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The Overall Costs of Obesity

This report investigates the direct and indirect costs of obesity in the State of Vermont. Direct costs constitute medical expenditures including out-of-pocket, Medicare/Medicaid, and private insurance covered expenses. Indirect costs are personal and employer incurred expenses that affect workplace productivity such as absenteeism and presenteeism. Other miscellaneous indirect personal costs range from life insurance premiums to extra gasoline consumption. Since there is limited state-level data about the indirect costs of obesity, this report will combine national-level statistics and data on Vermont's obese population to quantify the indirect economic consequences of obesity in Vermont.

Overview of Obesity in the US

Measuring Obesity

Obesity is commonly defined in terms of one's body mass. Following the Centers for Disease Control and Prevention's (CDC) definition, an overweight adult is a person with a body mass index (BMI) between 25 and 29.9. Adults with a BMI greater than 30 are considered obese.¹ According to the United States Department of Health (DOH), people who are obese or overweight have an increased risk of heart disease, stroke, type 2 diabetes, high blood pressure, breathing problems, arthritis, gallbladder disease, and some kinds of cancer.²

National Obese Population

At the national level, it is estimated that between 20% and 30% of the adult US population is obese,³ and this rate is increasing. In the next five years, 120 million Americans are expected to suffer from obesity.⁴

¹ Centers for Disease Control and Prevention. "Obesity and Overweight: Defining Overweight and Obesity." Centers for Disease Control and Prevention. <http://www.cdc.gov/obesity/defining.html> (accessed May 10, 2010).

² United States Department of Health. "Overweight, Obesity, and Weight Loss, 2009." <http://womenshealth.gov/faq/overweight-weight-loss.cfm> (accessed April 28, 2010).

³ Sullivan, Patrick W., Vahram Ghushchyan, and Rami H. Ben-Joseph. "The Effect of Obesity and Cardiometabolic Risk Factors on Expenditures and Productivity in the United States." *Obesity* 16 (2008): 2155–62.

Overview of Obesity in Vermont

Vermont Obese Population

The prevalence of obesity among Vermont adults has doubled between 1990 and 2007.⁵ From 2007 to 2009, 23% of adults in the state were obese (BMI \geq 30) and 58.5% of adults were either overweight or obese (BMI \geq 25). In 2009, 12.9% of children from ages 10 to 17 were obese⁶ and 13.8% were overweight.⁷ In that same year, 24% of adult males were obese and 43% were overweight. Additionally in 2009, 21.7% of adult females were obese and 25.3% were overweight.⁸

General Causes of Obesity & At Risk Demographics

Obesity is a problem affecting people of all ages, races, ethnicities, and socioeconomic classes. Originally obesity was concentrated unevenly across different cohorts. However, due to increased urbanization, change in work structure, technology, increased availability to calorically dense foods, and sedentary lifestyles the disease has become more ubiquitous.⁹ Factors that contribute to people becoming obese include “a tendency to eat meals away from home, increased soda consumption, large portion sizes, eating fewer fruits and vegetables, driving more than walking or biking, increased time spent in front of the television, and fewer opportunities for physical activity.”¹⁰ For a full discussion of the causes of obesity see the VLRS report at www.uvm.edu/~vlrs/Page=Health/health.html.

⁴ Sullivan et al. "The Effect of Obesity and Cardiometabolic Risk Factors on Expenditures and Productivity in the United States."

⁵ Vermont Department of Health. "Overweight and Obesity Prevention, Diseases and Prevention, 2005," Vermont Department of Health. <http://healthvermont.gov/fitandhealthy.aspx#obesity> (accessed May 10, 2010).

⁶ Levi, Jeffrey, Vinter, Serena, St. Laurent, Rebecca, and Segal, Laura M. "F as in Fat: How Obesity Threatens America's Future. Public Health, Washington: Robert Wood Johnson Foundation," 2010. <http://www.rwjf.org/files/research/20100629fasinfatmainreport.pdf> (accessed August 3, 2010).

⁷ The percentage of overweight children in 2009 was found by subtracting the percentage of obese children in Vermont as reported from Levi et al. from the percentage of overweight and obese children as reported by Kaiser State Health Facts; Kaiser Family Foundation. *Facts At-A-Glance*. <http://www.statehealthfacts.org/profileglance.jsp?rgn=47&rgn=1> (accessed November 2010).

⁸ "F as in Fat: How Obesity Threatens America's Future. Public Health, Washington: Robert Wood Johnson Foundation."

