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Logit Model to Predict Outcomes of Litigated Employee Obesity Cases

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### Abstract

Obese employees have questionable legal status, in that there are no real direct legal protections under existing law. A random sample of 80 litigated obesity cases was analyzed in the present study. The frequencies, chi square analysis, and logistics regression model suggest case characteristics in which the employer prevails. Future directions are discussed, including the changing definition of disability under Americans With Disabilities Act, exceptions in court rulings, changing the issue of voluntarism and mutability as irrelevant under the Equal Employment Opportunity Commission guidelines and the recognition of metabolic syndrome as a disability.

Key Words: Obesity, Americans with Disabilities Act, Logit, Model

### Nature of the Problem

Increasing attention has been given to obesity, in the popular press, in human resources practitioner journals and in academic research. The problem of obesity in organizations is a problem for a number of reasons. These reasons include its impact on productivity, the increased cost of health care coverage, its impact on interpersonal and psychological relations, including on hiring and on employee morale. There could be concern for employee safety and that of coworkers. Concern for employee obesity also raises questions about the ethical treatment of employees. Specifically, if you as the employer want to control obesity, are you invading the privacy of your employees? However, if you as the employer do nothing, are you contributing to unhealthy lifestyles?

Moreover, there are unclear legal issues. Under the Americans with disabilities act, obese employees are not necessarily protected from discrimination in terms and conditions of employment. However, obese employees may have other conditions that result in their being considered disabled under this legislation, most commonly are cardiovascular, muscular-skeletal, endocrinology (diabetes) and psychological. Furthermore there are differences between being obese and being morbidly obese.

Two emerging legal trends are: (1) the possibility of having to treat obese employees as having been discriminated against if they are perceived as disabled but are not. Secondly, a relatively newly identified medical condition known as metabolic syndrome causes individuals metabolism to slow down as they age, causing them to gain weight. This may lead to protection under the Age Discrimination in Employment Act. What this paper with this research proposes to do is to identify case characteristics in litigated cases that lead to various case outcomes with respect to obese employees.

It is hoped that the results of this research will allow employers to make better management and legally appropriate decisions in the treatment of obese employees.

### Employer Attitudes

Attitudes among human resources professionals point out the following: Half of them believe that obesity negatively affects employee output, one quarter believe that obesity is becoming a problem in their industry, one-third believe that obesity is a valid medical reason for not hiring a person and 11% think that firms can fairly dismiss people just because they are obese (Thomas, 2005).

The way managers and co-workers perceive obesity can have profound effects on recruitment and hiring, discrimination, and employee morale (Grossman, 2004). Some of this is subtle. For example, applicants for employment may have been judged on their appearance, not just on qualifications. Rejected candidates may not have been aware of weight related factors (Laabs, 1995). Bellizzi and Hasty (1998) have reported that obese salespeople are considered less fit for more challenging sales territories and may be discriminated in job assignments.

### Physical and Psychological Effects of Obesity

Carr and Friedman (2005) investigated the psychological correlates of institutional and interpersonal discrimination reported by underweight, normal weight, overweight, obese Americans. Not only did they compare overt discrimination of overweight people but they also reported day-to-day discrimination such as being treated rudely. They note that given the negative attitudes toward obese people in American society, symbolic interaction theory predicts that obese people may form negative self-evaluations as a reaction to discriminatory treatment.

Other research has also shown that there is a stigmatization and discrimination due to obesity. According to Rogge (2004), participants in their study were reminded through everyday encounters with family members, peers, health care providers and strangers that they deviate from social norms and are inferior to those who are not obese. Puhl and Brownell (2001) found that stigmatization can be documented in employment, education and health care. In addition, Puhl and Brownell (2006) also found overweight research participants were subject to stigmatization, depression, and low self-esteem.

Friedman, Reichmann, Constanzo, Zelli, Ashmore and Musantel (2005) in a summary of the literature state that obesity affects employment, employment potential and socioeconomic status as well as having negative psychological consequences. Their data, which was a self-report questionnaire, found that the participants had higher than average means for depression and general psychiatric symptoms. In addition, those participants who reported greater depression were also those who had more often experienced difficulties and obstacles in their daily situations, reported being discriminated at work and were the object of teasing in the past. Tunceli, Kemeng and Williams (2006) using data from the Panel Study of Income Dynamics, after adjusting for sociodemographic characteristics, smoking status, exercise and self-reported health found that obesity was associated with reduced employment. However while work limitation was statistically significant for women, the relationship was not statistically significant for men. Istvan and Zavela (1992) also found that women, not men were more likely to have a significant relationship between depression and a high body mass index. Carpenter (2000) also found that the relationship varies by sex. Friedman and

Brownell (1995) in a meta-analytic review concluded that obesity was modestly and consistently related to depression.

Furthermore, in two experiments, male job applicants were rated more negatively when seen with an overweight compared to a normal weight female. This shows that the stigmatization can spread just from proximity (Hebl and Mannix (2003).

Other research has not shown a relationship between obesity and depression, anxiety or poor self-esteem (O'Neil and Jarrell, 1992; Stunkard and Wadden, 1992; Kimm et. al 1991 and Klesges, Haddock, Stein, Klesges, Heck, and Hanson (1992). However these studies did not control for demographic confounding factors such as race, age, nor levels of overweight.

In the Carr and Friedman (2005) study, many of these factors were controlled, but they still found very obese persons as compared to normal weight persons reported significantly lower self-acceptance, more frequent discrimination and more major discrimination. In addition they also reported more frequent discrimination and more major workplace discrimination; however they did not report lower self-acceptance. A surprising finding was that for members of the higher socioeconomic strata the interpersonal consequences of severe obesity are even more acute.

In an extensive review, Roehling (1999) notes employee weight may bias employment decisions through its effect on assessments of physical attractiveness. Attractive people are perceived to have more socially desirable traits than unattractive people. They are perceived to be more intelligent, sociable, dominant, mentally healthy, and socially skilled than unattractive people. The obese are often blamed for their condition, leading to inferences about laziness and lack of self-control, being less tidy or having poor personal hygiene. Decision makers may react

differently to overweight individuals, causing them to treat overweight employees differently once on the job. Decision makers who may not personally hold negative stereotypical views of overweight employees may discriminate against them because they perceive pressure from others to do so. An individual may be allowed to recover damages for emotional distress as a victim of employment discrimination (McEvoy, 1992).

