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Initiation and Maintenance of Fitness Center Utilization in an Incentive-Based Employer Wellness Program

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Abstract

Objective—Investigate the initiation and maintenance of participation in an employer-based wellness program that provides financial incentives for fitness center utilization.

Methods—Using multivariate analysis, we investigated how employees' demographics, health status, exercise-related factors, and lifestyle change preferences affect program participation.

Results—Forty-two percent of eligible employees participated in the program and 24% earned a \$20 incentive at least once by utilizing a gym 8 times or more in a month. On average, participants utilized fitness centers 7.0 months each year and earned credit 4.5 months. Participants' utilization diminished after their first year in the program.

Conclusions—Factors associated with initiation and maintenance of fitness center utilization were similar. Declining utilization over time raises concern about the long-run effectiveness of fitness-focused wellness programs. Employers may want to consider additional levers to positively reinforce participation.

Workplace wellness programs have diffused rapidly over the past decade in response to advocacy from the business community, public health efforts such as recommendations from the Community Preventive Services Task Force¹, and legislation including the Affordable Care Act. Among U.S. firms offering health benefits, 76% of small firms and 99% of large firms offer at least one type of wellness program. A significant proportion of employers offer incentives such as lower insurance premiums for participation or achievement of health-related outcomes. Exercise-focused programs such as on-site gym facilities or fitness center membership discounts are particularly prevalent.²

Employers, public health advocates, and policymakers want to know whether participation in programs that target exercise behavior can improve health, reduce medical care spending, or improve workers' productivity. Because exercise-based wellness programs are voluntary,

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their success depends on employees' willingness to initiate and maintain participation in the program. Thus, it is critical to understand who chooses to participate in the program and to identify the characteristics which facilitate and inhibit participation.

Empirical evaluations of participation in exercise-based employer wellness interventions are limited. Examining the responses of employees during the first year of an incentive-based, exercise-focused program, Abraham and colleagues³ reported that younger employees, females, and those reporting to be regular exercisers prior to the program launch were more likely to sign up. Royer et al.⁴ conducted a field experiment and studied 1,000 employees in a Fortune 500 firm. They found that gym attendance rates were doubled among those receiving an incentive (\$10/visit up to 3 visits per week for 1 month) relative to a control group. Although investigators recognize the importance of tracking long-term behavioral outcomes, to date, no one has assessed the factors associated with the initiation and maintenance of participation in these programs.^{5,6}

This study adopts a multi-disciplinary approach to analyze fitness center utilization within an incentive-based wellness program. While studying the same institutional setting as Abraham et al.,³ we use newly available longitudinal data from the first three years of the program, including responses to Health Risk Assessments (HRAs), to answer novel questions regarding program participation. First, we use objective measures of fitness center utilization to examine how participation rates evolved over time at the employer-level. Second, we merge program data with medical claims and employees' HRA responses to examine the relation between program participation and employees' demographic, economic, and health status attributes as well as their preferences for making specific lifestyle changes and perceived barriers to change. The longitudinal data allow us to investigate the effects of these factors on both initiation and maintenance of fitness center utilization. Third, we investigate whether participants' fitness center utilization rates increased, sustained, or decreased with time in the program.

Methods

Study Setting

The study setting is the University of Minnesota, a large, public university with major campuses in Minneapolis, St. Paul, and Duluth from 2008–2010. Each year, approximately 95% of the university's employees enroll in the 'UPlan' medical insurance program. On January 1, 2008, the University launched the incentive-based Fitness Rewards Program (FRP) to promote regular exercise among its covered population. The FRP has two eligibility requirements: (1) Enrollment in the UPlan and (2) 18 years of age or older. The FRP provides a monthly financial reward of \$20 for utilizing a fitness center at least 8 times per month. Participating centers include university-based centers, national chains, local chains, and independent facilities. The program uses fitness center swipe data to track the frequency of utilization. Enrollment in the FRP is on-going throughout the year. FRP disenrollment can occur if an individual drops his or her fitness center membership or health insurance, or severs employment with the university.