⁹ Bovbjerg, Viktor E. "The Epidemiology of Obesity: Causal Roots – Roots of Cause." In *Obesity: Causes, Mechanisms, Prevention and Treatment*, edited by Elliott M. Blass, 19-72. Sunderland: Sinauer Associates, Inc., 2008; Price, R. Arlen. "Genetics and Common Obesities: Background, Current Status, Strategies, and Future Prospects." In *Handbook of Obesity Treatment*, edited by Thomas A. Wadden and Albert J. Stunkard, 73-94. New York: The Guilford Press, 2002;

Cabellero, Benjamin. "The Global Epidemic of Obesity: An Overview," *Epidemiologic Reviews*, 29 (2007): 1-5.

¹⁰ Vermont Department of Health. "Obesity Prevention Plan and Target Areas, Diseases and Prevention, 2005." <http://healthvermont.gov/family/fit/target.aspx#bf> (accessed May 10, 2010).

In Vermont, data collected from 1999 to 2003 indicates the prevalence of obesity is most common in people between the ages of 55 and 64. However, the state is seeing the highest increase in obesity rates in women aged 18 to 34 (estimated 7% increase) and in men aged 25 to 44 (estimated 4% increase). Although BMI has been increasing since the early 1990s, African Americans in Vermont have maintained the highest BMI (≈ 30 -33), followed by American Indians (≈ 29 -32), Caucasians (≈ 28 -30), and Asian Americans (≈ 26 -28).¹¹

Vermont's low-income population represents a high percentage of the obese population due to issues of food security. The Vermont Department of Health explains, "Data from the Vermont Behavioral Risk Factor Surveillance System indicates that adults who are in the extreme obesity category (BMI > 40) report the highest prevalence of experiencing hunger in the past month."¹² The DOH explains this imbalance as the result of adults without food security compromising quality for quantity, and therefore eating higher-calorie but lower-cost foods.¹³

The Vermont DOH cites several statistics that demonstrate the effect of socioeconomic status on obesity. In 2004, 11% and 16% of obese and morbidly obese people in Vermont reported, "they don't have enough food or enough money to buy food," as opposed to the 9% of healthy weight and the 7% of overweight individuals who shared this problem.¹⁴ According to 2005 data, 25% of obese adults in Vermont earned less than 125% of the Federal poverty level and 23% of obese adults earned between 125% and 225% of the federal poverty level.¹⁵

Costs of Obesity in the US

Direct and Indirect Costs

Integral to understanding the expenses associated with obesity is the distinction between direct and indirect costs. Direct costs include both out-of-pocket and insurance-covered expenditures related to physician services, hospital care, and pharmaceuticals. Indirect costs include loss of productivity from absenteeism and presenteeism, disability, premature mortality, life insurance

¹¹ Vermont Department of Health. "Obesity and Health Status Report 2006, Burlington: Vermont Department of Health." <http://healthvermont.gov/research/chronic/documents/ObesityHealth2006.pdf> (accessed May 10, 2010).

¹² Vermont Department of Health. "Fit and Healthy Vermonters: Preventing Obesity in Vermont A Statewide Plan Engaging Individuals, Organizations, Communities, Government, and Industry: 2006." http://healthvermont.gov/family/fit/documents/Obesity_Plan.pdf (accessed May 10, 2010).

"Hunger is defined as a feeling in adults who report eating less than they should because there is not enough food or money to buy food. The prevalence of obesity and hunger is highest among lower-income Vermonters."¹³ Vermont Department of Health. "Fit and Healthy Vermonters: Preventing Obesity in Vermont A Statewide Plan Engaging Individuals, Organizations, Communities, Government, and Industry."

¹⁴ Vermont Department of Health. "The Health Status of Vermonters 2008, Burlington." Vermont Department of Health. <http://healthvermont.gov/pubs/documents/HealthStatusRpt2008.pdf> (accessed May 10, 2010).