### *Rationale for Employer Control*

Obesity costs US companies an estimated \$12.7 billion annually. According to the US Surgeon General, some 127 million people are overweight and 60 million are obese. This costs the nation approximately \$117- 300 billion (Grossman, 2004; Mirza, 2003). The cost of obesity is estimated to cost companies approximately \$12.7 billion annually. Furthermore, the cost of health care is constantly increasing. Nearly 90 percent of small businesses are paying more to provide basic medical insurance to their employees in 2005 than in 2004. Most businesses reported a 10 to 20 percent increase, with some companies reporting as much as a 30 percent increase in health care costs (Osbourne, 2005; Weatherly, 2004). Researchers at RTI International and the Centers for Disease Control and Prevention have found that the average annual per capital increase in medical expenditures and absenteeism associated with obesity ranges between \$460 and \$2500 per obese employee, with costs increasing as body mass index increases (Finkelstein, E., Fiebelkorn, C. and Wang (2005); Federal EEO Advisor (2006). Furthermore, a study by Guardian Health Solution found that obesity is responsible for 2.1% of all diagnosed medical claims dollars for men and 2.8% for women. Of the ten (10) lifestyle health risks, obesity was by far the most costly (Workers Compensation Monitor, 2006).



Companies pay some of that cost through the employers' portion of healthcare insurance, life insurance and disability insurance. Health insurance costs are approximately \$7 billion, life insurance \$1.8 billion and disability insurance costs are \$800 million.

According to Roland Sturm, senior economist at RAND, health care costs for obese workers costs 36% more than for normal weight workers, and medication costs 77% more. Several studies claim that health costs go up with each body mass index category (Thompson, Edelsberg, Kinsey, and Oster (1998); Grossman, (2004); Schmier, Jones, and Halpren (2006).

In addition, to the direct costs relating medical insurance, obesity has been shown to be related to lost work time as well as a loss of productivity. The National Business Group on Health reported that that obesity is associated with 39 million lost work days, 239 million restricted activity days, 90 million bed days and 63 million physician visits. In addition, obese employees are twice as likely to be absent 14 or more times per year. Paid sick leave associated with obesity costs employers an estimate \$2.4 billion per year (Grossman, 2004). A study using National Health Interview Survey (2002) found that obese workers have the highest prevalence of work limitations (7% versus 3%); have higher hypertension (35% versus 9%) type 2 disabilities (12% versus 3%) (Hertz, Unger, McDonald, Lustik, Biddulph-Krentar, 2004). Another nation wide study found approximately 30% of the total cost of medical expenditures and absenteeism (Finkelstein et. al., 2005).

Lower productivity is also associated with obesity. Obese workers had the highest prevalence of work limitations (Grossman, 2004; Hertz, et al. 2004; Nemarkommula,

Singh, Lykens, Hilsenrath, 2003; Olson, 2003). In addition in one study, workplace injuries were higher for overweight or obese employees (Schmier, et al 2006). Alan Hedge, director of human factors and ergonomics laboratory at Cornell University states that obesity is linked to an increased risk of developing carpal tunnel syndrome and low back pain (Anonymous, Workplace Solutions for Repetitive Stress Injuries, 2005).

### *Legal Protections*

Title VII does not provide explicit protection for discrimination based on obesity. But there could be disparate impact with respect to race in that there is a higher incidence of obesity among African Americans and Hispanics. Additionally, since obesity tends to increase with age, it may be necessary to adjust weight standards for employees in different age categories (Maranto and Stenoien, 2000).

#### *Americans with Disabilities Act*

Although this is an evolving area, only a qualified individual with a disability is covered under Americans With Disabilities Act. Obesity discrimination coverage under the Americans With Disabilities Act is infrequent, in that current Equal Employment Opportunity Commission regulations specifically exclude the recognition of height and weight as disabilities. These are two factors that confound the protections available under Americans With Disabilities Act.

#### *Equal Employment Opportunity Commission*

A promising approach for legal protection is “perceived as impaired or perceived as disabled.” It may not be a prerequisite for an obese individual to have a disorder, if he or she is perceived as having one. The person does not have an actual disability but

the employer regards the person as if it substantially limits a basic life function. The person has a physiological or mental disorder that is substantially limiting a life function.

### *State Protections*

All states have statutes prohibiting discrimination against the disabled. However, there are limited, but increasing numbers of states and municipalities have enacted statutes, including San Francisco, Washington, DC and Michigan, prohibiting weight discrimination.

It is unclear whether obese individuals are protected under the Americans with Disabilities Act or other state or municipal disability protection laws (Jupp, 2004; Kristen, 2002). The Americans with Disabilities Act is the only federal law that protects obese individuals, only when workers can prove that morbid obesity prevents them from performing one or more essential life functions (Grossman, 2004). Metabolic Syndrome<sup>1</sup> has recently been reported in almost 50 million Americans and has increased by over 60 percent among Americans over the age of 40, which could explain some of this increase in obesity and could be used as a basis for obesity being a disability. This syndrome could be having a disparate impact on employees over the age of 40, who would be protected by the Age Discrimination in Employment Act (Klaff, 2005). There is also the possibility that the employee is not overweight, but just does not meet the employer's standard of appearance. This also has the potential for sex discrimination, in that women are more likely to be judged more rigorously relative to the standard.

### *Current legalities*

One important thrust of legal protection for all the obesity is the distinction between an actual disability and the perception that one has a disability that limits the

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<sup>1</sup> A condition characterized by a cluster of factors: hypertension, excessive abdominal fat, abnormal cholesterol levels, triglycerides and insulin resistance or glucose intolerance.

major life function of working. There are actually three types of disabilities that could impact on ability to be employed under the Americans With Disabilities Act—the individual is disabled, the individual has a record of being disabled whether or not he is currently disabled, and the individual that perceived to be disabled whether or not he is (Reisman, 2005). The first two types of claims are often dismissed by trial courts on motions for summary judgment in light of *Sutton v. United Air Lines, Inc.*, which held that disability under the Americans With Disabilities Act is to be determined with reference to mitigating measures such as wheelchairs, eyeglasses, and medication. In the third type of case, which is a quite frequent occurrence, a plaintiff claiming that he or she was regarded as disabled in the major life activity of working, must produce evidence that the employer regarded her as precluded from more than a single, particular job.<sup>2</sup>

