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Evaluating a Wellness Program for UNI Faculty and Staff: Preparing for a Cost-Benefit Analysis

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EVALUATING A WELLNESS PROGRAM FOR UNI FACULTY AND STAFF:
PREPARING FOR A COST-BENEFIT ANALYSIS

A thesis
Submitted
in Partial Fulfillment
of the Requirements for the Designation
University Honors

Michelle M. Breen
University of Northern Iowa
May 2010

This Study by: Michelle M. Breen

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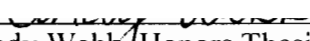
Evaluating a Wellness Program for UNI Faculty and Staff: Preparing for a Cost-Benefit Analysis

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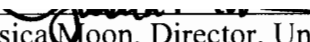
5/7/10

Date


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5/12/10

Date


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Introduction

I. Origin of Thesis

The University of Northern Iowa (UNI) paid total annual employer medical premiums of \$17,967,000 for 2008, an increase of 7.37% from 2007. If medical premiums continue to increase at this rate, UNI will pay \$29,556,720 in annual medical premiums in 2015. UNI is not alone in facing rising healthcare costs. Healthcare costs were identified as the “most serious challenge to their bottom line” by 41.7 percent of the employers in a survey by the National Association of Professional Employer Organizations (Kumar 2009). The Business Roundtable Fourth Quarter 2007 CEO Economic Outlook Survey confirms these results with CEO’s ranking the cost of health care as “the single biggest threat to company profits” (Adams 2008). To combat these costs, businesses have cut benefits, shifted costs to employees, and fired unhealthy workers (Armour 2005). Employee wellness programs are surpassing these responses in popularity, however, and are gaining the reputation as an effective response to the threat of healthcare costs (Goetzel 2008).

Taking notice of the current trend, the UNI administration has renewed its attention to the university’s wellness activities as a way to slow down its increasing healthcare costs. Currently, there is not a unified wellness program or full-time wellness director. Kathy Green, the Director of University Health Services at the University of Northern Iowa, noted in 2008 that “faculty and staff regularly express dissatisfaction with the limitations of the employee wellness program and [state] that their expectations are not being met.” In February 2010, a committee composed of Cindy Webb and Michelle Byers, of Human Resources, and Kathy Green, of University Health Services, formed to review the current wellness services and explore the option of unifying them into a comprehensive wellness program. Additional members will be added as the program

becomes more defined. The joint objectives of this employee wellness program, as listed by Cindy Webb, would be to keep employees healthy and active while lowering health insurance claims.

Although the committee has begun its work on developing a wellness program, there is still the looming question of whether a wellness program is an efficient solution to UNI's problem of rising healthcare costs. Last October during a visit with Cindy Webb, before the committee was formed, I offered to focus my Honors thesis on trying to answer this question by preparing for a cost-benefit analysis. This process would entail evaluating research to find accurate, relevant sources, identifying components suited to UNI's wellness program, and laying out the steps for a cost-benefit analysis. While a thorough cost-benefit analysis would be ideal, the approach I have outlined is necessary because the components of UNI's program have not yet been decided. Once these components have been decided upon, a complete cost-benefit analysis could be conducted.

The first objective of my thesis is to identify which components are necessary for UNI's wellness program to be successful. To accomplish this, I will analyze the existing scholarly research regarding the components of wellness programs as well as evaluate the wellness programs of several companies. The second objective is to critically examine the economic impacts of wellness programs and how they change over time, including an analysis of external factors. Because a cost-benefit analysis projects costs and benefits into the future, identifying and understanding the ways these impacts change over time is important. The third objective is to explain the concept of a cost-benefit analysis in relation to an employee wellness program, which will bring perspective to the research done so far and lay out the steps to continue the project.

This section will conclude with sample calculations of possible costs and benefits of UNI's future wellness program.

At this juncture in my thesis, I identified five areas of research that I needed to address for my work to be sufficiently comprehensive.

<i>Area of Research</i>	<i>Purpose</i>
1. Development of wellness programs	a. To increase my understanding of the field b. Preliminary identification of economic impacts
2. Current wellness programs	Examine aspects of current wellness programs
3. UNI's wellness landscape	To accumulate vital information about UNI to be used in designing and evaluating a wellness program
4. In-depth study of economic impacts	Analyzing methodology of potential economic costs and benefits for a cost-benefit analysis
5. Conducting a cost-benefit analysis	To prepare for the next part of this project as well as provide perspective for the prior research

Research topic One will serve as background information. Research topics Two and Three will aid in accomplishing the first objective of this thesis. Areas Four and Five will directly contribute to the second and third objectives, respectively. To conclude the introduction to this topic, I will discuss research topic One, the general development of wellness programs.

II. The Development of Wellness Programs

A. General History

A "wellness program" has been defined by Wolfe, Parker, and Napier (1994) as "on or off-site services sponsored by organizations which attempt to promote good health or to identify and correct potential health-related problems" (Wolfe 1994). However, the concepts of employee

wellness programs and wellness promotion exist in a variety of different forms. Goetzel and Ozminkowski (2008), for example, prefer the broader notion of work site health promotion, which they abbreviate to WHP. They describe WHP programs as “employer initiatives directed at improving the health and well-being of workers and, in some cases, their dependents” (Goetzel 2008).¹

Although wellness programs are currently attracting a large amount of publicity, they are not a recent discovery. Fuchs and Richards (1985) state that as early as the 1950s, employees had access to health screening, employee assistance, and health education programs that addressed such topics as infectious diseases, personal problems, and positive management and labor relations. (Fuchs 1985)

Fifty years of research prior to 1960 had established exercise and participation in fitness programs as leading to increases in aerobic capacity, flexibility, and strength along with decreases in body fat. No direct link had yet been established between these benefits and the diminution of coronary heart disease (Falkenberg 1987). Research from 1960 to 1980 found exercise and healthy life-style practices responsible for reducing coronary heart disease risk factors, including high blood pressure and high cholesterol levels (Falkenberg 1987). According to Falkenberg, “This realization led to a proliferation of research related to the effects of different types of fitness programs on the reduction of cardiac risk factors, and was one reason for the increased interest and participation in the fitness and running programs of the 1970s” (Falkenberg 1987).

As more research has been published, the notion that certain components of wellness programs reduce the severity of particular risk factors has gained support over time. As an

¹ For the rest of the paper the term “wellness program” will be used to refer to both employee wellness programs and WHP programs.

overview of the effectiveness of wellness programs, Heaney and Goetzel (1995) reviewed 47 peer-reviewed studies conducted on wellness programs, with the dates of the studies spanning a 20-year period. They determined that there was “ ‘indicative to acceptable’ evidence supporting the effectiveness of multi-component WHP (work-site health promotion) in achieving long-term behavior change and risk reduction among workers” (Goetzel 2008). The body of research continues to grow as companies measure and advertise the success rates of their own wellness programs, such as the state of California, home of the longest-running comprehensive tobacco control program of the states, announcing that it reduced the proportion of tobacco users from 22.7% in 1988 to 13.3% in 2006 (Brunnhuber et al.. 2007). Pilot studies published in the late 1980s indicated that smoking cessation programs were successful when offered at a worksite (Jason et al.. 1991).

Due to the lack of standardized monitoring of wellness programs, it is difficult to capture a snapshot of how many companies were offering wellness programs at a certain point in time. The general consensus is that the number of businesses promoting healthy activity has increased over the last 30 years. Gebhardt and Crump cite a study by Karch (1987) which finds a “formally organized fitness program” in 2.5% of companies with at least 250 employees in 1979. This number rose to 32.4% by 1985 (Gebhardt 1990). However, the original Karch study could not be obtained, and therefore more details such as the number of businesses and type of method used to obtain this estimation are unavailable.

With this growth came the development of organizations to attempt to organize and certify these programs. The American Association of Fitness Directors in Business and Industry was established in 1974, and during the early 1980s exhibited a 15-member-a-day growth rate.

(Gebhardt 1990) The Wellness Council of America (WELCOA) joined the scene in 1987.

(Wellness Council of America 2010)

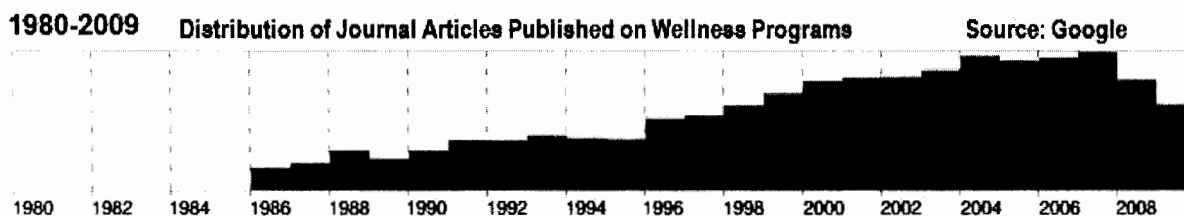
The latest National Worksite Health Promotion Survey, distributed in 2004, found that only 6.9% of businesses included all five elements considered key components of a comprehensive program (Goetzel 2008). The five elements were listed as “(a) health education, (b) links to related employee services, (c) supportive physical and social environments for health improvement, (d) integration of health promotion into the organization’s culture, and (e) employee screenings with adequate treatment and follow up” (Goetzel 2008). Assuming accuracy, one would determine that the frequency of wellness programs had decreased by 25.5%. However, it is possible that the Karch (1987) study mentioned previously may have used a very small and biased sample, consequently overinflating the percentage of companies offering wellness programs.

More recent annual estimates of the prevalence of comprehensive wellness programs have been calculated by Willis, a global insurance broker that provides financial, actuarial, and human resource consulting services to corporations.² In 2008, 24% of the 650 companies² surveyed by Willis responded that they were currently operating a wellness program (Willis HRH 2008). An additional 40% intended to offer one within three years (Willis HRH 2008). Willis increased the sample size of their 2009 study to 1644 companies, with interesting results. Only 16% of the companies surveyed in 2009 invested in a wellness program, with 24% intending to offer one in the next three years (Willis North America 2009). What appears to be a decrease in the percentage of companies offering wellness programs may actually just be a move toward a more accurate measurement of the number of companies offering wellness programs.