¹⁵ Vermont Department of Health. "The Health Status of Vermonters 2008, Burlington." Vermont Department of Health. <http://healthvermont.gov/pubs/documents/HealthStatusRpt2008.pdf> (accessed May 10, 2010).

and other personal expenses.¹⁶

Direct Costs: Medical Expenditures

A 2009 study conducted by the Research Triangle Institute and the Centers for Disease Control and Prevention (CDC) lists the total health care cost associated with obesity in the US at \$147 billion dollars a year, which includes Medicare, Medicaid, and private insurance payments.¹⁷ This represents an increase from 6.5% of total health care spending on obesity in 1998 to 9.1% in 2006.¹⁸ On average, obese Americans incur \$1,429 more per year in medical expenditures compared to their normal weight counterparts.¹⁹

In the US, Medicare pays on average \$95 more for inpatient services, \$693 more for outpatient services, and \$608 more for prescription drugs for a single obese patient. Medicaid pays, on average, \$213 per year more for inpatient services, \$175 more for outpatient services, and \$230 more for prescription drugs. Private insurers annually pay \$443 more for inpatient services, \$398 more for “non-inpatient” services,²⁰ and \$284 more for prescription drugs. In all, for each “obese beneficiary,” Medicare pays \$1,723 more, Medicaid pays \$1,021 more, and private insurers pay \$1,140 more per person in annual medical expenses.²¹

Indirect Costs: Absenteeism & Presenteeism:

Productivity loss due to absenteeism and presenteeism is the most significant cost to employers. Absenteeism is defined as absence from work measured by the annual number of sick days.²² In contrast, presenteeism is time lost at work due to a decrease in productivity.²³ There is a correlation between rates of absenteeism and presenteeism and levels of obesity; as the weight of a worker increases, their rate of presenteeism and absenteeism increases. A

¹⁶ Dor, A., Ferguson, C., Langwith, C. L., & Ellen Tan. (2010, September 21). “A Heavy Burden: The Individual Costs of Being Overweight and Obese in the United States.” *The George Washington University School of Public Health and Health Services*. Retrieved from <http://www.gwumc.edu/sphhs/departments/healthpolicy/pdf/heavyburdenreport.pdf> (accessed October 14, 2010).

¹⁷ Centers for Disease Control and Prevention Division of Media Relations, “Study Estimates Medical Cost of Obesity May Be as High as \$147 Billion Annually,” 27 July 2009, <http://www.cdc.gov/media/pressrel/2009/r090727.htm> (accessed May 10, 2010).

¹⁸ Centers for Disease Control and Prevention Division of Media Relations, “Study Estimates Medical Cost of Obesity May Be As High as \$147 Billion Annually.”

¹⁹ Centers for Disease Control and Prevention Division of Media Relations, “Study Estimates Medical Cost of Obesity May Be As High as \$147 Billion Annually.”

²⁰ Researchers’ term, meant to include all services other than in-patient.

²¹ Eric A. Finkelstein, Justin G. Trogdon, Joel W. Cohen, and William Dietz, “Annual Medical Spending Attributable To Obesity: Payer- And Service-Specific Estimates,” *Health Affairs*, 2009; 28(5): w822–w831, <http://content.healthaffairs.org/cgi/reprint/28/5/w822> (accessed June 30, 2010). The overall numbers reported in this sentence are not the sum of the numbers in the above because the researchers derived all of the numbers using multiple regression analysis—these numbers represent averages produced after controlling for other factors associated with increased health care costs, not simple sums.

²² A Heavy Burden: The Individual Costs of Being Overweight and Obese in the United States.

²³ A Heavy Burden: The Individual Costs of Being Overweight and Obese in the United States.

2010 study by Finkelstein et al. found that the cost of absenteeism and presenteeism in the US totaled \$42.8 billion per year.²⁴

Presenteeism is the leading cause of productivity loss among full-time obese employees.²⁵ Finkelstein et al. in their 2010 study found the total cost of presenteeism for employers to be \$30 billion per year. To break this number down further, the study noted that among obese men the cost of presenteeism ranged from \$391 to \$3,792, increasing with each grade of obesity, with the largest number equating to more than one month per year of lost work time on the job.²⁶ Costs associated with presenteeism for female employees ranged from \$797 for overweight women to \$6,694 for women in the highest obesity gradient.²⁷

A similar study conducted by Donna Gates of the University of Cincinnati explained that, "Moderately to extremely obese workers had limitations in time needed to complete work tasks and ability to meet physical work demands. These limitations were significantly greater than overweight or mildly obese groups."²⁸ From the sample of 341 manufacturing employees, the indirect costs due to losses in productivity from moderately to severely obese employees were estimated to be significantly higher than other workers. The study concluded, "Based on an average hourly wage of \$21, the annual costs of presenteeism for moderately to extremely obese workers were nearly \$1,800, about \$500 higher than for other workers."²⁹