Some employees have prevailed in weight discrimination cases by convincing courts to include obesity in the definition of disability, either as an actual or a perceived disability that the employer regarded as a disability. Sometimes, an overweight worker may not be able to establish a claim under disability law for a "regarded as" disability, since the plaintiff must prove that her employer considered her obesity as substantially limiting a major life activity. Actionable cases have tended to be based on a negative stereotype rather than based on a belief that an overweight worker is incapable or substantially limited in a major life activity. Protection of overweight people through disability laws fails to adequately address many ancillary issues to weight discrimination, such as substantial overlap with other protected classes including sex,

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<sup>2</sup> See *Francis v. City of Meriden*, 129 F.3d 281, 284 n.5 (2d Cir. 1997). In *Francis*, the Second Circuit affirmed dismissal of plaintiff's claim because he did not allege that his employer believed that his weight condition constituted a physical impairment; he merely alleged that he was disciplined for failing to meet a weight standard. *Id.* at 287. But see *Connor v. McDonald's Rest.*, No. 3:02 CV 382 SRU, 2003 WL 1343259 (D.Conn. March 19, 2003) holding that plaintiff who alleged that McDonald's refused to hire him because it perceived him as substantially limited in the major life activity of working based on his morbid obesity stated a claim.

race, and age. There is also the protection of all overweight people, not just the morbidly obese (Horner, 2005).

Benforado, Hanson and Yosifon (2004) present a call for attaining justice for discrimination based on weight. They note that numerous laws protect individuals based on race, creed, color, sex, national origin and age; but somehow discrimination based on weight seems to be legally different. Overweight individuals don't seem to have legal protection under Title VII or Age Discrimination in Employment Act. People looking for protection under the Americans with Disabilities Act have also been less than successful. The few court victories that have come occur when individuals were morbidly obese. More often the victories occurred when an individual claimed that he or she was discriminated against, not because of a disability, but because employers perceived that the individuals had disabilities when, in fact, the individuals could really perform the job. The causation of obesity is still unclear, even after the genetic, behavioral, and environmental factors that have been taken into consideration. The emerging consensus among public health experts is that obesity is largely a product of a "toxic environment." It is this notion of the "toxic environment" that moves the argument in that direction of governmental protection.

Kruse and Schur (2003) are the authors of one of several papers analyzing the impact of the Americans with Disabilities Act on employment of the disabled. Superficial analysis tends to indicate decreased employment, but employment has probably increased when a more appropriate measure of AMERICANS WITH DISABILITIES ACT coverage considers such variables as functionality and activity limitations. State-by-state variation in labor market tightness was also considered, finding a procyclical trend

employment in the employment of the disabled. Although obesity was not considered in one of the types of disabilities analyzed in the study, some of the functionality and activity limitations could be attributable to obesity. These include lifting/carrying ten pounds or difficulty getting around outside home,

Hotchkiss (2004) analyzed the employment of disabled individuals since the passage of the Americans with Disabilities Act. There had been a contention that there has been a decline in employment of disabled individuals. She found that this was not the case, but that was not a matter of disabled individuals fleeing the job market, but rather more likely the result of the reclassification of non-disabled the participants as disabled. In this empirical research study, she distinguished between types of disabilities, but the obesity was not specifically broken out as a separate category. She believes that that the employment of disabled individuals may have even improved for certain classifications of disabled.

#### *Discrimination/disparate impact issues*

Lack of attractiveness due to obesity, among other factors, and its impact on employment was the focus of an article by Bello (2004). Bello does not specifically consider obesity, but general physical attractiveness of job applicants in his research. He generalizes from a variety of bases that reduce attractiveness, including obesity and concludes that attractiveness-based hiring policies could result in a disparate impact and that no legitimate business necessity would justify hiring employees based exclusively on attractiveness.

One aspect in the discrimination against obese individuals is the necessity to interact with others. There is no judicial consensus on whether "interacting with others"

itself is a major life activity (Hartman, 2005). Three circuits have ruled on this, one concluding that it is not, one concluding that it is, and one concluding that getting along with others is not a major life activity but interacting with others is. The reason why this is relevant for protecting obese individuals is that occasionally there is difficulty attaining mobility and sometimes there is difficulty attaining productive interpersonal interactions.

Many managers in the retailing industry believe that one cannot put overweight employees in front of clients (Marshall, 2004). In addition, many managers assume that that overweight employees will not have the energy to complete projects and interface appropriately with clients. Employees in a training session to promote workplace diversity were shown a photograph of an overweight person. She was categorized by the employees as a single, back office clerk, in poor health, living out a lonely existence that revolves around books, a cat, and food. In fact, the employee is married, leads a busy life, and until recently ran a department which grossed millions in sales annually.

#### *Quality of job assignments*

Bellizzi and Hasty (2000) found that when members of the sales force received positive work experiences, it improved their suitability for a given job assignment, but only for less challenging assignments. In the case of challenging assignments, successful job experiences did not seem to help non obese employees. Both experienced and non-experienced non-obese individuals were perceived as equally qualified. They did not find differences between the sexes concluding that obesity was more of a determining factor than sex or work experience.

Another study focused on discrimination experienced by obese employees in high visibility job assignments. Research by King, Shapiro, Hebl, Singletary, and Turner

(2006), which was an experimental design, focused on the impression that obese employees made on customers. Their research examined the justification for the customers' discrimination against employees who are obese. If the perceivers justify their discrimination based on the perception that the obesity was controllable, then negative bottom-line consequences occurred. When the perceivers were persuaded that the obesity was not controllable, there was less discrimination.

### *Labor market issues*

Another approach to computing labor market costs is to associate body mass index with occupational attainment. Morris (2005) found that body mass index had a positive and significant effect on the occupational attainment in males, but a negative and significant effect on the occupational attainment of females. This study further supports the fact that there is a sex discrimination component to obesity discrimination.

Beegle and Stock (2003) examined the labor market effects of the various state disability discrimination laws. They found that disability discrimination laws are negatively associated with the labor force participation rates of the disabled relative to other disabled individuals in states without such laws. However, the impact was small. They also found a similar impact on earnings. Time trends in employment were controlled for they did not find any impact. The one exception is among females where there is a small negative effect of state discrimination laws. The effect of the laws on participation and earnings are larger for whites than nonwhites. This suggests that having Americans With Disabilities Act coverage for obesity may not make a significant difference in protection against discrimination.