² These companies ranged from less than 100 to over 1000 employees.

Alternatively, three national surveys distributed in 1987, 1993, and 1999 diverge from monitoring comprehensive wellness programs by focusing on the presence of individual wellness activities. The 1987 study by Fielding and Piserchia used 1,358 interviews to determine that 65% of U.S. worksites with 50 or more employees had at least one health promotion activity (Fielding 1989). In 1999, the Associate for Worksite Health Promotion surveyed 1,544 businesses to update this statistic to 90% of worksites with 50 or more employees (Aldana et al. 2004).

This high frequency of health promotion activities could be a result of the increased scholarly research on wellness programs. A graph generated by Google showing the distribution of journal articles published on wellness programs mirrors the research trends reported in a study by Harvey (2008). As displayed in the graph below and explained by Harvey, wellness programs began gathering academic attention in the mid 1980s (Harvey 2008).³ A jump upwards occurs in the mid-1990s, which according to Harvey is when evidence crediting wellness programs with economic benefits began to emerge (Harvey 2008).



B. History of Economic Impacts

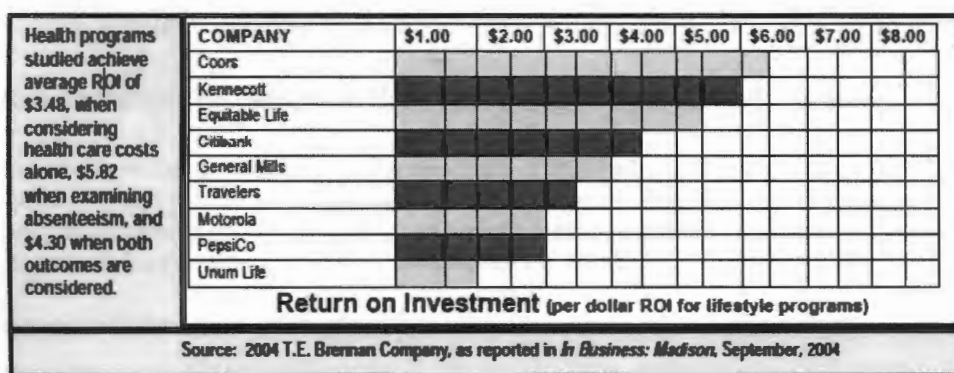
The early studies evaluating the economic impacts of wellness programs are widely varied and inconsistently calculated. Sources that determine the return-on-investment (ROI) of wellness programs of the 1980s and early 1990s provide values ranging from less than \$1 to \$19.41 per dollar spent (Chapman 2005, Goetzel 2008, Harvey 2008). Goetzel and Ozminkowski attribute this variation to the individually conducted case studies that comprise the majority of

³ It is likely that many research articles published prior to 1986 are not available electronically.

ROI research (Goetzel 2008). These case studies were often sponsored by the company being evaluated, which may have nudged the calculations in a positive direction. For example, the Human Resources department may want to make the program appear more profitable than it actually was so that it continued to receive management support. The company also could have faced pressure to make their results as appealing as a rival company's results.

Additionally, the selection bias resulting from healthier and higher motivated employees being more likely to enroll in a worksite wellness program is not accounted for in the early studies (Goetzel 2008). Initial studies were conducted on the wellness programs of pioneer companies such as Johnson & Johnson, Chevron Corporation, Citibank, DuPont, Bank of America, Tenneco, Proctor and Gamble, the California Public Retires System, Adolph Coors Company, and Duke University (Falkenberg 1987, Goetzel 2008). This author has been able to obtain only one specific instance when a negative ROI was both reported and published.⁴

Studies published in the early 2000s show similarly positive results. An article by Browning (2008) presents the following chart of wellness program ROIs. The chart includes the discrepancies that result from using different methods to calculate an ROI.



The chart reveals that on average, companies experience over a \$3 return for every \$1 invested (Browning 2008). Goetzel and Ozminkowski (2008) reference a study by Aldana (2001) that

⁴ A 1986 study reports New York Telephone as having spent \$10 million and incurring a cost savings of \$6 million. (Gebhardt 1990)

reports an average ROI of \$3.48 for seven studies that only consider health care costs. (Goetzel 2008) The same study found ROIs ranging from \$2.50 to \$10.10 when focusing on reductions in absenteeism (Goetzel 2008).

In 2005, Chapman conducted a meta-evaluation that began to delve deeper into the literature regarding the economic return of wellness programs and the calculations behind the ROIs. He used a list of ten criteria to identify 56 significant studies. To be included in the meta-analysis, the studies must evidence statistical analyses, sufficient sample sizes, original research, examinations of economic variables, and *comprehensive* wellness programs, which he defines as one having “multi-component programming” (Chapman 2005). To earn the label of multi-component programming, the companies had to provide at least three of the programs that have unofficially become characteristic of modern wellness programs. These programs include “smoking prevention and cessation, physical fitness, nutrition, stress management, medical self-care, high blood pressure control, cholesterol reduction, cardiovascular disease prevention, prenatal care, seat belt use, back injury prevention, back pain prevention, weight management, and nutrition education” (Chapman 2005).

While evaluating these 56 studies, which ranged in publication from 1984 to 2004, he found multiple disparities in the methodology of the studies. He states,

This meta-evaluation illustrates the general lack of standardization in the methodology used in economic analysis of worksite health promotion programs. Different measurement methods, varying categories of economic variables used for measuring economic return, and use of alternative research designs and statistical tests all highlight the lack of methodological consensus within the field for the evaluation of economic impact. (Chapman 2005)

As part of the meta-evaluation process, Chapman scores each study using an additional list of criteria that analyzed the studies’ quality of research methods. Although the median publication year of the studies is 1994, only one of the ten highest-scoring studies was published before

1990.⁵ This fact demonstrates an increase not only in quantity, but also in quality of research over time concerning the economic impacts of wellness programs.

The research summarized so far indicates that the wide range of reported ROIs could be the product of bias, varying methodology, and disparities in research quality. These are just a few of the items responsible for differing ROIs. To investigate these differences further, the broad concept of ROI needs to be broken down into the individual economic impacts.

⁵ This study, an evaluation of Johnson & Johnson's Life for Life Program by Bly et al. (1986), is discussed in greater detail later in this paper.

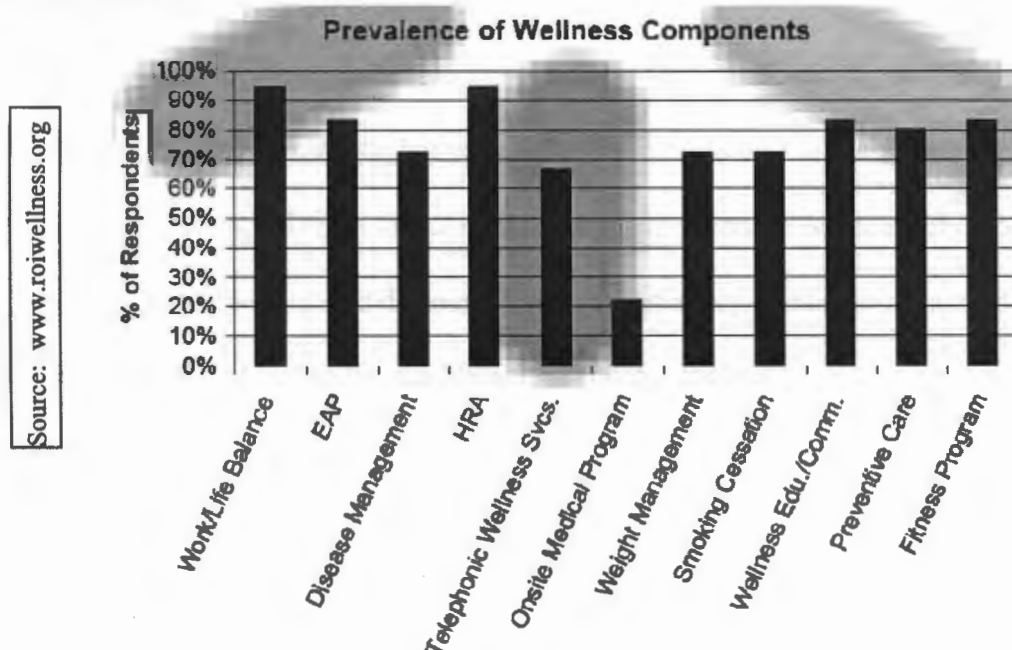
Research and Objectives

I. First Objective

The first objective of my thesis is to identify which components are necessary for UNI's wellness program to be successful. I will begin by analyzing the existing scholarly research regarding the components of wellness programs. Then I will evaluate the wellness programs of several companies. This section will conclude with my recommendations involving wellness components for UNI.

A. Components of Wellness Programs

Chapman's definition of a comprehensive wellness program mentioned previously serves as a preview of possible components of wellness programs. Other sources are able to provide information as to the frequency with which these components appear in wellness programs. A survey distributed in 2008 by the Alliance for Wellness ROI, Inc. of large corporations representing 250,000 employees and 700,000 insured presents a graph showing the various wellness components and their frequencies:



The chart demonstrates that Health Risk Assessments (HRAs) and programs promoting work/life balance are the most prevalent in wellness programs. The Willis Health and Productivity Survey (2009) reports that 94% of the companies surveyed use HRAs or a biometric health assessment. Smoking cessation (71%), physical activity (65%) and weight management programs (64%) were the most frequently reported programs in their survey of 1644 companies (Willis North America 2009).

