both forensic and non-forensic.

Dr. Skoog notes that he has no reason to dispute the source of my data. Does he therefore suggest the analysis of a plaintiff's lost earnings must be performed by two separate experts before it can be presented to the court? Or, is he suggesting that I must replicate the CPS, a survey with approximately 150,000 respondents in each of the six years I used, in order for my use of the data to be valid?

### 6.8. Skoog & Toppino Article

Dr. Skoog notes that he coauthored an article critical of the *The New Worklife Expectancy Tables* in a 1999 edition of the *Journal of Forensic Economics* (see Attachment A), which he points out was editorially reviewed through standard academic procedures. This, he offers as proof that the methodology employed by the tables is invalid. This article makes many of the points Dr. Skoog has detailed in his affidavit, again posing speculation on how *The New Worklife Expectancy Tables* might be distorted without any support scientific evidence.

However, he fails to note that the same journal also published an article by Gibson and Tierney (see Attachment A) which underwent the same process and contradicts every one of the points made by Skoog and Toppino. He also neglects to mention that other authors also submitted articles to the same journal finding fault with the Skoog and Toppino article.

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<sup>12</sup> <http://www.cdc.gov/nchs/products/pubs/pubd/lftbls/life/1966.htm>

<sup>13</sup> <http://www.census.gov/hhes/www/disable/disabcps.html>

## Affidavit of Anthony M Gamboa

One specific response (see Attachment C) was written by Mr. John McNeil (2002), the former Special Assistant for Disability Statistics with the US Census Bureau. In this response, Mr. McNeil addresses multiple misquotes and erroneous assumptions made by Skoog and Toppino. It is interesting to note that Skoog and Toppino thought so highly of Mr. McNeil at the time their article was written that Mr. Toppino noted:

. . . Dr. McNeil is a leading authority on this CPS subject data base, disability in general, and our original paper was careful to quote him thoroughly for that very reason.<sup>14</sup>

### 6.9. Article by Dr. Hale

The June 2001 issue of the *Monthly Labor Review* contains an article written by Thomas Hale (see Attachment A), an economist employed by the Bureau of Labor Statistics. The article criticizes the CPS as a data source for studying the employment experience of persons with a disability as measured by the Americans with Disabilities Act (ADA). Dr. Skoog takes great liberties with this article, claiming, “Hale’s detailed explanation of why Gamboa’s tables are invalid . . .” **This is a deliberate, gross misrepresentation of the facts. Dr. Hale’s article makes absolutely no reference to me or to *The New Worklife Expectancy Tables*.**

Hale’s goal as an employee of BLS is to find/develop a survey to enable measurement of the employment experiences of persons with a disability as it is defined by the ADA. As noted in section 3.1, the CPS does not use this definition, nor is this definition the best one to use when assessing lost earnings. Other key criticisms in the article deal with the validity of the first work disability question (limited in the amount or kind or amount of work a person can perform) and the presence of persons with a temporary disability.

There is no official government position against use of the CPS to define work disability. In fact the Census Bureau regularly generates cross-tabulations of these data and publishes them on its web site. In addition, two noted former Census officials (Mr. John McNeil and Dr. Herman Miller) have authored affidavits to the validity of CPS for measuring work disability, as shown in Attachments B and E.

Hale's criticisms of the CPS are not new. The CPS is far from a perfect measure of the impact of disability on employment. However, it is the best tool that exists for the matter at hand. The limitations are not substantial enough to warrant discontinuing use of the CPS for estimating the worklife expectancy of persons with and without work disability. In fact Hale’s reservations are contradicted by many leading researchers who use the CPS data to study the impact of disability.<sup>15</sup>

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<sup>14</sup> From a posting to NAFE ListServe, October 10, 2000.

<sup>15</sup> See sections 4 and 6.5.

## Affidavit of Anthony M Gamboa

### 6.10. Nobel Laureates

Although not as egregious as his distortion of the Hale article, Dr. Skoog goes on to imply the support of his opinions by three Nobel Laureates: Heckman, Haavelmo, and Koopmans. I congratulate Dr. Skoog on keeping up with his reading. However, none of their papers address the data I employed, the methodology I followed, or were in any way tied to forensic analyses.

### 6.11. John McNeil

Starting on page 5 of his affidavit, Dr. Skoog spends some time addressing the work of Mr. John McNeil, a noted authority on disability statistics. (See also section 6.8 and Attachments B and E.) However, Dr. Skoog appears somewhat confused on how to use this work. First, Dr. Skoog cites measures of validity Mr. McNeil performed on the SIPP questions in 1998 and in a paper he presented in 2000. These showed a lack of reliability of *the SIPP*, the survey purported by Dr. Skoog as the “gold standard” (section 6.5), not *the CPS*. Thus Dr. Skoog’s own efforts support my use of the CPS over his preference.

Skoog then notes that McNeil’s paper ruled out use of the CPS for testing a reliable measure of the impact of disability. However, as Dr. Skoog is well aware, Mr. McNeil’s exclusion of the CPS here was due to fact he was trying to measure disability as defined by the ADA, *not* work disability.<sup>16</sup> Mr. McNeil attested to this fact in the affidavit attached as Attachment B.

Dr. Skoog is obviously aware of this affidavit – he merely forgot to mention what it said. His awareness is attested to by his reference to McNeil’s affidavit on line 9 of page 5 of his affidavit. Here, he references it merely to claim that due to the lack of an outright endorsement of the tables in the affidavit, Mr. McNeil has no opinion on them. He also neglects to mention Mr. McNeil’s rebuttal of the article written by Skoog and Toppino.<sup>17</sup>

### 6.12. Preponderance of Experts

A final allegation of Dr. Skoog’s is that “the great preponderance of experts in the field of forensic economics who have looked at this matter have concluded these tables are utterly unreliable and are ill-suited . . .” Once again, Dr. Skoog offers a statement without providing any scientific evidence. He was asked for support for this statement in his deposition, but was unable to comply.

On March 21, 2002, he posted a query to the NAFE ListServe<sup>18</sup> to determine the level of support for the tables. His own posting started with a list of several PhD-level economists that use the tables. (Coincidentally, this was just a few days before he issued his report in this

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<sup>16</sup> See section 3.1 for more detail.

<sup>17</sup> See section 6.8.

<sup>18</sup> This is an electronic forum for discussion of various topics open to members of the National Association of Forensic Economics.

**Affidavit of Anthony M Gamboa**

case.) The bulk of the responses he received pointed out that such a survey had little-to-no scientific validity. He was unable to get more than a handful of respondents.

FURTHER, THE AFFIANT SAYETH NAUGHT.

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Anthony M. Gamboa, Jr., PhD, MBA  
Senior Vocational Economic Analyst

Subscribed and sworn to before me, a notary public, in this \_\_\_\_of January, 2003.

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Notary Public

My Commission Expires \_\_\_\_\_