Baum and Ford (2004) used National Longitudinal Survey of Youth to examine the effects of obesity on wages by sex. The means in their sample indicate that both men and women experience a persistent obesity wage penalty over the first two decades in their careers. But the standard set of socioeconomic and familial variables do not explain why these workers experience wage penalties. They suggest that other factors such as job discrimination, health related factors and obese workers' patterns of behaviors are the channels through which the wage penalties are exhibited.

Maranto and Stenoien (2000) contributed to the growing body of literature that estimates the impact of obesity on wages. Citing earlier studies using the National Longitudinal Survey of Youth, they found that obesity significantly reduced wages of women but not of men. These studies controlled for health limitations, intelligence, self esteem, and some human capital variables.

There were also differences based on race, and sex. Maranto and Stenoien extended the earlier studies by considering an obesity level less than morbidly obese and whether there were differences across gender or race. The medical literature suggests that obesity has a more detrimental health effect on men than on women. Hence, one would expect a greater difference in wages of men. Contradicting this finding in the health literature, there's a greater social expectation for women to be of a weight in the normal range.

Using the National Longitudinal Survey of Youth data and using regression analysis, they concluded that mildly obese women, who are 20% over standard body weight, experience greater wage penalties than black men who are 100% over in their ideal body weight. One implication of their study is that Title VII claims for sex

discrimination are more viable and appropriate than the Americans With Disabilities Act claims for addressing the weight-based wage penalties that women experience.

Other research on the subject was done by determining the impact of obesity on wages. Some, especially recent research, is capturing the implicit bias. Venturini, Castelli and Tomelleri (2006) determined through the use of an experimental design that “not all jobs are suitable for fat people”. Their study investigated whether people spontaneously associated being obese with certain types of jobs. Specifically, they sought to determine the relationship between obesity and positions that do not require interpersonal contact. Using the Implicit Association Test, the category “fat person” was paired with low contact job more often than “fat person” was associated with jobs requiring extensive interpersonal contact. Media exposure and personal body weight were moderating variables. Fat persons were more often associated with different job positions and different lower levels of potential.

### *Employer practices*

Fifty-five percent of Blue Cross and Blue Shield of North Carolina health plan's 3 million members were overweight and getting heavier. Treating obese members cost at least 30 percent more than normal-weight members; the price difference for overweight members was 18 percent. Depending upon the extent of the obesity and commitment to revising their habits, members can now qualify for a spectrum of services from nutrition counseling to weight-loss drugs to bariatric surgery. A program called Healthy Lifestyle Choices was made available to all 1.1 million eligible members. In addition to the obesity surgery and weight-loss drugs, the plan will pay for four doctor visits annually to discuss obesity issues, along with dietitian counseling.

Frontier Spinning Mills, a North Carolina manufacturer with 950 employees covered by Blue Cross and Blue Shield, was among the first self-insured employers to express interest. Employers can't ignore the escalating cost of chronic, obesity-related illness, says Jim Powers, Frontier's human resources director.

Aetna, which is rolling out a pilot obesity program that includes its own workforce, already provides reduced-rate access to on-site fitness centers for its own employees.

Since the early 1990s, Union Pacific Railroad has offered a \$2.5 million health promotion program to its 48,000 employees, along with their spouses. The program, which provides written information along with phone counseling, has reduced health claims related to lifestyle choices from 29 percent in 1990 to 18.8 percent in 2001 (Huff, 2005).

A National Business Group on Health survey released last year found similar bottom-line fitness benefits. Twenty-seven percent of the 84 large companies reported that fitness initiatives helped reduce health care costs. The survey also revealed that jump-starting physical activity is far from easy. At two-thirds of the companies, less than one-fourth of employees participated. In 2003, 58 percent of employers provided at least one such program, compared with 41 percent in 2002, according to a survey on employer-sponsored health plans conducted by Mercer Human Resource Consulting.

Companies also are starting to pay for employees to undergo such radical medical procedures as bariatric surgery. To reduce the costs of health care and improve productivity, many companies of all sizes are offering programs to help employees gain fitness. Employers can offer voluntary health risk appraisals through health plans and health professionals to obtain baseline data, on-site exercise facilities, or subsidize the cost of health club membership, make it easier for employees to bike, walk or run to work by

installing bike racks and shower facilities, require vendors to include healthy meal options in the cafeteria, vending machines, and especially at functions employees are required to attend, provide nutritional information for cafeteria selection, distribute health education materials, offer on-site classes related to nutrition and exercise such as “weight watchers”, create safe walking paths and encourage use of stairs, sponsor office sports teams or walking clubs, create opportunities for activity at work and encourage workers to take breaks and walk around (Grossman, 2004; Mirza, 2003). Such programs amounted to 1% to 3% of total health care costs (HR Focus, 2005). Companies also are starting to pay for employees to undergo such radical medical procedures as bariatric surgery.

Roehling's (1999) seminal article is one of the few interdisciplinary studies that draws from multiple disciplines in one article. The literature included is psychology, law, sociology and economics. His widely cited article combines a survey of the literature on the extent of bias against overweight individuals in employment contexts. He also identified legal requirements relevant to weight-based discrimination. Included in his article is an analysis of fifteen cases litigated in both Federal and state courts. Much has transpired however since this article was published. There are studies relating to the legal aspects of obesity discrimination, including examinations of Federal, state, and Canadian cases. More studies have been done examining the wage effects of obesity. These studies confirm not only the negative wage effects, but also race and sex differences in these wage effects. There have been additional studies on the social and social psychological aspects of obesity, including experimental designs and field studies.

Roehling made suggestions for further research: studies analyzing mediation mechanisms, studies done in laboratory settings, studies to be done testing the validity of stereotypes relating to obesity, studies considering whether training can reduce the bias, additional studies relating to race, and cultural differences, studies analyzing whether employer policies, practices or cultures contribute to biased treatment. He also recommends an analysis of the ethical aspects of obesity, which he subsequently did. However, what he did not recommend is a further systematic analysis of litigated cases. This seems to be warranted at this time because his study only analyzed fifteen cases. Furthermore, since it is unclear how he selected the cases for inclusion, it cannot be assumed that these cases were randomly sampled or representative.