To understand these components more in-depth, here is a look at the programs and activities that were classified under each heading by the Alliance for Wellness ROI, Inc.:

- Work/life balance program: legal and financial assistance, subsidies for onsite or offsite childcare, access to a concierge, and lactation support.
- Employee Assistance Program (EAP): call lines, stress management, critical incident services
- Disease management programs: manage the care of participants with chronic illnesses
- Health Risk Assessment (HRA): survey that collects information regarding the participants' medical history, current health conditions, medical risk factors, lifestyle risk factors, and willingness to change (Mayo Clinic 2010)
- Telephonic wellness services: 24-hr telephone number to a nurse, usually provided by the Medical Plan Administrator, as well as telephone coaching as part of the wellness program
- Onsite medical: Having either an onsite nurse, onsite physician, or onsite safety programs
- Weight management: weight loss discounts, coverage, surgery, medications, and financial incentives to nutritional counseling and healthy cafeteria choices
- Smoking cessation: smoking cessation rewards and incentives, benefits through a medical plan, medication discounts, and self-help opportunities

- Wellness education/communication: print, online, or audio/visual communications, as well as self-care guides and pre-natal programs
- Preventive care: physicals, also known as yearly medical examinations
- Fitness: onsite fitness and fitness club subsidies and discounts (Alliance for Wellness ROI, Inc. 2008)

These components could be referred to as the physical components of wellness programs. Research shows that wellness programs expand beyond the programs and activities. Harvey (2008) lists 17 components of a successful wellness program. The components he mentioned that were not included in the Alliance for Wellness ROI, Inc. or Willis surveys are health and product management models, incentives, senior management support, frequent contact, open enrollment, and family involvement (Harvey 2008). Goetzel and Ozminkowski (2008) add the duration of programs, follow-up interventions, targeting multiple risk factors at once, and data documenting program achievements as aspects that need to be carefully designed.

The insurance company of the organization can be thought of as an external component of wellness programs. I was unable to find a source that compares the wellness offerings of different insurance companies side-by-side. To create my own, I selected companies with available information in the Insurance-Healthcare Industry from “America’s Most Admired Companies 2009” list by Fortune and CNNMoney. These companies are Aetna, UnitedHealth Group, Humana, and Cigna. I included Wellmark® BlueCross BlueShield, UNI’s insurance provider, for comparison. I then researched their websites for their wellness programs.

INSURANCE COMPANY	Size of businesses	Wellness Coaching	Online Tools	Worksite services	Disease Management
Aetna	51-3000+	x	x	x	x
UnitedHealth Group	500-100,000	x	x	x	x
Humana	300+	x	x	x	
Cigna		x	x	x	x
BlueCross BlueShield		x	x	x	x

Sources: www.humana.com, www.aetna.com, www.cigna.com, “Wellness Services” brochure published by Wellmark® BlueCross BlueShield, www.unitedhealthgroup.com

There appears to be little difference between insurance companies in offerings. The difference would most likely be apparent in the prices they charge and incentives they provide. In any case, they offer components that can be helpful when designing a wellness program.

B. Wellness Program Case Studies

To be sufficiently prepared to make recommendations for the UNI wellness program, I need to study wellness programs as a whole. New information will be provided pertaining to costs and benefits, which is not available for the individual components. I began my analysis by reading in-depth case studies regarding the wellness programs of six organizations. I will present two of the programs here. First I will discuss what I believe are the strengths and weaknesses of the programs. Then I will analyze and compare the results of these programs. This information will aid me in making recommendations for UNI's wellness program.

Company #1: Cianbro

The first company, Cianbro, is best known for its construction management services. It is in the top 100 of *Engineering News Record's* Top 400 Contractors, and is identified as a leader in the areas of hydropower, pulp and paper, manufacturing, and industrial process. An overview of the demographics of its over 2000 team members is as follows: Female (10%) and Male (90%), ages 25 and under (11%), 26-35 (21%), 36-45 (29%), 46-55 (28%), 56-65 (10%), and Caucasian (90%). The work requires 10-12 hour shifts, and the job sites can be as far as 1-2 hours away for some workers. It is difficult for these workers to join a gym or even enjoy home-cooked meals. I organized the components of Cianbro's wellness program into a chart, classifying each as a strength or weakness with an explanation of my decision. The chart can be found in Appendix I.

The results of the Cianbro wellness program have been favorable. As of 2006, 86% of team members and spouses covered by Cianbro's medical plan were enrolled in the wellness program. From January 1, 2004 to April 1, 2005, Cianbro reports the following results: tobacco usage was reduced from 38% to 5% of employees; 337 of 352 physically inactive employees became active; 52 of 342 high cholesterol participants lowered their risk; 78 of 118 stressed employees reduced their high stress level; 17 of 128 seriously overweight participants are no longer seriously overweight. Cianbro slowed their 21% increase in healthcare costs from 2000 to 2001 to an average annual rate of 9-10%. The wellness program cost-per-person can be found by dividing the operating costs by the number of participants. The number of participants is not given but can be estimated by multiplying 1,839 employees by the 86% participation rate. The actual number of participants is less, seeing as not all of the employees are enrolled in Cianbro's medical plan. The cost-per-person using this method was \$756.51 in 2002, \$1150.17 in 2003, \$1116.11 in 2004, and \$1198.35 in 2005. When the savings in medical costs are taken into account, however, the cost-per-person is zero. The ROIs calculated by Cianbro are lower than the ones I calculated using the same data.

Company #2: City of Gainesville

The second organization is the city of Gainesville, Florida. The city employs 1,857 workers, including professionals (13.57%), technicians (16.24%), protective service personnel (13.95%), administrative support (16.59%), skilled craftsmen (23.97%), and service/maintenance personnel (9.86%). Males comprise 71% of the workers, and the workforce has an average age of 42.46 years. The City of Gainesville chart can be found in Appendix II.

Gainesville presents its results by highlighting individual achievements in the program. For example, a 50 year old morbidly obese male had severe sleep apnea and required a monitor.

After five individualized visits totaling \$150, the male had lost weight and no longer needed the monitor, saving \$123,678 over his lifetime. Due to the programs which concentrate on prevention, many of Gainesville's monetary gains are in terms of what health care costs have been prevented in the future. The costs of interventions and screenings were the only operating costs reported by Gainesville. It did not include operating costs from its fitness centers or events, or the cost of staff time dedicated to working on these programs; a possible explanation is that these costs are under a different budget, although this does not excuse them from being counted. It did not include them when calculating its ROI either, which makes it an inflated measurement of the economic impact of the program. It provided participation rates for individual events, but not for the program overall.

Analysis

The two wellness programs presented here have different strengths. Cianbro is most effective at reducing present healthcare costs; it includes spouses in its program, and uses one-on-one coaching and formal wellness teams to bring about immediate behavioral changes. It further sustains these changes with the Wellness Tracking System. Gainesville is most effective at reducing future healthcare costs; it has screened for hypertension, prostate cancer, osteoporosis, diabetes, and skin cancer. While Cianbro has used incentives to push involvement in its program, Gainesville relies on being flexible and convenient, and allows the employee to take the initiative. Gainesville is also able to push off the true operating costs onto other budgets.

In a sense, Cianbro is focused on behavioral management while Gainesville focuses on disease management. Cianbro's reduction in healthcare costs will be more sustainable; it focuses on the risk factors for extended periods of time and will reduce costs a little every year. Gainesville's approach is less sustainable; the events focus on one problem until it is brought to a

normal level where it will most likely plateau. Additionally, there are only so many times an individual can be tested for skin cancer and osteoporosis; the savings resulting from the early detection of a disease, while large, are only incurred once. Gainesville's program is also high in fixed costs; the fifteen fitness centers tie up a lot of capital. The opportunity costs of the land and buildings should also be considered. A participation rate was not reported for these centers, which indicates that Gainesville is not concerned that they are being used effectively.

This analysis helped me to understand the different focuses of these programs, and how they have affected both the design and results of the programs. Before I can apply the findings from these analyses to the University of Northern Iowa, however, I need to assess the current wellness landscape at UNI.

C. Wellness at the University of Northern Iowa

The University of Northern Iowa employed 2,279 full- and part-time workers as of February 2009. The proportional age and gender of these employees are described by this chart:

Age Group	Gender	Female		Male		TOTAL	PERCENT
		COUNT	PERCENT	COUNT	PERCENT		
< 20 years		3	0.24%	15	1.47%	18	0.8%
20-29 years		143	11.39%	98	9.58%	241	10.6%
30-39 years		219	17.44%	190	18.57%	409	17.9%
40-49 years		284	22.61%	226	22.09%	510	22.4%
50-59 years		438	34.87%	289	28.25%	727	31.9%
60+ years		169	13.46%	205	20.04%	374	16.4%
				1023	100%	2279	

The chart indicates that over 50% of the employees are between the ages of 40 and 59. The employees can also be classified by ethnicity. Caucasian employees compose 91.18% of UNI's workforce, followed by African American (4.04%), Asian (2.85%), Hispanic or Latino (1.45%), and American Indian (0.35%).

Health insurance coverage through UNI's self-funded health insurance plan managed by Wellmark Blue Cross & Blue Shield is available to all term, probationary, tenured faculty, academic administrators, institutional officials, and professional and scientific staff. According to Blue Cross & Blue Shield, UNI's top three diagnostic categories are ¹. Bones, muscles, and ligaments ². Benign/cancerous tumors and ³. Heart/vessels. Two of the top four prescription drugs issued, however, treat mental health. The drug most frequently prescribed to the participants of UNI's healthcare plan is for the treatment of cholesterol.