Data

We used multiple data sources, including UPlan enrollment files, claims data, and human resources data to identify FRP-eligible employees, demographic attributes and, health status. Data from the UPlan's health insurers provided FRP participants' fitness center utilization for each month participants were enrolled in the program. Responses to annual online HRAs provided information about body mass index (BMI), exercise habits and limitations, as well as plans and barriers for making lifestyle changes. To protect employees' privacy, a trusted third party administrator removed all personal identifying information and provided an encrypted unique person identifier consistent across data sources and over time.

The study population included all employees who were FRP-eligible at any point during 2008–2010 and completed at least one HRA between 2006–2010. We identified 23,427 FRP-eligible employees in our enrollment data, of which we excluded 1,177 with missing data for at least one variable from UPlan enrollment or claims data. Of these FRP-eligible employees, 10,622 or 48% completed an HRA. Our sample was similar to the overall UPlan population, except that employees who completed an HRA had higher odds of being female, married, and not being in the lowest income quartile of employees (\$0–\$32,617). Full analysis of the difference between employees completing and not completing HRAs is available in supplemental material.

Measures

The initiation of FRP participation was defined as when an FRP-eligible employee enrolled in the FRP and utilized a fitness center for a first time. We identified time to initiation of FRP participation by counting the number of months the employee had been FRP-eligible up to their first fitness center utilization. For FRP-participants, we identified time to initiation of earning credit (i.e., at least eight visits in one month) by the number of months between their first fitness center utilization and earning their first credit. All employees with no fitness center utilization (or credit earned) were censored after December 2010.

We defined maintenance of FRP participation as the sum of all months during the year with any fitness center utilization and the annual number of months earning credit as the sum of all months during the year in which credit was earned.

For baseline demographics, we included a set of age categories (18–35 (reference), 36–50, 51 and older), female, married, and number of child dependents. Baseline economic attributes included W-2 income quartile based on all employees (<\$32,617 (reference), \$32,618–\$45,400, \$45,401–\$67,646, and >\$67,658) and job location (East Bank-Minneapolis (reference), West Bank-Minneapolis, St. Paul, Duluth, Other campuses). To measure employees' health risk at baseline, we used a risk-adjustment algorithm designed by the University of California-San Diego for the Chronic Illness and Disability Payment System (<http://cdps.ucsd.edu/>, 2013). We normalized the measure so that one was equal to the mean of entire UPlan enrolled employee population.

When merging the HRA data, we used the HRA with the date closest to the first month of FRP-eligibility; 68% of linked individuals completed an HRA within six months of their initial month of FRP-eligibility. Using the HRA responses, we measured baseline BMI

category (underweight, normal weight (reference), overweight, and obese), days per week of vigorous exercise (zero (reference), one, or two or more), and existence of an exercise limitations due to physical condition. Additionally, employees indicated their plans for making a series of lifestyle changes, including exercise and losing weight. From their responses, we constructed a set of binary indicators corresponding to whether an employee indicated that they wanted to change their exercise habits within 6 months, they had recently changed their exercise habits within the last 6 months, or they had either made this change over 6 months ago or had no plans to change their exercise habits (reference).⁷ We constructed an analogous set of indicators regarding plans for change related to weight loss. Finally, we defined a set of indicators for perceived barriers to any lifestyle change, including time barriers, not worth the effort, trouble staying committed, and giving into temptations.

Initiation and Maintenance Model Specifications

For the FRP to provide meaningful change in participants' health behaviors, programs must not only motivate an initial change in behavior (initiation), but also enable those behavioral changes to be maintained over time (maintenance). For this reason, we chose to separately model initiation and maintenance. To account for timing of initiation and right censoring of our data, we use complementary log-log discrete-time survival models to estimate FRP-eligible employees' initial fitness center utilization and FRP participants' initial credit earned. We discretely controlled for FRP-eligible employees' duration (i.e. time at risk) by including monthly indicators corresponding to the number of months of FRP-eligibility in the case of the fitness center utilization model and indicators for the number of months since first fitness center utilization for the credit model. We controlled for employees' baseline (i.e. first year of FRP-eligibility) demographics, economic attributes and health status, as well as baseline self-reported body mass index (BMI), pre-existing weekly exercise habits, the presence of any exercise limitation, preferences for making lifestyle changes regarding exercise and weight loss, and barriers to making lifestyle changes. Given individuals' tendency to exercise outdoors when weather is favorable, we used calendar month indicators to control for seasonality. We clustered standard errors by employee to control for correlation across observations of the same individual.