This sample seems somewhat limited in that the current researchers have identified over 200 cases in the timeframe of 1995 to 2005. The cases in his study could have been precedent setting but this is not known, even though some of the cases he cited in his article are sufficiently old enough to have been cited in subsequent litigation.<sup>3</sup>

Starting with Roehling's cases, KeyCites were retrieved from WestLaw to discern impact on subsequent litigation. KeyCiting uses a coding system in which a case that was cited could be categorized at various levels of impact. The researchers used a minimum of three stars as a minimum standard of impact on subsequent litigation. Three stars means that the case was "Discussed - Contains a substantial discussion of the cited case, usually more than a paragraph". Of the fifteen cases in Roehling's

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<sup>3</sup>Implications from employers are presented. These include having concern for obese female applicants not being treated in a different way than obese male applicants. The courts have approved both gender and age related adjustments to weight standards. Physical examinations need to be conducted relative to specific abilities and not to a job in general. Additionally, while few employee or applicants will be able to demonstrate weight-based disabilities, either physical or psychological, employers might be advised to make accommodations voluntarily.

sample, eight cases did not have any cases associated with them to the extent of “Discussed”. This means that Roehling’s choice of cases was less than optimal in predicting precedents or future litigation outcomes of obesity cases. Of the seven cases that had KeyCites, only two seem to be significant in setting precedents.

### Hypotheses

The hypotheses that are being tested are as follows:

H<sub>1</sub> There would be no findings in favor of the employee.

H<sub>2</sub> There would be filings under Americans With Disabilities Act, Vocational Rehabilitation Act, Employee Retirement Income Security Act and/or Social Security.

H<sub>3</sub>. There would be no relationship between outcomes and case characteristics such as gender of the employee, type of employee, being in the public versus private sector or being represented by a union.

### Methodology

While the literature is full of case examples and analyses based on outcomes of single variables there has been little systematic analysis has been undertaken to either empirically test hypotheses of case outcomes with many variables. The present research will result in the development of a predictive model, predicting likely case outcomes, given certain case characteristics. The present research addresses these issues by developing a logit model. This research analyzes 80 cases litigated from 1995 to 2005. These cases were randomly selected from 276 litigated cases.

The use of coding in the analysis of public decision is well established in the literature (Rowland and Carp, 1996; and Carp and Rowland, 1983). Similar coding methodology has been used in comprehensive decision datasets (Spaeth, 1999 and Songer, 1998). In addition, while not relevant to the current study, similar coding of

arbitrated cases is well-established (Bemmels, 1988; Mesch, 1995; Mesch and Shamayeva, 1996).

The major objective of this study is to determine the outcomes of litigated cases dealing with people who are obese.

### *Variables*

The current research was conducted to identify case characteristics that are related to case outcomes. The current study is based on the analysis of a random sample of 276 cases that have been litigated based on adverse employment decisions of individuals who were obese. These cases were retrieved using Lexis/Nexis over the past ten years. Eighty cases are included in the empirical analysis.

This analysis considered demographic characteristics, organizational and cases characteristics, legal bases, and confounding physical factors. Demographic factors include sex, education, professional employee, employment/unemployment status, whether the obesity was considered to be within the control of the employee, and whether the employee was disabled. Whether a plaintiff was disabled was self-reported, in that the laws were the legal bases for the lawsuit was considered.

Organizational characteristics include whether the employer was a manufacturer, whether the employer needed to make reasonable accommodation, whether a third party was involved, whether there was the union's involvement and/or arbitration, whether the employer was the public sector or service sector employer, what actions were proposed including firing, and whether they were physical or job actions. Physical actions were those relating to the physical well-being of the employee, and would involve such factors as bariatric surgery operation, requirements for more healthful

lifestyles, and issues relating to disability. Job actions are those relating to job status, and included such factors as leave, need for accommodation, firing, failure to promote, denial of benefits, and income penalties.

The legal characteristics included such factors as the court level and the various legal bases for the lawsuits. Discrimination laws included the Americans with Disabilities Act, Vocational Rehabilitation Act, Title VII coverage for sex and national origin, the Pregnancy Discrimination Act, the Age Discrimination in Employment Act, and to a lesser extent state discrimination laws and the Jones act.

Health laws included ERISA, OSHA, Social Security, workers' compensation, coal miners and/or Black Lung disease, and to a lesser extent state disability laws. The disability laws included both state and the Americans with Disabilities Act, and Constitutional law, including first, second and fourteenth amendments. Americans with Disabilities Act was analyzed separately.

Muscular confounding factors included osteoarthritis, carpal tunnel syndrome, difficulties walking, back injuries, herniated discs, joint and knee pain and fibromyalgia. Digestive problems included diabetes, thyroid, glucose intolerance, and high cholesterol. Cardiovascular characteristics include characteristics relating to blood pressure, hypertension, allergies, asthma, and smoking. Psychological factors include depression, stress, anxiety, fatigue syndrome, sleep disorders, clinical psychological disorders and drug use.

### *Results*

The frequencies of the variables are portrayed in Table I. The findings of interest are discussed. Of the 80 cases included in the analyses, the employer prevailed in 59%



overall. In general, the employer prevailed in a small majority of the cases. This was unexpected. In terms of case characteristics, the employer was most likely to prevail when the employee was a professional; the employer was in the public sector and when the Vocational Rehabilitation Act or the American with Disabilities Act was involved. However the cases filed under ERISA and Social Security Disability were most likely to favor the employee

The frequencies of the variables are portrayed in Table I. In addition, the findings include the percent of cases for the employer as well as a column that shows the more recent case breakdown.

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Insert Table I About Here

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Table I shows the frequencies for the relevant of variables. Overall, the employer prevailed in 58.8% of cases and split an additional 12.5%. Secondly, the table contains frequencies for the cases in which the employer prevailed. Among the case characteristics associated with the employer prevailing included being a professional, being in the public sector and filing lawsuits under laws other than the Americans with Disabilities Act including various discrimination, health, and disability laws. It was surprising that there were no differences with respect to sex, in that the literature would have led us to believe that weight standards are more rigid for females. Additionally, the employer prevailed more often in the public sector, although it would have been expected that public sector employees have civil service and union protections.

When an analysis is made of the more recent cases, although the number of cases in this category is smaller, the following relationships are worth noting. This analysis is comparing all cases to the more recent cases. The employee demographic characteristics are about the same, except that obesity was less likely to be thought of as being in the control of the employee, and the employee was less likely to be disabled. Third party involvement was also greater in the more recent cases. The number of cases in the public sector is considerably less and the number of cases in the service sector is more. The proposed employer's actions are less likely to be a job action and more likely to have a physical or physiologically based action. This suggests corrective rather than punitive actions on the part of the employer.