There are a variety of wellness opportunities currently available to faculty and staff, both with and without fees. Some of the free services include personal consultations, access to the Wellness Resource Lab, blood pressure screenings, resources about stretching and back safety, and the "Fit While You Sit" guide. Additionally, if the employee qualifies for UNI health insurance benefits he/she will receive a free annual blood chemistry profile, an online Personal Health Assessment and Lifestyle Questionnaire, the Employee Assistance Program, and two weeks of nicotine patches or gum for employees using the UNI smoking cessation program. Employees can join the Wellness & Recreation Center (WRC) for a fee of \$182 annually, which falls in the middle of what our peer institutions are charging their faculty and staff. The families of employees who join can use the WRC on Fridays, Saturdays, and Sundays during certain family hours for free. Other resources include departmental Wellness Ambassadors and access to the monthly "Words of Wellness" publication produced by Wellness and Recreation Services. A flyer the committee anticipates using to advertise UNI's employee wellness program is included in the appendix. This provides a thorough description of the services.

Wellness at UNI began as an outreach from the School of Health, Physical Education and Leisure Services (HPELS) in the form of a Wellness Promotion Program that served students,

faculty, and staff. The Employee Assistance Program was a combination of efforts from Human Resource Services and Wellness Promotion. However, in the early 2000's, the budget cut caused HR to cut back on their support, and general funds to Wellness Promotion decreased as well.

The costs currently associated with employee wellness at UNI, as provided by Kathy Green, were predicted to be \$102,000 for the 2009 fiscal year. It is estimated that 5% of WRS professional staff time (\$42,000) as well as 5% of student wages, supplies and equipment (\$62,000) are used to promote employee wellness. Other costs include the Words of Wellness publication (\$3600), faculty/staff brochures (\$400), miscellaneous books, pamphlets, and self-help materials (\$200) and an annual membership to the Wellness Councils of America (\$365). The wellness committee has provided a rough wellness budget for the 2011 fiscal year. New items include free flu shots for employees and reduced memberships to the WRC. With a proposed estimate of 800 employees participating, the free flu shots would cost \$12,000. The reduced memberships would cost from \$12,000 (\$20 off for 600 employees) to \$32,000 (\$40 off for 800 employees).

D. My Recommendations

The objective of UNI's wellness program, as identified by the wellness committee, is to keep employees healthy and active while reducing healthcare costs. The word "keep" implies a long-term commitment. It is also safe to assume they want more than a one-time reduction in healthcare costs. If the intent is for long-term benefits, they should adopt a long-term focus.

To achieve a long-term focus, UNI's wellness program is going to need ways to measure their wellness status now, and track it over time. Without an evaluation mechanism in place, the employees will realize that the wellness program lacks the direction needed to end up anywhere significant in the long-run, and will not commit to it. Goetzel and Ozminkowski (2008), Harvey

(2008), Gebhardt and Crump (1990), and WELCOA all advocate establishing ways to evaluate the wellness program's goals and objectives. Possible metrics reported by the Willis survey include participation rates, medical claim trends, cumulative weight loss, employee satisfaction, fewer smokers, clinical risk levels, absenteeism, and productivity (Willis North America 2009).

Once UNI is able to measure and see results, it will be able to work backwards by first identifying the results it wants to see and then determining the ways to get there. Cianbro used this strategy in its outcome-focused program. Its focus was to eliminate at-risk behavior, and it only sponsored programs that accomplished this goal. UNI would gain the most by specifying goals that relate directly to its top ailments, as identified by Wellmark® BlueCross BlueShield. While there are always more programs any wellness program could offer, not every program will maintain its focus. Establishing objectives, and ways to measure these objectives, will help UNI trim the fat by deciding which programs are actually the most effective use of its money.

If UNI wants the metric to measure the results of the efforts of its wellness program, it should only measure the participants in the wellness program, or else the results will be skewed. For this reason, I suggest that UNI develops a way to enroll in the program. Additionally, this will reinforce its long-term focus in the following ways: it will foster commitment; it will allow the implementation of follow-up programs; and it can structure goals, programs, and incentives over periods of time. For example, to borrow Cianbro's incentive, participants could receive a 5% discount on healthcare their first year in the program, with the option of increasing the discount to 10% for the next year if certain results are achieved, and 15% the third year.

Both follow-up programs and goal setting have been cited in multiple studies. Lovato and Green (1990) discovered that "goal setting was the most effective method to maintain employee participation in WHP (worksites health promotion) programs" (Lovato 1990). Goetzel and

Ozminkowski (2008) refer to a study by Ozminkowski et al. (2006) that found that “cost trends were lowest for HRA participants who also engaged in one or more follow-up interventions. These interventions included on-site biometric screenings, telephone lifestyle management counseling for high-risk individuals, nurse-support telephone lines, and wellness classes” (Goetzel 2008). Having a group of enrolled employees will also develop a culture of health and support. Goetzel and Ozminkowski (2008) reference eight other studies as noting the importance of this aspect.

II. Second Objective

The second objective of this thesis is to critically examine the economic impacts of wellness programs and how they change over time, including an analysis of external factors. Because a cost-benefit analysis projects costs and benefits into the future, identifying and understanding the ways these impacts change over time is essential to achieving accuracy.

The overview of the history of the economic impacts presented earlier show that no ROI or economic impact can be taken at face value. The lack of standardization in regards to evaluating wellness programs has given scholars the freedom to individually decide which economic costs and benefits should be included and how they should be measured. To understand what a ROI, cost, or benefit actually means requires knowing how it was calculated. Understanding these economic impacts inside and out is imperative to correctly conducting a cost-benefit analysis. The following is a critical analysis of research available describing the economic impacts of wellness programs from 1980 to the present. They will be examined utilizing the two major classes of (A) Healthcare Costs and (B) Absenteeism & Presenteeism. Once this research has been presented, I will look at a number of external factors for each class whose trends over time would affect future cost and benefit calculations.

A. Healthcare Costs

Reducing healthcare costs has not always been perceived as an economic impact of wellness programs. A source dating back to 1979 lists the economic benefits of wellness programs as providing “(a) increased ability to attract competent employees; (b) improved attitudes and loyalty; (c) a reflection of the firm’s concern for the non-work aspects of the employees’ lives; and (d) indirectly, increased productivity” (Falkenberg 1987). Compare this to the Goetzel and Ozminkowski study (2008) which states that “The main driving force behind employers’ growing interest in providing WHP [work-site health promotion] services to their workers is undoubtedly rapidly rising health care costs” (Goetzel 2008).

Scholars have had a difficult time establishing a connection between wellness programs and reductions in health care costs. Only 28 of the 56 studies included in Chapman’s meta-study even attempted to use healthcare cost analysis to assess a wellness program’s economic impact (Falkenberg 1987). Gebhardt and Crump (1990) reference two studies from the 1980s while observing, “Although scientifically sound data on cost savings are available only from a limited number of long-standing programs, the preliminary results indicate that fitness and health promotion programs are successful in promoting healthy life-styles and are beginning to demonstrate cost effectiveness in relation to health care costs” (Gebhardt 1990).

The majority of the early studies reviewed attempted to compare the group that participated in the wellness program with the rest of the workers at the company that did not participate in the wellness program. However, this type of experiment cannot irrefutably prove causation. There is the possibility of reverse causation, where wellness programs did not make employees healthier; instead, the fact that they were already healthy employees is what caused them to utilize the wellness program in greater numbers than unhealthy employees. Studies of

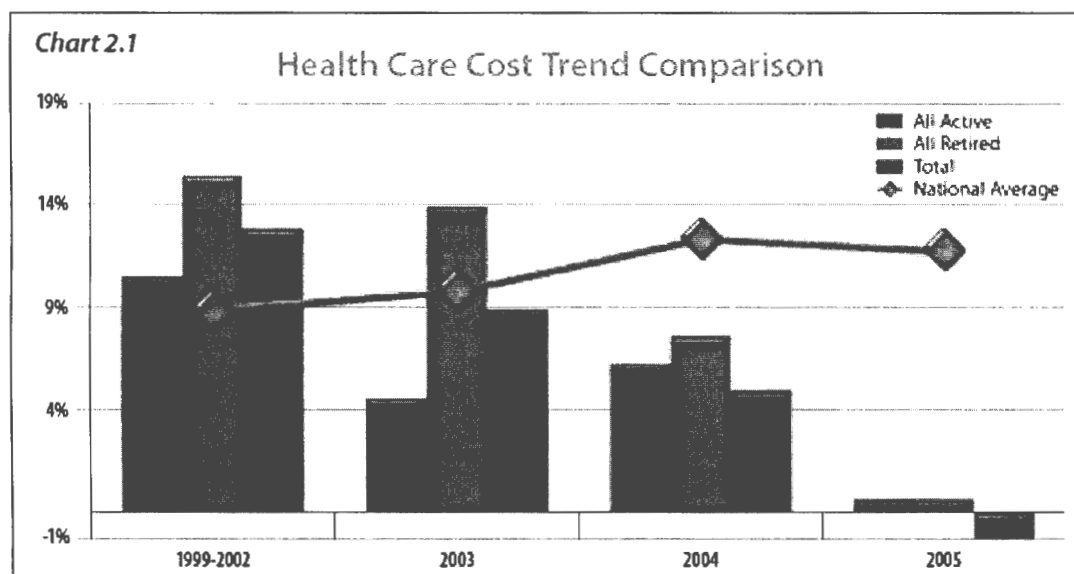
this nature were conducted on Johnson & Johnson, Prudential Insurance Company, Tenneco, and Blue Cross and Blue Shield of Indiana, with all reporting reductions in healthcare costs for the participants of the respective wellness programs (Gebhardt 1990).

A study mentioned previously as ranking seventh in Chapman's meta-study is included in this category. An analysis of Johnson & Johnson's wellness program from 1979 to 1983 by Bly, Jones, and Richardson (1986) finds that the mean annual inpatient cost increases were \$43 and \$42 for the groups in the wellness programs, and \$76 for the group not participating in the wellness program (Bly, Jones and Richardson 1986). All costs are adjusted to 1979 dollars. The analysis of covariance is used to control for sex, age, job class, fitness level, health parameters, and location differences (Bly, Jones and Richardson 1986).