For maintenance, we used negative binomial count regression models to estimate FRP participants' annual number of months of fitness center utilization and annual number of months earning credit. We allowed FRP participation to be an absorbing state and only included person-year observations after an FRP-eligible employee initiated fitness center utilization. For example, an FRP-eligible employee with positive fitness center utilization in year 1 and no utilization in years 2 or 3 is considered a FRP participant throughout the study period and all three years are included in this analysis. We included the same baseline demographic, economic, health status, and exercise measures as the initiation models. To determine if rates of fitness center utilization changed with time in the FRP, we included indicators for whether the participant was in her first year (reference), second year, or third year of the FRP. Because some employees were not eligible for a full 12 months of each year, we use an offset of the number of FRP eligible months.

Results

Overall Participation

Among our sample of FRP-eligible employees, 42% initiated program participation and 24% earned credit at least once between 2008 and 2010. In 2008, 2,610 FRP-eligible employees participated in the program, while 1,025 and 832 had their first participation in 2009 and 2010, respectively. Of participants, 494 had no fitness center utilization after their first year and an additional 443 had no utilization after their second year of participation. Figure 1 summarizes by month, the percentage of employees with any FRP utilization and the percentage earning credit as a result of having at least eight fitness center visits during the month. We observe a gradual increase in both outcomes over time. Seasonal variation is also present with utilization typically increasing from September through March while decreasing from April through August.

On average, FRP participants had 7.0 months with any fitness center utilization per year and 4.5 months with credit per year. However, months of fitness center utilization fell from 7.5 months in 2008 to 6.5 months in 2010. Similarly, months of credit decreased from 4.9 in 2008 to 4.2 in 2010.

Table 1 reports descriptive statistics by FRP participant status. FRP participants are younger and more likely to be female than non-participants, although no significant difference by income was observed. Participants are less likely to be obese, while the proportion of overweight employees is similar across participants and nonparticipants. However, FRP participants are slightly healthier than non-participants, as evidenced by a lower risk score. Non-participants are more likely to want to change exercise habits within 6 months as well as change weight loss habits within 6 months.

Initiation

Results from our models of the initiation of FRP fitness center utilization and earning credit are reported in Table 2. Column (1) reports hazard ratios (HR) for the effects of the explanatory variables on FRP-eligible employees' fitness center utilization, whereas column (2) reports analogous results for FRP participants earning credit.

A statistically significant, inverse relationship exists between age and initiation of fitness center utilization. FRP-eligible employees of ages 36 to 50 (HR: 0.73) and 51 or older (HR: 0.61) have lower monthly incidence of initiating fitness center utilization relative to employees 18 to 35 years old. Among FRP participants, individuals 51 years of age or older have higher incidence of earning credit (HR: 1.21) as compared to participants 18–35. Female employees are more likely to initiate utilization (HR: 1.24), but we observe no significant differences by sex relating to incidence of earning credit.

Income also exhibits an association with fitness center utilization and with earning credit. Relative to those in the bottom income quartile (<\$32,618), employees in the second quartile (\$32,618–\$45,400) are less likely to initiate fitness center utilization (HR: 0.85), whereas employees in the highest quartile (>\$67,658) are more likely to do so (HR: 1.13). However, FRP participants in the highest income quartile are less likely to ever earn credit as

compared to those in the lowest quartile (HR: 0.88), possibly reflecting higher opportunity costs of time. We observe no empirical evidence to suggest that fitness center utilization or earning credit is related to individuals' health risk.