The 2010 study conducted by Finkelstein et al. determined the aggregate cost of absenteeism for employers to be \$12.8 billion per year. Costs associated with absenteeism for female employees ranged from \$147 for overweight women to \$2,395 for women in the grade III obesity category (BMI > 40). Costs attributable to absenteeism for men ranged from \$85 for overweight men to \$1,026 for men in the grade III obesity category (BMI >40).³⁰ To put this in context, a company of 1,000 employees would suffer an estimated cost of \$133,170 per year.³¹

The total cost of obesity in the work place in 2010 was \$73.1 billion. To break this number down further, 41% of these costs can be attributed to presenteeism, 18% to absenteeism, and 41% to medical expenditures.³² Along gender divisions the cost of obesity for men in the workplace

²⁴ Finkelstein, E. A., DiBonaventura, M. D., Burgess, S. M., & Hale, B. C. (2010, October). "The Costs of Obesity in the Workplace." *Journal of Occupational and Environmental Medicine*, 52(10), 971-971.

²⁵ The Costs of Obesity in the Workplace.

²⁶ The Costs of Obesity in the Workplace.

²⁷ The Costs of Obesity in the Workplace.

²⁸ New Mexico Wellness Coalition. "Study Shows That Obesity Can Reduce Job Performance."

http://nmwellnesscoalition.org/news_as.html (accessed August 3, 2010).

²⁹ Medical News Today. "Obesity Linked to Reduced Productivity at Work: January 2008." Medical News Today.

<http://www.medicalnewstoday.com/articles/93402.php> (accessed May 10, 2010).

³⁰ Finkelstein et al., "The Costs of Obesity in the Workplace."

³¹ This number was derived by averaging the total cost of absenteeism for men and women and applying 23% (average rate of obesity) to a 1,000 person work force to determine the number of obese employees. After we calculated the number of obese workers we multiplied it by the total average cost per employee.

³² The Costs of Obesity in the Workplace.

was \$33.8 billion and \$39.3 billion for women. These findings suggest productivity loss associated with obesity generates a significant financial burden to employers and should be considered in calculating the total costs of obesity.³³

Disability, Mortality, and Personal Expenditures:

Other indirect costs associated with obesity are included in Table 1. The first two terms, short term disability and disability pension insurance, are costs that directly burden employers. Premature mortality, life insurance, and gasoline expenditures are personally incurred expenses. Table 1 projects the individual annual incremental costs for each of these indirect costs in 2009 dollars.

Table 1: Indirect Per Person Annual Obesity Related Costs in 2009 Dollars³⁴

	Definition:	Annual Incremental Costs:
Short Term Disability	Salary-continuation benefit for employees off work due to illness.	\$348
Disability Pension Insurance	Pension benefits paid to employees due to inability to work.	\$69
Premature Mortality	Value of years of life measured by the dollar value of a quality of life year (QALY).	\$3,679
Life Insurance	Hourly wage measured by medical care and indemnity costs received annually.	\$121
Gasoline Expenditure	Additional gasoline consumed	\$22

Source: A Heavy Burden: The Individual Costs of Being Overweight and Obese in the United States.

Workplace Injuries

Research indicates that overweight workers are more injury prone than their healthier co-workers. A study performed on Texas Shell Oil workers, for example, found that overweight employees had lower-back injuries at 1.42 times the rate of normal-weight employees. This rate was even higher, 1.53, for non-back musculoskeletal injuries. Another study, in New Zealand, found that those who were overweight were twice as likely as the general population to have carpal tunnel syndrome. In women, those with carpal tunnel syndrome were twice as likely to be obese as the general population. Additionally, acute conditions were almost twice as likely to become chronic in obese workers.³⁵

³³ The Costs of Obesity in the Workplace.

³⁴ Heavy Burden: The Individual Costs of Being Overweight and Obese in the United States.

³⁵ Schmier, Jordana K, Mechelle L Jones, and Michael T Halpern., "Cost of Obesity in the Workplace," *Scandinavian Journal of Work, Environment, & Health*, 32 (2006): 5-11, 32 (1).