An investigation of later research produces inconclusive results. Aldana et al. (2004) analyzes the wellness program of the Washoe County School District in Reno, Nevada, and does not observe any differences in healthcare costs during the two-year study. (Aldana et al. 2004) Aldana et al. reference a previous article by Aldana (2001), which provides an overview of 32 studies exploring this same topic. Of these studies, twelve cover time periods of less than three years, with mixed results. (Aldana et al. 2004) In conclusion, Aldana et al. state, "These findings support the theory that improvement of health risks through worksite health promotion program participation may have a limited effect on short-term health care costs, but they may be more financially beneficial with the passage of time as more costly chronic diseases are prevented" (Aldana et al. 2004).

The most recent research available is more conclusive. I will highlight three case studies on wellness programs that provide longitudinal data on healthcare costs. Cianbro, the construction company referenced earlier, lowered the rate of growth of its healthcare costs from

21% between 2000 and 2001 to 9-10% between 2005 and 2006 (Wellness Council of America 2006). The city of Gainesville achieved similar results. In 1995, its healthcare costs were neck-and-neck with other Southern employers. From 1995 to 2000 it had lower average healthcare costs than both other Southern employers and the U.S. government (Wellness Council of America 2006). The third business, the International trucking company, also slowed the speed of its rising healthcare costs, and in 2005 accomplished the unprecedented achievement of no increase in healthcare costs (Wellness Council of America 2006). The performance of International in relation to the rest of the United States is portrayed on the following chart:



Source: www.welcoa.org

It is important to note that there are actions a business could take to reduce their healthcare costs in addition to implementing a wellness program, and these may inflate the effect wellness programs actually have on reducing healthcare costs. For example, some businesses have fired smokers in an attempt to lower healthcare costs (Armour 2005). Others implement healthcare plans with higher deductibles or other mechanisms that shift the costs from the employer to the employee, which creates the appearance of a reduction without actually causing

one (Goetzel 2008). However, identifying and correcting for these actions is beyond the scope of this paper.

This concludes the general overview of the connection between wellness programs and reductions in healthcare costs. I have discovered another relationship, however, that will prove very useful in calculating potential future benefits in relation to health care. This is the relationship between diseases and their ability to incur healthcare costs. Most importantly, this relationship is another avenue to use when predicting future costs and benefits. Whereas using the wellness program to healthcare costs relationship uses past results to model future results, the diseases to healthcare relationship uses current characteristics to measure future results, and with more accuracy if done correctly. Now I will examine the studies existing on this relationship.

The most recent studies connecting diseases or risk factors directly to their respective healthcare costs are more convincing than their outdated counterparts due to higher-quality methodology. Research by Yen, Edington and Witting (1991) is an example of an early study on this subject. They utilized data from 1,838 employees of a manufacturing company to investigate relationships between three-year medical claim costs and 18 health-related measures (Yen, Edington and Witting 1991). The employees were classified as high or low risk using self-reported risk factors. The average medical claims for the 18 risk factors were then compared between the risk classes to determine the cost of increased risk. For example, the mean cost of medical claims of high-risk smokers was \$665.70. The mean cost of medical claims of low-risk smokers, which is referred to as non-smokers, was \$437.98 (Yen, Edington and Witting 1991). Yen, Edington and Witting (1991) draw the conclusion that the value of the increased risk of a smoker is \$227.72.

This study loses credibility for the use of self-reported risk factors. It is unable to account for comorbidity⁶, as well. It is possible that the large health claims of a particular smoker are not due to his smoking, but instead his prostate cancer. This method seems almost silly considering that a high-risk seatbelt user would save \$156.72 upon becoming a low-risk seatbelt user (Yen, Edington and Witting 1991).

Goetzel et al. (2004) is an example of a recent and higher quality study. They used the Medstat MarketScan Health and Productivity Management (HPM) database, which provides information about benefit plan enrollment, inpatient and outpatient healthcare services, pharmaceutical claims, absence records, and short-term disability claims for 374,799 employees. The study published the ten most expensive diseases according to their medical claims. The costliest disease is heart disease, with a medical cost average of \$265.71 (Goetzel et al., 2004). By using diseases instead of risk factors in their mathematical analysis, Goetzel et al. achieve a higher degree of accuracy. Risk factors may not necessarily incur costs in a person's lifetime; consequently, the estimations involving risk factors require adjustments for probability as well as comorbidity. Goetzel et al. lower the effect of comorbidity with their extensive database. Therefore, working backwards by using the likelihood of a risk factor to lead to a disease, it is possible for them to achieve more accurate estimations of the healthcare costs a risk factor might accrue.

To complete this section on healthcare costs, I need to discuss the intrinsic behavior of healthcare costs over time. Data retrieved from the U.S. Department of Health and Human Services document consistent increases in healthcare costs since 1960. National health expenditures totaled \$27.5 billion in 1960, \$74.9 billion in 1970, \$253.4 billion in 1980, \$714.1 billion in 1990, \$1,353.2 billion in 2000, \$1,980.6 billion in 2005, \$2,112.7 billion in 2006, and

⁶ Comorbidity is defined as the existence of two or more health conditions simultaneously.

\$2,241.2 in 2007 (National Center for Health Statistics 2010).⁷ The effect of rising healthcare costs is best understood by letting the present value of preventable future healthcare costs represent the value of wellness programs to businesses. As the future stream of healthcare costs grows at an increasing rate, the present value will grow, causing wellness programs to inherently increase in value to businesses.

The research presented here forms a strong foundation for calculating benefits of wellness programs related to reductions in healthcare costs for a cost-benefit analysis. The appropriate method and study to emulate would be chosen for each variable during the course of the cost-benefit analysis.

B. Absenteeism & Presenteeism

Absenteeism is investigated as a potential economic benefit of wellness programs as early as the late 1980s (Conrad 1987, Glasgow 1988, Parks 2008). Presenteeism, which refers to “the loss in productivity that occurs when workers are on the job, but not performing at their best,” has only been referenced as an economic benefit recently (Kulesa 2008).

Absenteeism, and sometimes presenteeism, was examined by 25 of the 56 studies included in Chapman’s meta-study (Chapman 2005). However, a meta-analysis by Parks and Steelman (2008) conclude that, “The inconsistencies among the results of the research contribute to the larger controversy as to whether or not wellness programs affect important organizational variables such as absenteeism and job satisfaction” (Parks 2008).

Much of the research exhibits the same flaws as the research on reducing healthcare costs, such as reverse causation (Bell 1989, Lechner 1997, Lynch 1990). Studies by Goetzel et al. (2004) and Loeppke et al. (2009) avoid these flaws and are able to directly connect diseases to

⁷ All of the amounts are in 2007 dollars.

absenteeism and presenteeism. These studies represent the most methodologically advanced studies on this subject. The following is a more in-depth look at the Loeppke et al. study.

Loeppke et al. used data from 10 employers, 51,648 employees, and 1,134,281 medical and pharmacy claims. Measures of absenteeism and presenteeism were obtained from the validated Health and Work Performance Questionnaire. With isolated regression, they were able to establish correlation between 25 different risk factors and levels of absenteeism and presenteeism. Controls were made for gender, age, and occupation. Loeppke et al. regressed employees with risk factor versus other employees with no conditions. Then they ran regressions with employees with risk factor versus other employees with other conditions. They found that 98.5% of the coefficients were positive and statistically significant at the level $\alpha=0.05$. Loeppke et al. reasoned that “the conditions considered here are significantly associated with elevated absenteeism and presenteeism” (Loeppke 2009). They also found that “every one of the coefficients in the model that compares respondents with condition to respondents with no conditions is larger than the parallel coefficient in the model that compares respondents with condition to respondents without focal condition” (Loeppke 2009).

Other interesting findings include that over 33% of absenteeism days were from 7.9% of the respondents with six or more risk factors. Health-related productivity costs were found to be significantly greater than medical and pharmacy costs alone, on average 2.3 to 1. Coronary heart disease and chronic obstructive pulmonary disease were the strongest predictors of absenteeism, and depression was the strongest predictor of presenteeism (Loeppke 2009). This study is a great resource for specific data to use when attempting to value the economic costs and benefits related to absenteeism and presenteeism for the cost-benefit analysis.

Absenteeism and presenteeism have to be treated carefully when projecting their effects into the future. Unlike rising healthcare costs, the effects of absenteeism and presenteeism do not intrinsically increase in magnitude over time; a worker's absence or lack of concentration disrupted the activities of a business just as much then as it does now. The argument could be made that the business environment is faster paced today, meaning an employee disrupts more activities by missing a day of work than in the past. However, the effect of an employee's absence is relative, not absolute. If an employee is missing more work activities today, that implies that a business accomplishes more in a day, which leads to the conclusion that the business accomplishes more overall. In proportion to overall business performance, the effect of an employee's absence is the same today as it was thirty years ago.

Additionally, absenteeism and presenteeism have a unique relationship that distorts the effects of external factors. Presenteeism can be thought of as an extension of absenteeism. Absenteeism is the recorded instances when one is too ill to be productive, also known as sick days. Presenteeism is the unrecorded instances, since the employee is still at work. For example, consider the situation where an employee has little potential for productivity and is debating whether to go to work. This decision represents a tradeoff between absenteeism and presenteeism, and will result in one increasing and the other decreasing, depending on the preferences of the employee. All studies that separate these concepts to measure or run regressions with external factors will always have uncertainty surrounding them, because of this decision; it is difficult to tell whether absenteeism increased because of the increased incident of a disease, or because more people decided to stay home instead of go to work. This uncertainty can be eliminated by using the total number of combined instances of absenteeism and presenteeism. Although it is likely scholars have discovered this relationship, they routinely

study absenteeism and presenteeism separately because their nature prevents measuring and recording them simultaneously. This limits the conclusions this paper can draw from the available research.