Pre-existing exercise behavior and exercise beliefs significantly affect initiation of FRP participation. Relative to employees who self-report no vigorous exercise during the week, those with 1 day per week or 2 or more days per week of vigorous exercise are more likely to initiate FRP participation (HR: 1.27 and 2.06, respectively). Additionally, employees who wanted to change their exercise habits within six months are less likely to initiate fitness center utilization (HR: 0.73) as compared to employees who either had "no plans to change" or "made this change over six months ago." Similarly, FRP participants who wanted to change their exercise habits are less likely to earn credit (HR: 0.68). However, employees who wanted to change their weight loss habits within the next six months were more likely to initiate fitness center utilization (HR: 1.13) and FRP participants are more likely to earn credit (HR: 1.09) relative to those with "no plans to change" or "made this change more than six months ago." Notably, the structure of the response options provided with the HRA questions about plans to change behavior may limit our interpretation. Employees who were already regular exercisers and had not initiated this level of activity in the past six months could only indicate that they had no plans to change their behavior (i.e., they would continue to be active). Because employees who indicated "no plans to change" included a majority of regular exercisers, they showed higher rates of fitness center utilization than those who planned to make changes.

Several perceived barriers to lifestyle changes are associated with initiation of fitness center utilization and earning credit. Notably, employees who reported that lifestyle changes are not worth the effort are less likely to initiate fitness center utilization (HR: 0.81) whereas those who reported challenges with giving into temptation are more likely to utilize (HR: 1.17). Among FRP participants, those reporting time barriers (HR: 0.93) and trouble staying committed (HR: 0.87) are less likely to earn credit, whereas participants who report giving into temptations (HR: 1.18) are more likely to do so.

Maintenance

In Table 3, we report model results for the maintenance of program participation, including the number of months during the year that FRP participants utilize the fitness center (column 1) and earn credit (column 2). On average, FRP participants utilized fitness centers approximately 7.0 months each year and earned credit about 4.5 months.

Both the age and sex of FRP participants influence the maintenance of fitness center utilization throughout the year. Older FRP participants have 0.72 additional months with utilization and 1.33 more months earning credit, relative to those 18–35 years of age. Female FRP participants have slightly lower utilization and months of earning credit relative to males. Additionally, FRP participants in the highest income quartile earn 0.42 fewer months of credit, on average, relative to employees in the lowest quartile. FRP participants who are obese have fewer months of fitness center utilization and earned credit as compared to those of normal weight. In contrast, vigorous exercisers (2+ days per week) have a larger number

of months of fitness center utilization and earned credit during the year (1.71 and 1.51 months, respectively).

FRP participants who report a desire to change exercise habits within 6 months have 1.28 fewer months of fitness center utilization and 1.58 fewer months of earning credit relative to those reporting “no plans to change” or “made this change more than 6 months ago.” Finally, FRP participants who report difficulty with time barriers (−0.30 months) and staying committed (−0.51 months) have fewer months earning credit, whereas FRP participants who report giving into temptation earn more months of credit (0.58 months).

Utilization Rates Over Time

We included indicators in the maintenance models to determine if FRP participants’ utilization rates changed over time. Longer duration in the program is negatively associated with the number of months an FRP participant has any fitness center utilization or earns credit. Specifically, FRP participants in their second and third years of the program have 0.51 and 1.05 fewer months of utilization, on average, relative to participants in their initial year. Similarly, FRP participants have 0.41 and 0.60 fewer months earning a credit, on average, relative to participants in their initial year.

Sensitivity Analysis

We conducted two additional specifications to check the robustness of our findings. First, we used a stricter definition of initiation, defining the outcome as two continuous months with utilization or credit versus just a single month. For neither outcome did our results change. Second, we defined interaction terms for a subset of explanatory variables (income quartile, plans for changing exercise habits, plans for changing weight loss habits, and vigorous exercise frequency) with an indicator for an employee having four or more months of eligibility. We included these interactions in the initiation model to assess whether the pattern of initiation was constant throughout the study period or if the timing of initiation varied for specific subgroups. Differences in initiation observed in our base models tended to be greatest during the start of FRP-eligibility and decreased after four months of eligibility. FRP-eligible employees in the highest income quartile, those with 2 or more vigorous days of exercise per week, or those wanting to make lifestyle changes for weight loss were most likely to initiate FRP participation relative to their reference categories. Complete results are reported in online supplemental material.