The Total Cost of Obesity in Vermont

Public Insurance: Medicare & Medicaid

A study conducted in 2004 by Finkelstein et al. estimated annual obesity-related medical costs for the state of Vermont to be \$141 million (\$163.05 million in 2010 dollars).³⁶ Of this total cost \$29 million can be attributed to Medicare costs and \$40 million to Medicaid costs (both the federal and state share). The Vermont Legislative Research Service has calculated a more refined and up-to-date estimate of the Medicaid costs of obesity to Vermont using the different rates of obesity for children and adults in the state and found *Vermont's share* of the cost of obesity to Medicaid to be \$12.1 million in 2007 dollars (Vermont covers less than ½ the cost of Medicaid, the federal government covers the rest).³⁷ For further details on the cost of obesity for Medicaid, access the report at <http://www.uvm.edu/~vlrs/?Page=Health/health.html>. Additional expenditures can be attributed to other public options not covered by Medicare and Medicaid such as SCHIP (Dr. Dinosaur), Vermont Health Access Plan and Prescription Assistance; these programs are not included in the above calculations.

Private Insurance

To calculate the cost of obesity for privately insured Vermonters, we first found the number of people covered by private insurance.³⁸ Then we multiplied that number by 23% (rate of obesity in Vermont)³⁹ to determine the number of obese Vermonters covered by private insurance. We found that the number of privately-insured obese Vermonters was 79,557 people. Then using data from a 2009 publication, conducted by Finkelstein et al. it was determined that the extra cost for obese people covered by private insurance was \$1,140 in 2006 dollars.⁴⁰ Assuming that the cost of obesity in Vermont is similar to national estimates, we multiplied the number of obese Vermonters covered by private insurance by \$1,140; this number came to \$31.4 million after being adjusted for inflation in 2010 dollars which represents the total annual cost of obesity for private insurance in Vermont.

In a 2010 working paper for the National Bureau of Economic Research John Cawley and Chad Meyerhoefer report on a statistical analysis that estimates the medical costs of obesity to be

³⁶ E. A. Finkelstein, I. C. Fiebelkorn, and G. Wang, "State-level estimates of annual medical expenditures attributable to obesity," *Obesity Research*, vol. 12 no. 1 (January 2004), pp. 18-24.

³⁷ Gierzynski, A., McKeon, M., Sease, K., Simmons, J., & Fournier, K. (2010, August). The Medicaid Costs of Obesity to Vermont. *James M. Jeffords Vermont Legislative Research Service*.

³⁸ Kaiser Family Foundation. (2008). *Vermont: Health Insurance Coverage of the Total Population, states (2007-2008)*. Retrieved from <http://statehealthfacts.org/profileind.jsp?cmprgn=1&cat=3&rgn=47&ind=125c=39> (accessed October 14, 2010)

³⁹ Gierzynski, A., McKeon, M., Sease, K., Simmons, J., & Fournier, K. (2010, August). The Medicaid Costs of Obesity to Vermont. *James M. Jeffords Vermont Legislative Research Service*.

⁴⁰ Eric A. Finkelstein, Justin G. Trogon, Joel W. Cohen, and William Dietz, "Annual Medical Spending Attributable To Obesity: Payer- And Service-Specific Estimates," *Health Affairs*, 2009; 28(5): w822-w831.

much higher than earlier studies.⁴¹ Cawley and Meyerhoefer utilized an instrumental variable model to control for the possibility that people may have accrued medical costs for injuries that lead to obesity and to control for the biases associated with the self-reporting of weight. The research by Cawley and Meyerhoefer suggests the medical costs are much higher for private insurance. Their study concluded that the cost of obesity per person covered by private insurance was \$2,398. To put this in context for the State of Vermont, the total annual cost of obesity for private insurance after adjusting for inflation was \$190.8 million in 2010 dollars.⁴²

Indirect Costs

Workplace Productivity Loss: To determine the cost of absenteeism and presenteeism in the workplace for the State of Vermont, we first calculated the number of workers who suffer from obesity. By applying the national average of obesity (23%) to the number of people employed in the state we found the total number of obese workers. In 2006, there were 342,400 people employed in the State of Vermont.⁴³ Assuming, Vermont follows the national trend, we multiplied 23% by the number of Vermonters employed in 2006; this number indicates 78,752 workers were obese.

Using numbers presented in the study conducted by Finkelstein et al., we determined the magnitude of obesity-related spending for absenteeism and presenteeism to be \$2,381 per employee per year in 2010.⁴⁴ We multiplied the national cost of presenteeism and absenteeism by the number of obese employees in Vermont. This indicates that the total annual cost of absenteeism and presenteeism in Vermont is \$188 million.

Other Indirect Costs: Table 2 contains other annual obesity related costs for the State of Vermont. To determine the total cost of obesity for Vermont, the annual individual incremental costs for short term disability and disability pension insurance were multiplied by the number of obese workers in the state. The annual individual incremental costs for premature mortality, life insurance, and gasoline expenditures were multiplied by Vermont's total obese population.