C. External Factors

A variety of external factors could shrink or stretch the impact of the wellness programs over time. An understanding of these factors is necessary to make the correct adjustments to the streams of costs and benefits projected into the future for the cost-benefit analysis.

The first external factor is a change in the effectiveness of the wellness program components. Research indicates that the wellness components have become more effective over time. Chapman credits newer prevention technologies, such as “the Transtheoretical Model⁸, Internet-provided health information, tailoring, benefits-linked financial incentives, telephonic high-risk intervention coaching, self-directed change, and annual required morbidity-based health risk appraisals (HRAs) used for individual targeting of interventions,” with increasing ROIs of wellness programs (Chapman 2005). According to Chapman (2005), studies performed on wellness programs with these latest technological additions showed a ROI of \$6.30 for every \$1 invested, while the older wellness programs calculated an ROI of \$3 for every \$1 invested (Chapman 2005). These ROIs are assumed to be compared accurately due to Chapman’s attention to methodology and standards of research quality employed in his study. Future technological advancements are likely. One example is given by the city of Gainesville, which is looking to adopt the use of Telemedicine. Gainesville provides on the development and capabilities of Telemedicine in its case study:

Because of innovations in computing and telecommunications technology, many elements of medical practice can be accomplished when the patient and health care provider are geographically separated. The separation for this

⁷“The Transtheoretical Model in health psychology assesses an individual’s readiness to act on new, healthier behavior, and provides strategies to guide the individual through the stages of change” (Wikipedia)

application is “across town”. Broadly defined, telemedicine is the transfer of electronic medical data (i.e., high resolution images, sounds, live video and patient records) (Wellness Council of America 2006).

A second external factor is a change in the health of Americans. The World Health Organization states that among the top five contributors to disease and injury worldwide are preventable factors including alcohol misuse, smoking, physical inactivity, and poor diet (Goetzel 2008). Changes in any of these four factors would directly impact the effects of wellness programs. For example, if Americans steadily declined in health, the projected savings in healthcare costs would increase. To get an idea of how these might change in the future, I am going to examine their behavioral trend over the last 30 years.

Data retrieved from the website of the Centers for Disease Control and Prevention (CDC) demonstrate a steady increase in obesity since 1988 and a decline in cigarette use since 1965. Alcohol has slightly decreased since 1975, according to the National Institute on Alcoholism and Alcohol Abuse. It has been increasing gradually since 1996, but has not reached the heights that it was at in the 1970s. The charts this information was derived from are available in Appendix V. A closer look at the charts measuring obesity and cigarette use show that their behavior over time are close to being exact opposites of each other, when looking at the percentage of Americans. These factors would then cancel each other out if every factor is given equal weight, which leaves alcohol consumption as the deciding factor. Alcohol consumption is shown to decrease over time. Therefore, in regards to preventative behavior, Americans have become slightly healthier. It is likely that these behaviors do not have equal weight; however the complexity of determining the significance of each behavior is beyond the scope of this paper, but would need to be considered when determining how this health trend could impact future costs and benefits.

The external factors that affect absenteeism and presenteeism are either difficult to account for or do not follow a behavioral trend over time. Absenteeism and presenteeism are sensitive to unique characteristics of individual companies, such as sick leave/vacation day policies, the distribution of project deadlines, and the level of management enforcement. Similarly, many individual characteristics affect absenteeism and presenteeism, including age, education level, income, gender, and personality. These factors vary so much from business to business that any trend identified would be too broad to be of any use. The best way to determine whether the economic impacts of absenteeism and presenteeism have increased the value of wellness programs to businesses over time is by analyzing past and present evidence connecting diseases to the occurrence of absenteeism and presenteeism.

III. Third Objective

The third objective is to explain the concept of a cost-benefit analysis in relation to an employee wellness program, which will bring perspective to the research done so far and lay out the steps necessary to continue the project. This section will conclude with sample calculations of possible costs and benefits of UNI's future wellness program.

A. Conducting a Cost-Benefit Analysis of UNI's Wellness Program

The purpose of a cost-benefit analysis, as identified by Boardman et al., is to help society make decisions regarding the most efficient allocation of society's resources (Boardman et al. 2001). To accomplish this task, it is necessary to consider the costs and benefits to society as a whole, which is different than equating the benefits and costs of something as one's own personal revenues and expenditures. (Boardman et al. 2001) This feature is also what distinguishes a cost-benefit analysis from other decision-making tools, such as profitability

analyses, general policy analyses, or economic impact analyses (Uyar 2009). The popularity of the cost-benefit analysis (CBA) increased dramatically in 1981 when President Reagan issued Executive Order 12,291, which required regulatory agencies to conduct a CBA on all major regulations (Adler 2006).

A CBA is appropriate for evaluating a prospective employee wellness program because this project is not an issue of equity, equal opportunity, or morality. (Uyar 2009) This project is instead a question of whether an employee wellness program would be an efficient allocation of UNI's scarce resources, namely, its money, staff, and recreational services.

Dr. Bülent Uyar, Associate Economics Professor at the University of Northern Iowa, defines costs as "the value we put on all things we will no longer have as a result of this project." The benefits, therefore, are "the amount we are willing and able to pay for the project rather than not have it at all." (Uyar 2009) For feasibility I will use the American dollar as the unit of value. Some of the costs and benefits I will encounter are not exchanged on a market and do not have a market price, although they do have value. An example of such would be the personal satisfaction one gets from working out. Another would be the discomfort one experiences from exercising at a crowded facility. One of my tasks is to use various methods to assign value to these items.

Before conducting the CBA, I have to identify the perspective from which to perform this analysis. To aid in this decision I would take into account the objectives and scope of the project. A simple explanation of the process of a CBA is as follows: I would identify the costs and benefits; I would then quantify them and project them into the future; I would discount them to achieve the present value; I would subtract the costs from the benefits to obtain the net present value; I would calculate the net present value multiple times with different scenarios. A cost-

benefit analysis utilizes the present value because a dollar today is worth more than a dollar received in five years, because that dollar could be invested and earn five years' worth of interest.

My cost-benefit analysis will recommend, on the basis of efficiency, that the University of Northern Iowa implements an employee wellness program if the present value of the benefits exceeds the present value of the costs; in other words, if the project's *net present value* is positive.

It is possible to view a cost-benefit analysis as a series of research questions: ¹. *What are the objectives of implementing a faculty/staff wellness program at the University of Northern Iowa?* ². *What is the scope of this project? What people will be included? What buildings will be used?* ³. *What are the benefits and costs of this project?* ⁴. *What is the monetary value of these benefits and costs?* ⁵. *How long into the future will these benefits and costs continue to make an impact?* ⁶. *Will these values remain constant, diminish, increase, or stop entirely?* ⁷. *What interest rate should I use to determine the net present value?* ⁸. *What could happen in the future to change the accuracy of my analysis? Which sensitivity analyses should I run?* ⁹. *Should UNI implement a faculty/staff wellness program?*

My approach to conducting a cost-benefit analysis would be very straight-forward. I would simply answer my research questions in the order I presented them here. This section is crucial to the project, however, because the success of a cost-benefit analysis is determined by the methods used to answer the research questions. There are various technical guidelines that I would follow to ensure my analysis is as objective and accurate as possible. Among these is verifying that any existing data that I would use is from a population comparable in size and demographics to the University of Northern Iowa. All of the information used would be the most

recent that is available and from reliable and traceable sources. If it would be advantageous for me to use a survey, I would first have it approved by the Institutional Review Board. The survey would be distributed to a large and representative sample. When available, I would use professional standards and methods to guide my judgment, as in the case of choosing a discount rate and putting values on incommensurables.

B. Calculating a Sample Benefit

My access to data regarding the health status of UNI faculty and staff is limited. If I was actually conducting a cost-benefit analysis, it is conceivable I would be provided with more detailed, albeit sensitive, information. For my sample calculations, however, it is sufficient to estimate. My two choices are 1) to only calculate costs and benefits that rely on the information available to me, which are primarily gender and age or 2) to locate and apply national rates to the UNI population, and use those in my calculations. I have decided to do a calculation based on the information I have regarding the participants in UNI's healthcare plan. I am choosing a discount rate of 1.78%, which is the current yield for a 5-year municipal bond according to www.bloomberg.com.

Given the information regarding gender, I am going to calculate a potential benefit of a hypothetical breast cancer screening event held for women in June 2010. The National Cancer Institute provides the proportion of American women that are diagnosed with breast cancer for different age brackets. A study by Groot et al. provides the percentage of diagnoses that are Stages I-IV for North America. I decided to use the rates with an "extensive program," which is defined as "Treatment of all stages as described above, plus a breast awareness program and early case finding through biannual mammographic screening in women age 50–70 years" (Groot et al. p. S82 2006). I chose the extensive program due to what I have classified as a high

level of breast awareness and mammographic screening which takes place in the United States. Combining these two sources, I can determine the number of UNI female faculty and staff members that could potentially be diagnosed with breast cancer, specifying Stage I-IV, by age bracket.

Age Group	Breast Cancer Rate	Women Faculty/Staff	Potential diagnoses	Stage I (49%)	State II (37.4%)	Stage III (8.6%)	Stage IV (5%)
< 20	NA	3	NA	NA	NA	NA	NA
20-29	NA	143	NA	NA	NA	NA	NA
30-39	0.43%	219	1	1	0	0	0
40-49	1.44%	284	4	2	1	0	0
50-59	2.63%	438	12	6	4	1	1
60+	3.65%	169	6	3	2	1	0
			(23)	12	7	2	1

Using the same Stage I-IV rate for each age bracket is against intuition. One would think that older women might have a higher incidence of Stage IV breast cancer. It is possible, however, that the distribution is actually the same across age brackets. Additionally, these rates are reflective of a population with access to an “extensive program,” in which case the older women’s bi-annual mammograms would most likely not allow the breast cancer to reach Stage IV before it was detected.