Discussion

Examining a heterogeneous employee population at a large public university with objective outcome measures, we find that 42% of eligible employees initiated participation in an incentive-based wellness program encouraging fitness center utilization. However, employees’ utilization over the years has been uneven. FRP participants, on average, utilized a fitness center only 7.0 months during the year and utilized frequently enough to earn credit only 4.5 months out of the year. Some of this pattern can be attributed to seasonality, whereby individuals are more likely to utilize a fitness center in fall and winter and less likely in spring and summer when the weather is more favorable for outside activities.

Our results suggest that a large proportion of FRP-eligible employees want to exercise as indicated by their desire to change their exercise plans within six months, but aren't participating in this program. Future work should help clarify the barriers that keep people from translating their intentions into action (e.g., cost, time) and whether there are ways to modify the wellness program to address these barriers. Consideration should also be given to factors that appear to facilitate participation. For example, individuals who indicated plans to lose weight within the next 6 months are more likely to have any utilization (but not likely to earn credit). This could signify that programs could work with people to develop and or act on a goal to guide their behavior.

Employees' behavior changed as their years of program participation increased. Specifically, employees in their second and third years have fewer months of fitness center utilization and fewer months of earning credit relative to those in their initial year. The reduction may reflect a drop in interest in the program or the perceived value of the incentive, which did not change during the three year period.

Employers may want to consider additional levers to reinforce fitness center utilization through alternative incentive mechanisms or program designs. For example, employers may want to experiment with augmenting incentives in response to consistency in fitness center utilization over time. Alternatively, programs may want to provide regular reminders to participants about their progress during the month as well as feedback regarding how they are doing relative to other participants.

Two study limitations are worth noting. First, our sample is restricted to employees who completed a health risk assessment. If employees who complete an HRA are more committed to wellness and health promotion, our findings may not generalize to the broader employee population. Second, we are only able to observe fitness center "swipe" card activity and thus, do not know whether or how much an employee exercises at each visit.

This study provides the first systematic assessment of the initiation and maintenance of employee participation in an exercised-focused employer wellness program. Findings from this analysis highlight the importance of monitoring employee wellness program participation over time as the novelty of and employees' interest in programs may wear off. This is particularly relevant given the rapid diffusion of employer wellness programs in recent years.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

1. Community Preventive Services Task Force. Obesity Prevention and Control: Worksite Programs. Available from: <http://www.thecommunityguide.org/obesity/workprograms.html>.
2. Kaiser Family Foundation and Health Research & Educational Trust. Employer Health Benefits Survey 2013. Available from: <http://kaiserfamilyfoundation.files.wordpress.com/2013/08/8465-employer-health-benefits-20131.pdf>.
3. Abraham J, Feldman R, Nyman J, Barleen N. What factors influence participation in an exercise-focused, employer-based wellness program? *Inquiry*. 2011; 48(3):221–241. [PubMed: 22235547]
4. Royer H, Stehr M, Sydnor J. Incentives, commitments, and habit formation in exercise: evidence from a field experiment with workers at a Fortune 500 Company. 2012 Nov. NBER Working Paper 18580. Available from: <http://www.nber.org/papers/w18580.pdf>.
5. Volpp K, John L, Troxel A, Norton L, Fassbender J, Lowenstein G. Financial incentive-based approaches for weight loss. *JAMA*. 2008; 300(22):2631–2637. [PubMed: 19066383]
6. Meenan R, Vogt T, Williams A, Stevens V, Albright C, Nigg C. Economic evaluation of a worksite obesity prevention and intervention trial among hotel workers in Hawaii. *J Occup Environ Med*. 2010; 52(Suppl 1):S8. [PubMed: 20061889]
7. StayWell Health Management, LLC. 2010

Figure 1.
Percent of Fitness Rewards Program-eligible Employees with Fitness Center Utilization or
Earning Credit by Month, 2008–2010

