

# Implementation of a Worksite Wellness Program Targeting Small Businesses

## *The Pinnacol Assurance Health Risk Management Study*

*Lee S. Newman, MD, MA, Kaylan E. Stinson, MSPH, Dianne Metcalf, MD, PhD, Hai Fang, PhD, MPH, Claire vS. Brockbank, MS, Kimberly Jinnett, PhD, MSPH, Stephen Reynolds, PhD, Margo Trotter, RN, BScN, MHSc, Roxana Witter, MD, MSPH, Liliana Tenney, MPH, Adam Atherly, PhD, and Ron Z. Goetzel, PhD*

**Objective:** To assess small business adoption and need for a worksite wellness program in a longitudinal study of health risks, productivity, workers' compensation rates, and claims costs. **Methods:** Health risk assessment data from 6507 employees in 260 companies were examined. Employer and employee data are reported as frequencies, with means and standard deviations reported when applicable. **Results:** Of the 260 companies enrolled in the health risk management program, 71% continued more than 1 year, with 97% reporting that worker wellness improves worker safety. Of 6507 participating employees, 34.3% were overweight and 25.6% obese. Approximately one in five participants reported depression. Potentially modifiable conditions affecting 15% or more of enrollees include chronic fatigue, sleeping problems, headaches, arthritis, hypercholesterolemia, and hypertension. **Conclusions:** Small businesses are a suitable target for the introduction of health promotion programs.

As the health of the nation declines and the costs of medical care rise, interest in health and wellness promotion in the workplace has increased.<sup>1</sup> Because the average working American spends roughly one third of his or her time at work,<sup>2</sup> the workplace is a logical location for promoting healthy behaviors to large numbers of individuals. To that end, the Healthy People 2020 objectives for educational and community-based programs<sup>3</sup> included both increasing the number of worksites that offer health promotion programs and increasing the number of employees who participate in these programs.

From the Colorado School of Public Health, Center for Worker Health and Environment and Department of Environmental and Occupational Health (Dr Newman, Metcalf, and Witter, Ms Tenney), Aurora; Tri-County Health Department (Ms Stinson), Greenwood Village, Colo; Health Science Center, Peking University (Dr Fang) Beijing, China; Segue Consulting (Ms Brockbank), Denver, Colo; Integrated Benefits Institute (Dr Jinnett), San Francisco, Calif; Department of Environmental and Radiological Health Sciences (Dr Reynolds), Colorado State University, Fort Collins; Trotter Wellness (Ms Trotter), Sheboygan, Wis; Department of Health Systems, Management & Policy (Dr Atherly), Colorado School of Public Health, Aurora; and Truven Health Analytics and Institute for Health and Productivity Studies, Johns Hopkins University, Bloomberg School of Public Health (Dr Goetzel), Bethesda, Md. Funding for this study was provided by Pinnacol Assurance.

Ms Trotter's company was the vendor for the health risk assessment and coaching services described in this study.

Authors Newman, Stinson, Metcalf, Fang, Brockbank, Jinnett, Reynolds, Trotter, Witter, Tenney, Atherly, and Goetzel have no relationships/conditions/circumstances that present potential conflict of interest.

The JOEM editorial board and planners have no financial interest related to this research.

This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 3.0 License, where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially.

Address correspondence to: Lee S. Newman, MD, MA, Colorado School of Public Health, Center for Worker Health and Environment, 13199 E. Montview Ave Ste 200, Aurora, CO 80045 (Lee.Newman@ucdenver.edu).

Copyright © 2015 by American College of Occupational and Environmental Medicine

DOI: 10.1097/JOM.0000000000000279

### Learning Objectives

- Discuss the development and characteristics of the Health Risk Management (HRM) program for small businesses evaluated in this study.
- Summarize the initial experience with the program, including its adoption and reception by small businesses.
- Identify the characteristics of participating employees, and discuss the potential benefits of extending worksite health promotion programs to smaller companies.