One of the benefits of discovering breast cancer in June 2010, as opposed to a later date, is the number of years the individual will not have to suffer because it was discovered before it reached the more advanced stages. These extra years are known as disability-adjusted life years (DALYs). Groot et al. calculate the DALYs averted based off of ten years of treatment; in my scenario, this would mean the extra years that the UNI female faculty and staff are able to live disability-free due to appropriate treatment from June 2010 to June 2020. From the terms of a cost-benefit analysis, the avoidance of DALYs is viewed as the opportunity cost of not having the project, which is a benefit of the project. This is the benefit I have chosen to calculate.

I will use the simplest method of valuing the worth of these years to society, which is to use the annual salary of the individual. For this value, I will use two different values, one representing the average annual salary of UNI faculty and one representing the average annual salary of UNI staff. I will use the number of faculty divided by the total number of employees to calculate the percentage of faculty and staff that are faculty. ($293/2279 = 0.13$) I will multiply this rate by the number of diagnoses in each stage of breast cancer to determine the number of diagnoses which represent faculty.

I will use the same process but with (1-faculty rate = 0.87) as percentage of faculty and staff that are staff. I will use \$66,000 to represent the average salary of a UNI faculty member, as provided by the Office of Institutional Research for FY2009. I will use $\$7.25/\text{hr} * 40 \text{ hrs/week} * 50 \text{ weeks} = \$14,500$ to represent the annual salary of a staff member. Even though the staff would only be working while UNI is in session, I am assuming that they will have another job during the summer. The use of the minimum wage will underestimate the actual wage of these individuals, but this is a common practice in cost-benefit analyses. The following chart represents the calculations used to obtain the value of this benefit for faculty:

Stage	Total diagnoses per stage	Estimated faculty diagnoses	DALYs averted per female	PV of stable cash flow (annuity) using $n=\text{DALYs}$ and $\text{payment}=\$66,000$	PV of faculty DALYs averted*no. of faculty
I	12	2	12.25	599,733.07	1,199,466.14
II	7	1	2.24	143,681.69	143,681.69
III	2	0	1.6	103,207.56	0
IV	1	0	0.18	11,756.83	0
					\$1,343,147.83

The following chart represents the calculations used to obtain the value of this benefit for staff:

Stage	Total diagnoses per stage	Estimated staff diagnoses	DALYs averted per female	PV of stable cash flow (annuity) using $n = \text{DALYs}$ and $\text{payment} = 14,500$	PV of staff DALYs averted*no. of staff
I	12	10	12.25	158,336.02	1,583,360.20
II	7	6	2.24	31,566.43	189,398.58
III	2	2	1.6	22,674.39	45,348.78
IV	1	1	0.18	2,582.94	2,582.94
					\$1,820,690.50

The benefit to society of DALYs averted for female UNI faculty and staff diagnosed with breast cancer totals \$3,163,838.33.

IV. Conclusion

This thesis originated to aid the University of Northern Iowa in evaluating its need for an employee wellness program. This paper has identified which components are necessary for UNI's wellness program to be successful, critically examined the economic impacts of wellness programs and how they change over time, and explained the concept of a cost-benefit analysis in relation to an employee wellness program.

In regards to my first objective, I found that UNI needs to adopt a long-term focus to be successful. Components to support this focus include an evaluation metric, voluntary enrollment, wellness tracking software, and follow-up interventions. While researching my second objective, I discovered that many studies regard reducing healthcare costs and preventing absenteeism and presenteeism as the economic impacts of wellness programs. I also found a lack of standardization in this field, as well as studies that contained bias and errors. More recent studies,

however, are of higher quality. To accomplish my third objective, I identified applicable research questions and methodology for a cost-benefit analysis. I calculated a sample benefit for this analysis; my sample calculations resulted in a benefit to society totaling \$3,163,838.33. This benefit represents the avoidance of disability-adjusted life years by the 23 female UNI faculty and staff diagnosed with breast cancer at a hypothetical June 2010 breast cancer screening.

This thesis will prove useful to the administration of the University of Northern Iowa as they make decisions regarding the implementation of an employee wellness program. In addition to providing recommendations about health services for UNI's wellness program, it explores the economic impacts UNI could experience as a result of its wellness program, and suggests a method for evaluating these impacts further.

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Appendix I: Cianbro

<i>Component</i>	<i>Strength</i>	<i>Weakness</i>	<i>Reasoning</i>
Goals: Cianbro's wellness program is very outcome focused. The goal is very simply "to eliminate at-risk behavior and achieve zero incidents [accidents]"	X	X	With clearly defined goals, Cianbro has built a unified program. The narrow focus leaves out other wellness issues, however.
Mandatory HRA: Every employee enrolled in Cianbro's medical plan is required to complete a HRA whether they are in the wellness program or not.	X		The company has removed a potential barrier to entry. Making the HRA mandatory means joining the wellness program requires no extra effort.
Spousal involvement: Spouses are required to join for the couple to qualify for the 15% health discount.	X		Family and peer support certainly doesn't hurt. Also, if the spouses are covered by the health insurance, this increases any benefits of reduced costs.
One-on-one health coaching: Originally face-to-face but now telephonic	X		Personalized communication makes the participants more responsible and gives them motivation to change their behavior.
Wellness Tracking System: This computer program monitors the health biometrics and medical history of every participant	X		This data shows real improvements and gives the participants something to work for.
Management Support: Cianbro gave presentations to every level of management about the wellness program	X		This indicates to the employees there is a long-term commitment to the program. They are more likely to invest in it.
No on-site fitness program or fitness subsidies	X	X	Cianbro saved money but may have inconvenienced employees.
Tobacco Free Status: In 2003 they used nicotine replacement therapy to help implement this status	X	X	This action intrudes into the employees' personal lives but saves the company money.

Appendix II: City of Gainesville

<i>Component</i>	<i>Strength</i>	<i>Weakness</i>	<i>Reasoning</i>
Goals: Gainesville has the clear goal of reducing healthcare costs by “help[ing] employees take charge of their own healthcare”	X		With this clear-cut goal, Gainesville focused on the programs that would get them there, such as education programs
Flexibility: Gainesville offered services whenever they were most convenient for employees, including at shift-change.	X		Gainesville has shown commitment and a willingness to go the extra mile. Employees recognize this and could be motivated to do the same.
Variety of services: Cancer, sun protection, seat belt usage, weight loss, tobacco use, and depression are topics covered by the program	X		Improvements in many of these areas are harder to show. All of these areas have potential to reduce healthcare costs, however.
Informal wellness teams	X	X	Peer support improves performance. Not all members have access to the teams if there is no one in their department that wants to informally start one.
Fitness Centers: Gainesville has 15 fitness centers. They intend to have one within walking distance of every facility.	X		Gainesville recognizes the value of time and convenience to its employees.
Union Support	X		Gainesville reports Union support as being vital to its success.
Structure: The program is comprised of many separate events, each promoting a different area of wellness. There is no program monitoring the health of the employees long-term yet. A website is used for updates.	X	X	The events add variety to the program. The website unifies the scattered employees. A computer monitoring system could provide a base to connect the variety of events. It would also show long-term improvements.

Appendix III: Employee Wellness Flyer

University of Northern Iowa
Employee Wellness Program
Wellness and Recreation Services

Facilitating
Awareness—Empowerment--Action

Wellness Outreach	Wellness/Recreation Center
Wellness Resource Lab	Health Beat
Individual Consultations & Group Programs	Aquatics
Massage Therapy	Outdoor Recreation
Screenings & Assessments	Fitness & Leisure Classes
Employee Assistance Program	Personal Training
Red Cross Certifications	Family Activities
Wellmark Resources	

Wellness Resource Lab: Visit this “hub of wellness” in the Wellness/Recreation Center, room 104, with its library of books, magazines, videos, and pamphlets, blood pressure testing station, displays, pedometers, and more to support your wellness interests. Materials may be checked out or enjoyed in this attractive comfortable setting. Massage therapy and other special events and activities also occur here. We invite you to visit the Wellness Resource Lab; we’ve got so much to offer you here.
<http://www.uni.edu/wellrec/wellness/lab/index.html>

Massage Therapy: Massage therapy provides many benefits, including stress and pain relief. Licensed massage therapists provide their services in the Wellness Resource lab, WRC 104. Clients may schedule appointments of 15-to-90 minute lengths by calling or stopping by WRC 104 during office hours. Do you need to be “kneaded”? Call us today!
319-273-6119
www.uni.edu/wellrec/wellness/massage_therapy.html.

Wellness Outreach: A variety of services, programs, events, and activities are offered to help you on your journey to wellness, including the *Words of Wellness* employee newsletter, wellness fairs, labyrinth, flu vaccine clinics, Wellness on Wheels, over-the-counter products in the UNI Pharmacy, travel consultations/immunizations at the Student Health Clinic and more. Stay informed regarding upcoming events by checking UNIONline and the WRS web site.
319-273-6119
www.uni.edu/wellrec/UNI_employee_wellness/index.html
<http://www.uni.edu/wellrec/wellness/index.html>

Individual Consultations/Group Programs: WRS professional staff bring their expertise in diverse areas of health and wellness to the private consultations, group programs and support group services we provide UNI employees. Requested services commonly relate to healthy eating, tobacco cessation, exercise planning, stress management, general behavior change, and more. We can help you achieve the healthy lifestyle you seek.

319-273-6921

<http://www.uni.edu/wellrec/wellness/index.html>

Screenings & Assessments: Knowledge is power! The more you know about your health status, the more effectively you can implement strategies and activities for lifelong health and well being. WRS offers confidential blood chemistry profiles, blood pressure checks, online personal health assessments, and fitness assessments to assist you in your wellness journey. Know your numbers!