Table 1

Mean Characteristics of Fitness Reward Program-eligible Employees

	Fitness Reward Program Non- participants (N=6,155)	Fitness Reward Program Participants (N=4,467)	p-value
Had Any Fitness Center Utilization	0.00	1.00	-
Earned at Least One Credit	0.00	0.58	-
Age (years)	44.2 (11.5)	41.9 (11.1)	<0.001
Female	0.59	0.63	<0.001
Number of Child Dependents	0.20 (0.52)	0.19 (0.53)	0.441
Married	0.63	0.62	0.110
<i>Job Location</i>			
Minneapolis-East Bank	0.55	0.56	0.133
Minneapolis-West Bank	0.14	0.13	0.077
St. Paul	0.15	0.15	0.889
Duluth	0.10	0.10	0.867
Other Location	0.06	0.06	0.552
Income (\$)	56,000 (35,785)	56,670 (34,477)	0.333
Risk Score	0.94 (1.30)	0.89 (1.24)	0.070
<i>Body Mass Index</i>			
Underweight	0.02	0.01	0.359
Normal Weight	0.42	0.45	<0.001
Overweight	0.33	0.34	0.461
Obese	0.24	0.20	<0.001
Vigorous Exercise Days per Week	1.9 (1.9)	2.6 (1.8)	<0.001
Exercise Limitation	0.11	0.08	<0.001
<i>Plans for Exercise Habits</i>			
No Plans to Change/Made Change Over 6 Months Ago	0.30	0.37	<0.001
Wanted to Change within 6 Months	0.49	0.35	<0.001
Recently Changed	0.21	0.28	<0.001
<i>Plans for Weight Loss Habits</i>			
No Plans to Change/Made Change Over 6 Months Ago	0.42	0.43	0.060
Wanted to Change within 6 Months	0.35	0.30	<0.001
Recently Changed	0.23	0.27	<0.001
<i>Barriers to Lifestyle Changes</i>			
Not Worth the Effort	0.05	0.03	<0.001
Time Barriers	0.62	0.62	0.954

	Fitness Reward Program Non- participants (N=6,155)	Fitness Reward Program Participants (N=4,467)	p-value
Trouble Staying Committed	0.44	0.42	0.006
Giving into Temptations	0.41	0.44	0.001

Notes: Includes Fitness Reward Program-eligible employees from 2008–2010 who submitted at least one Health Risk Assessment from 2006–2010. Standard deviation shown in parentheses for continuous variables.

Table 2
Initiation of Fitness Center Utilization and Earning Credit in the Fitness Reward Program

Sample	Fitness Center Utilization, Hazard Ratio (95% CI)		Earning Credit, Hazard Ratio (95% CI)	
	(1)		(2)	
	FRP-eligible Employees		FRP Participants	
<i>Age (Reference=18–35)</i>				
36–50	0.73	*** (0.68, 0.79)	0.99	(0.91, 1.08)
51+	0.61	*** (0.56, 0.66)	1.21	*** (1.09, 1.34)
Female	1.24	*** (1.16, 1.33)	0.95	(0.89, 1.03)
Number of Child Dependents	1.04	(0.98, 1.1)	1.06	* (0.99, 1.13)
Married	0.95	(0.89, 1.02)	1.00	(0.93, 1.08)
<i>Job Location (Reference=East Bank)</i>				
Minneapolis-West Bank	0.89	*** (0.81, 0.97)	1.04	(0.94, 1.15)
Minneapolis-St. Paul	0.98	(0.9, 1.06)	1.01	(0.92, 1.12)
Duluth	1.02	(0.92, 1.13)	1.37	*** (1.22, 1.54)
Other Location	1.01	(0.89, 1.15)	1.50	*** (1.3, 1.74)
<i>Income Quartile (Reference=Quartile 1 ($\\$ < \\$32,617$))</i>				
Quartile 2 ($ \$32,618-\$45,400$)	0.85	*** (0.78, 0.94)	1.01	(0.92, 1.12)
Quartile 3 ($ \$45,401-\$67,646$)	0.99	(0.9, 1.09)	1.01	(0.91, 1.12)
Quartile 4 ($ \$67,659+$)	1.13	** (1.01, 1.25)	0.88	** (0.78, 0.98)
Risk Score	1.01	(0.98, 1.03)	1.01	(0.98, 1.04)
<i>Body Mass Index (Reference=Normal Weight)</i>				
Underweight	0.95	(0.74, 1.23)	1.47	*** (1.1, 1.96)
Overweight	1.02	(0.95, 1.09)	0.99	(0.91, 1.07)
Obese	0.92	* (0.85, 1.01)	0.93	(0.85, 1.03)
<i>Vigorous Exercise Days per Week (Reference=0 Days)</i>				
1	1.27	*** (1.14, 1.42)	1.06	(0.92, 1.22)
2+	2.06	*** (1.89, 2.24)	1.48	*** (1.33, 1.65)
Exercise Limitation	0.92	(0.82, 1.03)	0.95	(0.83, 1.09)
<i>Plans for Exercise Habits (Reference=No Plans/Made Change Over 6 Months Ago)</i>				
Wanted to Change within 6 Months	0.73	*** (0.67, 0.8)	0.68	*** (0.61, 0.75)