Lawsuits were more likely to be filed under disability laws that were not necessarily under the Americans with Disabilities Act. The findings show that the confounding physical factors of cardiovascular are less frequent, while the psychological and the mental factors are slightly more frequent. The other two categories, muscular and digestive, are proximately the same in the recent cases as they are in the cases over the ten-year period.

Chi-square analyses were done on the employee characteristics and case characteristics. These are portrayed in Table II.

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Insert Table II About Here

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The results of the analysis were surprising. Based on an analysis of the law there was little expectation that employee's would ever prevail in the cases. However,

we found that the employer did not prevail in a little under half the time. However, when cases were filed under Americans \with Disability Act, there were no statistical significance. However when the case was filed under Discrimination Law there were a statistical significance that the employer would prevail ( $X^2 = 8.7$ ,  $df = 1$ ,  $p = .01$ ). There were no statistically significant relations between employee characteristics and case outcomes, with one exception. The type of employee, specifically being a professional employee was statistical significance ( $X^2 = 5.71$ ,  $df=1$ ,  $p<.05$ ). In addition, employers were more likely to prevail when the case was in the public sector and when a union was involved.

### *Logit*

A multivariate logistic regression analysis (LOGIT) was performed in order to investigate the effect of the independent variables. The rationale for the use of Logit<sup>4</sup> is as follows:

Log-linear models were developed to analyze the conditional relationship of two or more categorical values. Log-linear analysis is different from logistic regression in four ways:

1. The dependent is categorical (nominal or ordinal), unlike binomial logistic regression
2. The expected distribution of the categorical variables is Poisson, not binomial.
3. The link function is the log, not the logit.
4. Predictions are estimates of the cell counts in a contingency table, not the logit of y.

Logit and probit extend the log-linear model to allow a mixture of categorical and continuous independent variables to predict one or more categorical dependent variables. Both logit and probit usually lead to the same conclusions for the same data. Logit regression yields results equivalent to logistic regression, but with different output

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<sup>4</sup> <http://www2.chass.ncsu.edu/garson/pa765/logit.htm>, downloaded December 3, 2007.

options. Many problems can be handled by either logit or logistic regression, though the latter has become more popular among social scientists.

The following variables were selected for inclusion in the LOGIT model based on their approaching significance or statistically significant in the Chi-square analysis. These variables were professional or non-professional employee, public or private sector employee, whether or not the employee was in the union, whether or not the case was filed under discrimination laws or the American With Disability Law.

Due to missing data, 69 cases were included in the analysis for the development of the model. Using a relative difference tolerance of .001 the maximum likelihood estimation converged at iteration 4, yielding the following unsaturated logit model:

Constant

In testing the model, we found the Goodness of fit statistic equal to 14.66,  $df=26$ ,  $p=.963$ . This indicates that the model is strong. This is further indicated by the analysis of dispersion, which is portrayed in Table III.

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Insert Table III About Here

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### *Sample Size Considerations*

The sample size was reduced from 80 to 69 due to missing data in individual cases. It is necessary for statistical inference in logit modeling to assume asymptotic properties of sample statistics (behavior that obtains as the sample size increases toward infinity). In order for these asymptotic properties to be approximately valid, the sample size must be relative large (i.e. average cell size should be at least five) (DeMaris, 1992). Tables with average cell sizes of smaller than this are refereed to as

“sparse” tables. However even in sparse tables, if there is only a limited number of possible models, the model can still be considered if  $G^2$  and  $\chi^2$  are similar. In this study the  $G^2$  Likelihood ratio (11.65, df = 26, p = .993) appears to be similar to the  $\chi^2$  ( 14.659, df = 26, p = .963) . Furthermore, the plots of the residuals also suggest that this is a good model.

### Conclusion

While there are four variables that contributed to the model, only one of them was related to the obese individual. The other variables were related to the context loosely defined: public or private sector employee, member of the union, and whether it was a legal issue filed under a variety of discrimination laws or under the Americans with Disabilities Act.

The literature suggests that females are held to higher appearance standard than males, but the litigated cases in our sample had no difference in neither gender nor age. The only organizational characteristic entering the model is being a public sector employer. One implication is that public sector employers value appearance more than employers in the private sector. This is surprising, in that one would expect private sector employers to value appearance more. One possible explanation is not that the public sector managers value appearance more or less than their private sector counterparts, but that public sector employees have Civil Service protections. Therefore, these issues could have been resolved through their own processes without having to resort to litigation. As previously mentioned, if an obese individual was perceived as disabled, protection could have afforded under the Americans With Disabilities Act.

In addition, the cases in which there was union representation, these resulted in the employer prevailing all of the time. However, there were only a small percentage of cases in which there was union representation. It may be that the union is pursuing unwinnable cases, for internal political or other extraneous reasons. Furthermore, cases involving obesity in unionized settings could have been resolved internally through the grievance process and not resulted in litigation.

Both discrimination law<sup>5</sup> and the Americans with Disabilities Act, analyzed separately, were variables entering into the logit model. This was surprising in that up to this point in time, explicit coverage has been generally thought to be relatively non-existent for obesity discrimination protections.

In conclusion, it was surprising to find that employees were filing not under the Americans With Disabilities Act, but under other disabilities laws, such as Vocational Rehabilitation Act, Jones Act and state disability laws. Other surprising results were that professional employees in the public sector are more likely to be impacted by their obesity. When they pursue litigation, they are not likely to win. However, contrary to expectations from the literature, female employees were not held to a higher standard of appearance than male employees, at least not in the litigated cases. It can be anticipated that there will be changes that involve more protection for obese employees under state laws and under the Americans with Disabilities Act. Also there will changes providing coverage for obese individuals are who perceived as disabled.

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<sup>5</sup>Americans with Disabilities Act, the Vocational Rehabilitation Act, Title VII coverages for sex and national origin, Age Discrimination Act, various state discrimination laws, and Jones Act.