319-273-??????

www.uni.edu/wellrec/UNI_employee_wellness/index.html

Allen Employee Assistance Program (EAP): The Allen EAP is provided to help you and your family deal with personal problems affecting personal or family relationships, health and/or work performance. Allen EAP offers confidential initial assessment/referral and short-term counseling for employees and their immediate, tax dependant family members and/or those family members covered on the UNI health insurance plan. Life happens! Sometimes we all need help in dealing with it.

319-235-3550, or toll free at 1-800-303-9996

www.vpaf.uni.edu/hrs/eap/index.shtml

Wellmark Resources:

Wellness/Recreation Center (WRC): The state-of-the-art WRC offers a wide range of drop-in recreation, fitness, and leisure facilities: multi-purpose and racquetball courts, fitness areas (including a free weight room), indoor track, climbing wall, lap and leisure pools, saunas, and lounge areas with table tennis tables. For the competitive, we offer the Noon Basketball Association, Intramural Sports tournaments, and a variety of incentive fitness programs. Specialty areas, like the wall and pools may also be rented for family or group events.

319-273-6275

www.uni.edu/wellrec

Health Beat: The Health Beat is a fitness room on the ground level of the Maucker Union, north of the food court in the walkway to Lang Hall. During academic hours when the WRC fitness areas are closed for classes, the Health Beat is open for your weekday convenience. The Health Beat offers the same high quality cardio and strength training equipment as the WRC, along with locker rooms and locker and towel services. The Health Beat's central location couldn't be better! Stop by to check it out.

www.uni.edu/wellrec/facilities/healthy_beat.html

Aquatics: The WRC pools are great places to relax, exercise, learn new aquatic skills and bring family. The eight lane 25-yard lap pool, leisure pool with water slide, and spa provide a variety of programming choices, including water aerobics, lap and recreational swimming, adult and child swim lessons, lifeguarding and water safety courses, Panther Masters swim team, and general relaxation. Enjoy our facilities throughout the year, no matter your water skills.

319-273-7263

www.uni.edu/wellrec/aquatics

Outdoor Recreation: The Outdoor Recreation office offers equipment rental for all seasons and interests: canoes, kayaks, tents, sleeping bags, snow shoes, cross country skis, and more. Additionally,

items such as bike helmets, water bottles, socks, etc. may be purchased. Our outdoor adventure trips provide a lifetime of wonderful memories. And, instructional skill clinics, bike maintenance services, annual free bike mini-tune-ups, and trail maps are among the many other services available. Walk a different path....enjoy the great outdoors!

319-273-7163

www.uni.edu/wellrec/outdoor_recreation

Fitness & Leisure Classes: Participation in a group setting for fitness and leisure can provide the motivation you need. You'll not find a more varied class selection anywhere! No matter your fitness level or physical abilities, we've got classes on land and in water to develop your cardio and muscular strength, flexibility, balance, and more. In addition, our wide selection of dance and other skill classes will enhance your interest and enjoyment of leisure activities.

319-273-6275

www.uni.edu/wellrec/fitness/classes.html

Personal Training: Personal Training is a results-driven exercise program designed for you to work one-on-one with a personal trainer who will motivate you and provide guidance to help you reach your goals. With a focus on overall health and wellness, assessments, current educational information, and encouragement are provided in a professional manner. Physical activity can be fun and beneficial, no matter your fitness level. Consider using a Personal Trainer to help you get started.

319-273-7167

www.uni.edu/wellrec/personal_training

American Red Cross (ARC) Certifications: ARC Certification classes, conveniently offered in the WRC, provide campus community members the knowledge and skills necessary to respond to an emergency situation. CPR/AED, First Aid, and Bloodborne Pathogen classes are among those offered throughout the year. Individuals may register for scheduled classes or request a class be arranged for a departmental or organizational group.

319-273-7263

www.uni.edu/wellrec/certifications

Family activities: Family wellness is encouraged through the Family time privileges in the WRC for UNI employees, through day passes or the annual user fee. The WRC offers such fun and unique amenities for kids of all ages, like the water slide, bubble couch, and hot tub in the leisure pool, the climbing wall and more. Additionally, our Paddling Panther youth swim lessons (American Red Cross) are the best around.

319-273-6275

http://www.uni.edu/wellrec/user_policy/family.html

Appendix IV: UNI's Proposed Wellness Budget

UNI Employee Wellness Proposed FY11 Budget

To Continue Current Programs/Services

Salary Coverage for Portions Of WRS Staff Time Dedicated to Employee Wellness, including a 3% increase for FY11 SWFB (my layperson's estimate) approx.	\$40,000
Student Wages	\$8,000
S&S	<u>\$11,000</u>
SubTOTAL \$59,000	
2.5% Administrative Overhead Fee (since I believe this in non-GEF funded)	<u>\$1,475</u>
TOTAL \$60,475	

The above costs include all services provided previously, like the blood chemistry profiles, smoking cessation services, one/one consultations by WRS professional staff, bloodborne pathogen training, blood pressure checks, educational and incentive programs offered by WRS staff, online health assessments, the Words of Wellness newsletter, educational materials and marketing. We will intensive marketing to improve participation in/use of existing offerings.

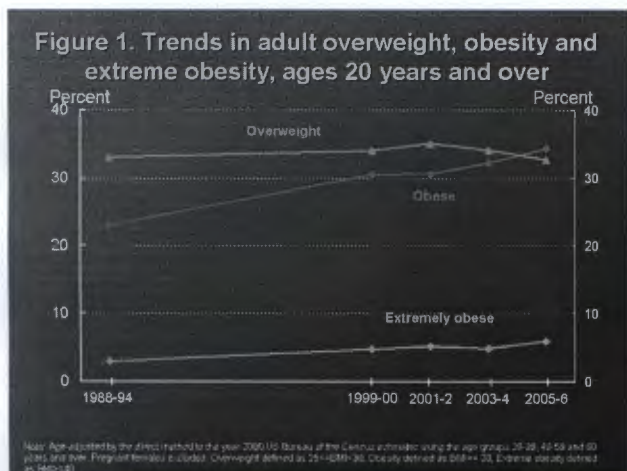
Blood Chemistry Profiles	\$20 each for 400 employees =	\$8,000
Smoking Cessation Services (nicotine replacement therapy)	\$20 each for 8 employees =	\$160
Words of Wellness and other educational, Marketing, and outreach materials		\$2,840

New proposed initiatives in a prioritized list for the VP to consider, include:

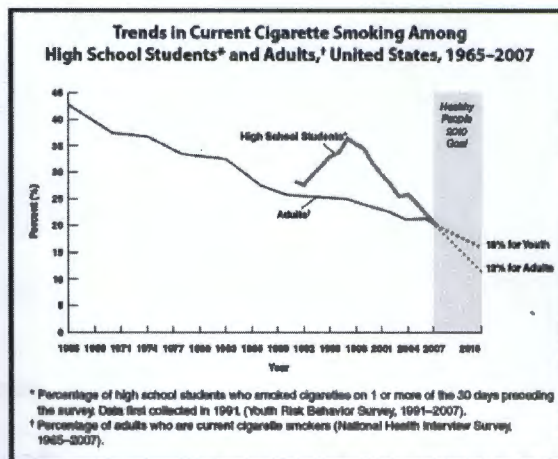
- Free flu vaccines for UNI employees,
provided by the UNI Student Health Clinic: \$15 each for 800 employees = \$12,000
- Reduction of employee user fee for fitness facilities,
Reducing to \$160 (\$20 reimbursement each for 600 employees) = \$12,000
or
Reducing to \$140 (\$40 reimbursement each for 800 employees) = \$32,000

We wonder if you may want to also **consolidate UNI's EAP expenses into this budget as well**, shifting those costs from the HR budget. Those costs include the contract cost and costs of printed materials and postage to send letters home to new employees. (Michelle or Cindy, you'd need to identify what those costs are).

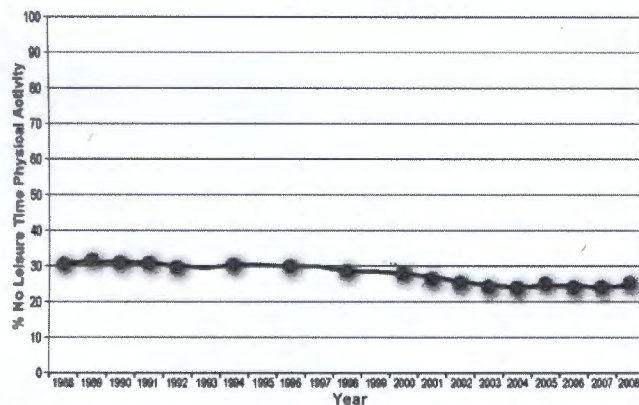
Appendix V: Change in the health of Americans



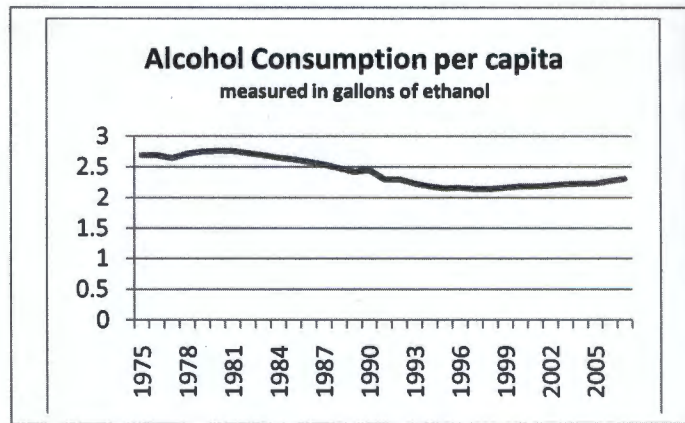
Source: Centers for Disease Control and Prevention



Source: Centers for Disease Control and Prevention



Source: Centers for Disease Control and Prevention



Source: National Institute on Alcohol Abuse & Alcoholism