	Fitness Center Utilization, Hazard Ratio (95% CI) (1)	Earning Credit, Hazard Ratio (95% CI) (2)
Made Change in Previous 6 Months	0.99 (0.9, 1.08)	0.77 (0.7, 0.85)
<i>Plans for Weight Loss Habits (Reference=No Plans/ Made Change Over 6 Months Ago)</i>		
Wanted to Change within 6 Months	1.13 (1.03, 1.24)	1.09 (0.99, 1.21)
Made Change in Previous 6 Months	1.04 (0.95, 1.14)	1.04 (0.94, 1.15)
<i>Barriers to Lifestyle Changes</i>		
Not Worth the Effort	0.81 (0.69, 0.95)	0.94 (0.78, 1.13)
Time Barriers	1.05 (0.99, 1.12)	0.93 (0.86, 0.99)
Trouble Staying Committed	1.00 (0.94, 1.08)	0.87 (0.8, 0.94)
Giving into Temptations	1.17 (1.09, 1.25)	1.18 (1.09, 1.28)
<i>Month (Reference=January)</i>		
February	0.86 (0.71, 1.05)	0.97 (0.87, 1.08)
March	0.40 (0.32, 0.51)	0.88 (0.77, 1.01)
April	0.42 (0.33, 0.53)	0.76 (0.65, 0.89)
May	0.41 (0.31, 0.54)	0.71 (0.6, 0.84)
June	0.27 (0.2, 0.37)	0.80 (0.67, 0.95)
July	0.40 (0.3, 0.54)	0.87 (0.73, 1.04)
August	0.43 (0.32, 0.56)	0.61 (0.5, 0.75)
September	0.64 (0.51, 0.81)	0.83 (0.71, 0.98)
October	0.67 (0.54, 0.85)	0.93 (0.8, 1.08)
November	0.66 (0.52, 0.84)	0.74 (0.63, 0.87)
December	0.74 (0.58, 0.95)	0.66 (0.56, 0.78)

CI, Confidence Interval

Notes: Utilization models include monthly observations from 10,622 Fitness Reward Program-eligible employees. Credit survival models include monthly observations from 4,467 Fitness Reward Program participants. All models are complementary log-log survival models and include a set of monthly dummy variables for duration. Standard errors clustered by individual in parentheses.