## References

- Anonymous. (2005). More Companies Commit to Wellness Plans, Despite Little Hard Data on Results. *HR Focus*, 82(4), S1, S3.
- Anonymous. (2005). Obesity Creates an Array of Workplace Ergo Challenges  
CTDNEWS Workplace Solutions for Repetitive Stress Injuries, 14(7).
- Anonymous. (2006). Employers spend millions each year on obesity epidemic, study finds. *Workers Compensation Monitor*, 19(7).
- Anonymous. (2006). Employers Spends Millions Each Year On Obesity Epidemic, Study Finds. *Workers Compensation Monitor*, 19(7).
- Anonymous. (2006). Obesity increases medical, indirect costs. *Federal EEO Advisor* 8(12).
- Baum, C. I., & Ford, W. F. (2004). The wage effects of obesity: a longitudinal study. *Health Economics*, 13(9), 885-899.
- Beegle, K., & Stock, W. (2003). The Labor Market Effects of Disability Discrimination Laws. *Journal of Human Resources* 38(4), 806-859.
- Bellizzi, J. A., & Hasty, R. W. (1998). The Effects of Obesity and Gender as Moderated by Job-related Factors: Territory Assignment Decisions and Supervising Unethical Selling Behavior. *Journal of Personal Selling & Sales Management*, 18(2), 35-49.
- Bello, J. (2004). Attractiveness as Hiring Criteria: Savvy Business Practice or Racial Discrimination? *The Journal of Gender, Race & Justice*, 8(483).
- Bemmels, B. (1998). The Effect of Grievants' Gender on Arbitrators' Decisions. *Industrial and Labor Relations Review*, 42, 63-76.

- Benforado, A., Hanson, J., & Yosifon, D. (2004). Broken Scales: Obesity and Justice in America. 53 Emory Law Journal, 53, 1645.
- Carp, R. A., & Rowland, C. K. (1983). Policymaking and Politics in the Federal District Courts. Knoxville, Tenn.: University of Tennessee Press.
- Carpenter, K. M., Hasin, D.S., Allison, D. B., & Faith, M. S. (2000). Relationships between obesity and DSM-IV major depressive disorder, suicide ideation, and suicide attempts: results from a general population study. American Journal of Public Health, 90(2), 251-257.
- Carr, D., Friedman, Michael A., . (2005). Is Obesity Stigmatizing? Body Weight, Perceived Discrimination, and Psychological Well-Being in the United States. Journal of Health and Social Behavior, 46(3), 244-260.
- DeMaris, A. (1992). Logit Modeling: Practical Applications. Newbury Park, CA: Sage Publications.
- Finkelstein, E., Fiebelkorn, C. and Wang, G. (2005). The Costs of Obesity among Full Time Employees. American Journal Health Promotion, 20(1), 45-51.
- Friedman, M. A., & Brownell, K. D. (1995). Psychological Correlates of Obesity: Moving To the Next Research Generation. Psychological Bulletin, 117, 3-20.
- Friedman, K. E., Reichmann, S. K., Costanzo, P. R., Zelli, A., Ashmore, J. A., & Musante, G. J. (2005). Weight Stigmatization and Ideological Beliefs: Relation to Psychological Functioning in Obese Adults Obesity Research 13, 907-916.
- Grossman, R. J. (2004, March). Countering a Weight Crisis. HRMagazine, 49, 42-51.
- Hartman, P. (2005). Interacting with Others" as a Major Life Activity Under the Americans with Disabilities Act. Seton Hall Circuit Review, 2, 139.



- Hebl, M. R., & Mannix, L. M. (2003). The Weight of Obesity in Evaluating Others: A Mere Proximity Effect Personality and Social Psychology Bulletin, 29(1), 28-38.
- Hertz, R. P., Unger, A.N., McDonald, M., Lustik, M.D., Biddulph-Krentar, J. (2004). The Impact of Obesity on Work Limitations and Cardiovascular Risk Factors in the U.S. Workforce. Journal of Occupational and Environmental Medicine, 46(12), 1196-1203.
- Horner, K. (2005). Comment: A Growing Problem. Why the Federal Government Needs to Shoulder the Burden in Protecting Workers from Weight Discrimination. The Catholic University Law Review, 54( 589).
- Hotchkiss, J. (2004). A Closer Look at the Employment Impact of the Americans with Disabilities Act. Journal of Human Resources, 39(4), 887-911.
- Huff, C. (2005). Health care benefits: Struggling with surging premiums, more companies are delving into high-deductible plans aimed at getting employees to think twice about making frivolous treatment decisions. Workforce Management, 84(1), 47-51.
- Istvan, J., Zavela, K., Weidner, G. (1992). Body Weight and Psychological Distress In NHANES I. International Journal of Obesity, 16, 999-003.
- Jupp, J. (2004, Jun 22, 2004). Rising levels of obesity are a cause for concern. Personnel Today 12.
- Kimm, S. Y. S., Sweeney, C. G., Janosky, J. E., & MacMillan, J. P. (1991). Self-Concept Measures and Childhood Obesity: A Descriptive Analysis. Developmental and Behavioral Pediatrics, 12, 19-24.

- King, E. B., Shapiro, J. R., Hebl, M. R., Singletary, S. L., & Turner, S. (2006). The Stigma of Obesity in Customer Service: A Mechanism for Remediation and Bottom-Line Consequences of Interpersonal Discrimination. *Journal of Applied Psychology*, 91(3), 579-593.
- Klaff, L. G. (2005, Oct 10). Employers slow to address 'metabolic syndrome' despite sharp impact on health costs. *Workforce Management* 84, 68.
- Klesges, R. C., Haddock, C. K., Stein, R. J., Klesges, L. M., Heck, L. H., & Hanson, C. L. (1992). Relationship between Psychological Functioning and Bodyfat in Preschool Children: A Longitudinal Investigation. *Journal of Consulting and Clinical Psychology* 60, 793-796.
- Kristen, E. (2002). Addressing the Problem of Weight Discrimination in Employment. *California Law Review*, 90(1), 57-109.
- Kruse, D., & Schur, L. (2003). Employment of People with Disabilities Following the ADA. *Industrial Relations* 42(1):31–66, 42(1), 31-68.
- Laabs, J. J. (1995). Does image matter? *Personnel Journal* 74(12), 48-53.
- Maranto, C., & Stenoien, Ann. (2000). Weight Discrimination: A Multi-Disciplinary Analysis. *Employee Responsibilities and Rights Journal*, 12(1), 9-24.
- Marshall, E. (2004). Public Enemy Number One: Tobacco or Obesity? *Science*, 304(5762), 804.
- McEvoy, S. A. (1992). Fat Chance: Employment Discrimination Against the Overweight. *Labor Law Journal*, 42(1), 3-14.