⁴¹ Cawley, J., & Meyerhoefer, C. (2010, October). The Medical Care Costs of Obesity: An Instrumental Variables Approach. *NBER Working Paper Series*. Retrieved from <http://www.nber.org/papers/w16467> (accessed October 2010)

⁴² This is a "working paper" and not a peer reviewed article. We evaluated the methodology to the best of our ability and found it to be sound (Professor Gierzynski has utilized the instrumental variable approach that they use here). We will, however, be more confident in the findings of this paper once it undergoes peer review. Until that time instead of using the estimates from this research we present the findings as an alternative set of calculations that suggests the medical costs of obesity are higher than previously believed.

⁴³ Vermont Department of Labor. (2010, September 21). *Economic & Labor Market Information*. Retrieved from <http://www.vtlni.info/> (accessed October 14, 2010)

⁴⁴ To calculate the magnitude of obesity-related spending for absenteeism and presenteeism, we average the total costs attributable of obesity due to presenteeism and absenteeism for men and women.

Table 2: Total Indirect Annual Obesity Related Costs in 2010 Dollars⁴⁵

	Annual Individual Incremental Cost (in 2009 dollars):	Total Costs for Vermont: (in millions)
Short Term Disability	\$348	\$27.9
Disability Pension Insurance	\$69	\$5.5
Premature Mortality	\$3,679	\$294.9
Life Insurance	\$121	\$9.7
Gasoline Expenditure	\$22	\$1.7

Source: A Heavy Burden: The Individual Costs of Being Overweight and Obese in the United States

Conclusion

This report demonstrates that obesity represents a significant financial burden to public health expenditures, the workplace, and individually incurred indirect costs. Direct medical expenses due to obesity related diseases and injuries considerably increase costs for both public and private insurers. Presenteeism and absenteeism is the most significant cost to employers, followed by short term disability and disability pension insurance. Additionally, the cost of obesity is not confined to medical expenditures, productivity loss, and disability but also includes other personally incurred expenses, such as life insurance and gasoline consumption. Cawley and Meyerhoefer’s recently published findings suggest direct medical costs attributable to obesity are significantly higher than previous studies have indicated. These new calculations are bolded in the third column of Table 3. Using the data presented in this report the total annual cost of obesity for the State of Vermont, its employers, and private citizens was estimated to be \$615.2 million. If we utilize the estimates of medical costs of obesity calculated by Cawley and Meyerhoefer’s the total is estimated to be \$718.5 million. Table 3 provides a complete breakdown of the factors contributing to this figure and has been adjusted for inflation to 2010 dollars. All numbers in this report were adjusted using the United States Bureau of Labor Statistics CPI inflation calculator.⁴⁶

⁴⁵ A Heavy Burden: The Individual Costs of Being Overweight and Obese in the United States.

⁴⁶ Bureau of Labor Statistics. “CPI Inflation Calculator.” Retrieved from <http://www.bls.gov/home.htm> (accessed November, 2010.)

Table 3: Total Annual Cost of Obesity for the State of Vermont, Employers, Private Citizens
(In 2010 dollars)

Factors Attributable to the Cost of Obesity:	Total Costs (in millions):	Total Costs Utilizing the IV Approach (in millions):
Medicare	\$43.3	\$43.3
Medicaid (Vermont's share)	\$12.8	\$12.8*
Private Insurance	\$31.4	\$190.8
Absenteeism & Presenteeism	\$188	\$188
Short Term Disability	\$27.9	\$27.9
Disability Pension Insurance	\$5.5	\$5.5
Premature Mortality	\$294.9	\$294.9
Life Insurance	\$9.7	\$9.7
Gasoline Expenditure	\$1.7	\$1.7
Estimated Total Costs	\$615.20	\$718.50

*The Instrumental Variable approach did not find a statistically significant difference so we use our estimate from the VLRS report "Medicaid Costs of Obesity" (adjusted for inflation) here.

Compiled at the request of the Vermont Attorney General's Office by Jason DePatie, Kelly Walsh, Kate Fournier, Benjamin Lidofsky, Ryan Kendall Waingortin, and Justin Woodie under the supervision of Professor Gierzynski on November 16, 2010.

Disclaimer: This report has been prepared by undergraduate students at the University of Vermont under the supervision of Professor Anthony Gierzynski. The material contained in the report does not reflect the official policy of the University of Vermont.