*** p<0.01,

** p<0.05,

* <0.1

Table 3

Annual Maintenance of Fitness Center Utilization and Earning Credit for Fitness Reward Program Participants

	Months of Fitness Center Utilization (95% CI) (1)			Months Earning a Credit (95% CI) (2)		
<i>Age (Reference=18–35)</i>						
36–50	0.22		(−0.04, 0.48)	0.44	***	(0.17, 0.72)
51+	0.72	***	(0.43, 1.02)	1.33	***	(1.02, 1.65)
Female	−0.32	***	(−0.54, −0.10)	−0.48	***	(−0.71, −0.25)
Number of Child Dependents	0.15		(−0.04, 0.34)	0.33	***	(0.13, 0.53)
Married	−0.12		(−0.34, 0.1)	−0.03		(−0.26, 0.19)
<i>Job Location (Reference=East Bank)</i>						
Minneapolis-West Bank	−0.14		(−0.44, 0.17)	−0.14		(−0.46, 0.17)
Minneapolis-St. Paul	0.02		(−0.27, 0.3)	0.13		(−0.17, 0.42)
Duluth	−0.56	***	(−0.90, −0.22)	0.19		(−0.16, 0.53)
Other Location	0.52	**	(0.11, 0.93)	1.05	***	(0.62, 1.48)
<i>Income Quartile (Reference=Quartile 1 (<\$32,617))</i>						
Quartile 2 (\$32,618–\$45,400)	−0.18		(−0.50, 0.15)	−0.05		(−0.38, 0.28)
Quartile 3 (\$45,401–\$67,646)	0.32	*	(−0.01, 0.65)	0.31	*	(−0.03, 0.65)
Quartile 4 (\$67,659+)	0.12		(−0.24, 0.47)	−0.42	**	(−0.79, −0.05)
Risk Score	−0.06		(−0.14, 0.02)	−0.05		(−0.13, 0.03)
<i>Body Mass Index (Reference=Normal Weight)</i>						
Underweight	0.60		(−0.26, 1.47)	1.01	**	(0.12, 1.9)
Overweight	−0.09		(−0.33, 0.14)	−0.03		(−0.28, 0.21)
Obese	−0.63	***	(−0.93, −0.34)	−0.57	***	(−0.88, −0.27)
<i>Vigorous Exercise Days per Week (Reference=0 Days)</i>						
1	0.34	*	(−0.05, 0.74)	−0.17		(−0.59, 0.24)
2+	1.71	***	(1.40, 2.02)	1.51	***	(1.19, 1.84)
Exercise Limitation	−0.15		(−0.54, 0.23)	−0.28		(−0.68, 0.12)
<i>Plans for Exercise Habits (Reference=No Plans/Made Change Over 6 Months Ago)</i>						
Wanted to Change within 6 Months	−1.28	***	(−1.59, −0.97)	−1.58	***	(−1.91, −1.26)
Made Change in Previous 6 Months	−0.80	***	(−1.1, −0.5)	−1.03	***	(−1.34, −0.72)
<i>Plans for Weight Loss Habits (Reference=No Plans/Made Change Over 6 Months Ago)</i>						
Wanted to Change within 6 Months	0.35	**	(0.06, 0.65)	0.13		(−0.18, 0.43)
Made Change in Previous 6 Months	−0.18		(−0.48, 0.13)	−0.20		(−0.51, 0.11)
<i>Barriers to Lifestyle Changes</i>						
Not Worth the Effort	−0.44		(−0.99, 0.11)	−0.55	*	(−1.12, 0.02)
Time Barriers	0.05		(−0.16, 0.26)	−0.30	***	(−0.51, −0.08)
Trouble Staying Committed	−0.34	***	(−0.57, −0.11)	−0.51	***	(−0.75, −0.27)
Giving into Temptations	0.45	***	(0.23, 0.68)	0.58	***	(0.35, 0.82)
<i>Year of Fitness Reward Program Participation (Reference=first year)</i>						
Second Year	−0.51	***	(−0.76, −0.26)	−0.41	***	(−0.67, −0.15)
Third year	−1.05	***	(−1.30, −0.81)	−0.60	***	(−0.85, −0.34)

CI, Confidence Interval.

Notes: All models include 10,683 annual observations from 4,467 Fitness Reward Program participants. Fitness Reward Program participation was considered an absorbing state. All models are negative binomial count regression and use an offset of the number of Fitness Reward Program-eligible months. Standard errors clustered by individual in parentheses.

p<0.01,

**
p<0.05,

*
<0.1

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