- Mesch, D. J. (1995). Grievance Arbitration in the Public Sector: A Conceptual Framework and Empirical Analysis of Public and Private Sector Arbitration Cases. *Review of Public Personnel Administration*, 15(4), 22-36.
- Mesch, D. J., & Shamayeva, O. (1996). Arbitration in Practice: a Profile of Public Sector Arbitration Cases. *Public Personnel Management*, 25(1), 22.
- Mirza, P. (2003). Fight the flab at work. *Human Resources* 11.
- Morris, S. (2006). Body mass index and occupational attainment. *Journal of Health Economics*, 25(2), 347-364.
- Nemarkommula, A. R., Singh, K., Lykens, K., & Hilsenrath, P. (2003). A Growing Market. *Marketing Health Services* 23(4), 34-38.
- Olson, E. (2003). Obesity In The Workplace: A Case For Treatment. *American Journal of Bariatric Medicine*.
- O'Neil, P. M., Jarrell, M.P. (1992). Psychological Aspects of Obesity and Dieting. In T. A. Wadden, VanItallie, Theodore B. (Ed.), *Treatment of the Seriously Obese Patient* (pp. 252-270). New York, NY: Guilford.
- Osbourne, L. (2005). A Look Back at 2005, and a Look at Trends for 2006. *Employee Benefit Plan Review*, 60(6), 16-20.
- Puhl, R., & Brownell, K. D. (2001). Bias, Discrimination, and Obesity. *Obesity Research*, 9, 788-805.
- Puhl, K. M., Brownell, K.D. (2006). Confronting and Coping with Weight Stigma: An Investigation of Overweight and Obese Adults *Obesity* 14(10), 1802-1815.

- Reisman, M. D. (2005). Traveling to the Farthest Reaches of the ADA or Taking Aim at Employment Discrimination on the Basis of Perceived Disability. *Cardozo Law Review*, 26, 2121.
- Roehling, M. V. (1999). Weight-Based Discrimination in Employment. *Personnel Psychology*, 52(4), 969-1016.
- Rogge, M. M. (2004). Obesity, Stigma, and Civilized Oppression. *Advances in Nursing Science*, 27(4), 301-315.
- Rowland, C. K., & Carp, R. A. (1996). *Politics and Judgment in Federal District Courts*. Lawrence, Kan: : University of Kansas Press.
- Schmier, J. K., Jones, M.L., & Halpren, M.T. (2006). Cost of Obesity in the Workplace. *Scandinavian Journal of Work*, 32(1), 5-11.
- Songer, D. R. (1998). *United States Courts of Appeals Database Phase 1, 1925-1998*. . AnnArbor, Mich: Inter-University Consortium for Political and Social Research.
- Spaeth, H. (1999). *United States Supreme Court Database, 1953-1997*. Ann Arbor, Mich: Inter-University Consortium for Political and Social Research.
- Stunkard, A. J., & Wadden, T. A. (1992). Psychological aspects of severe obesity. *American Journal of Clinical Nutrition*, 55, 524S - 532S.
- Thomas, D. (2005, Oct 25). Fattism is Last Bastion of Employee Discrimination *Personnel today*, 4.
- Thompson, D., Edelsberg, J., Kinsey, K. L., & Oster, G. (1998). Estimated economic costs of obesity to US business American. *Journal of Health Promotion*, 13(2), 120.

- Tunceli, K., Kemeng, L., & Williams, L. K. (2006). Long-Term Effects of Obesity on Employment and Work Limitations Among U.S. Adults, 1986 to 1999 Obesity, 14, 1637-1646.
- Venturini, B., Castelli, Luigi and Silvia Tomerlleri. (2006). Not all jobs are suitable for fat people: Experimental evidence of a link between being fat and out-of-sight jobs. Social behavior and personality, 34(4), 9-39.
- Weatherly, L. A. (2004). The Rising Cost of Health Care: Strategic and Societal Considerations for Employers. HRMagazine, 49(9), A1-A11.

Table I – Frequencies of Case Characteristics and Case Outcomes

<b><u>Category of variable</u></b>	<b>Percent of cases N=80</b>	<b>Percent of cases with finding for employer N= 47</b>	<b>Percent of recent cases 2003-2005 N=27</b>
Demographic characteristics			
Sex –female	50.0	46.8	55.6
Occupation as professional	30.6	40.9	29.2
Unemployed status	82.9	80.0	76.9
Obesity within own control	18.1	12.8	3.8
Disabled	31.3	36.2	22.2
Organizational and case characteristics			
Manufacturer employer	31.0	27.5	30.4
Need to make accommodation	25.3	28.9	22.2
Third party involvement	51.3	47.7	63.0
Union involvement	13.9	19.6	7.4
Arbitration involvement	2.5	2.2	0
Public sector	19.7	29.5	11.5
Service sector	56.3	52.2	69.6
Proposed action other than fired	68.8	63.8	70.4
Proposed firing	23.8	29.8	11.1
Job action	63.8	63.8	44.4
Physical action	26.3	23.4	40.7

Table I – Frequencies of Case Characteristics and Case Outcomes (Continued)

<b><u>Category of variable</u></b>	<b>Percent of cases N=80</b>	<b>Percent of cases with finding for employer N= 47</b>	<b>Percent of recent cases 2003-2005 N=27</b>
<b>Laws</b>			
District court	78.0	72.3	85.2
Discrimination laws	40.0	52.3	40.7
Health laws	48.0	57.4	66.7
Disability laws	25.0	36.2	22.2
Constitutional law	5.0	2.1	0
Americans with Disabilities Act	27.5	34.0	11.1
State law	18.8	23.4	18.5
<b>Confounding physical issues</b>			
Muscular	56.3	61.7	51.9
Digestive	31.3	38.3	33.3
Cardiovascular	35.0	40.4	26.9
Psychological	42.5	44.7	48.1
<b>Finding for employer</b>	58.8	100.0	44.4
Split finding	12.5		14.8

Table II  
Chi Square Analysis:

Findings for employer by variable	Chi Square Value	Degrees of Freedom	Probability
Finding for employer * professional employee	5.71	1	<.05
Finding for employer * public sector	6.347	1	<.05
Finding for employer * union	2.924		<.10
Finding for employer * Discrimination Law	8.704	1	=.01
Finding for employer * Americans with Disability Act	2.44	1	=.118



Table III – Analysis of Dispersion

Source of Dispersion	Entropy	Concentration	DF
Due to model	6.073	5.269	5
Due to residuals	40.111	27.6012	63
		32.870	68
Total	46.184		

Measures of Association

Entropy .131  
Concentration .160