Previously published studies have described various worksite wellness programs. Although study designs, objectives, and wellness program objectives are diverse, collectively these published studies suggest that positive effects of worksite health promotion programs can be measured for both health risk factor modification and reduced costs.<sup>4,5</sup> The latter has been analyzed in numerous ways, including the potential reduction in employer-sponsored health care costs, increased employee productivity, and overall return on investment.<sup>4,6</sup> Additional purported benefits of worksite wellness programs have included improved employee satisfaction and employee retention.<sup>7,8</sup> Researchers have reported on associations between some health risks and behaviors and workers' compensation costs.<sup>9-14</sup> Nevertheless, there is relatively little evidence showing whether modifiable health risks and management of comorbid conditions reduce the number and cost of work-related injuries. Musich and coworkers<sup>15</sup> observed a reduction in workers' compensations costs for Xerox Corporation employees participating in a health risk assessment (HRA) program. Serxner et al<sup>16</sup> demonstrated decreased short-term disability usage in a large telecommunications company. We are aware of no such studies of the effects of health promotion on workers' compensation that have been conducted in small businesses and across various industries. The definition of a small business varies on the basis of industry, the number of employees, and/or revenue; however, the most widely used, and Small Business Association-endorsed, sizing criteria for small businesses require the business to have no more than 500 employees for most manufacturing and mining industries, and no more than \$7 million in average annual receipts for most nonmanufacturing industries.<sup>17</sup>

Notably, there is mounting evidence that small businesses in the United States lag in the adoption of health promotion programs,<sup>18</sup> despite evidence of some potential benefits. For example, a study published in 2008 reported that 24% of US large businesses offered all elements of a comprehensive program as defined by the Centers for Disease Control,<sup>3</sup> whereas only 4.6% of small worksites offer these components.<sup>18</sup> Small businesses report a number of perceived barriers to adoption,<sup>18</sup> including direct and indirect program costs, lack of employee interest, lack of management

support, lack of program expertise, uncertain return on investment, and privacy concerns. As a consequence, there have been few examples of broad-scale introduction and adoption of worksite wellness programs in small business and even fewer studies that have methodically assessed the effect of health promotion in small businesses, even though 56% of US workers are employed by a small business.<sup>19</sup>

In this study, we describe a group of small employers and their employees who participated in a single, health risk management (HRM) program. The HRM program used in this study was designed to help employees identify and reduce specific health risks through healthier lifestyle choices. The primary objectives of the HRM program were to (1) improve employees' health profiles; (2) reduce workers' compensation rates and costs; and (3) enhance productivity. In this article, we provide an overview of an ongoing, prospective, longitudinal study that aims to achieve the outcomes listed above. Specifically, it describes the profile of participating employers and their employees' baseline health status. We provide data on the adoption of this program by small businesses. We then discuss the need for health promotion among small business workers, suggesting that it may be possible to derive health and economic benefits from worksite wellness in this important segment of the US economy.

## METHODS

This study focuses on baseline recruitment and health risk profile data gathered from small businesses and their employees as part of a 5-year, prospective, longitudinal case-control study. Pinnacol Assurance, a workers' compensation insurer in the state of Colorado, the United States, offered its policyholders access to a free HRM program described below. Although outside the scope of this article, the larger goal of the ongoing longitudinal study was to compare rates of workers' compensation claims and costs in companies that participate in the HRM program with matched companies that do not participate, hypothesizing that health risk reductions can lead to reductions in workers' compensation claims and costs.

Before one can test such a hypothesis, it is necessary to demonstrate that it is feasible to recruit and retain small businesses to offer HRM to their employees. As such, this article and the remainder of the Methods section focus on strategies used for recruitment of small businesses, description of the HRM intervention, and survey methods used to assess the types of organizations recruited and the health risk profiles of the employees participating in the study.

### Health Risk Management Program

In 2010, Pinnacol Assurance, a Colorado-based workers' compensation insurance provider, began offering its employer-policyholders access to the HRM program. Pinnacol's decision to offer this program and engage in research was based on a belief that poor health has a negative effect on workers' compensation costs. Strategically, Pinnacol Assurance leadership was of the opinion that health risk management will become as fundamental to managing risks as safety management is currently. Nevertheless, because of a paucity of reliable data, Pinnacol had no actuarial basis for establishing the financial effect of HRM. As such, Pinnacol made a commitment to an external evaluation. To comply with state workers' compensation insurance regulations, the program was offered to all approximately 55,000 policyholders in the Pinnacol book of business. Nevertheless, the initial pilot of this program allowed capping if recruitment goals were met. The program was capped at 300 businesses of any size. As a result, it is not possible for us to calculate a corporation participation rate. Pinnacol Assurance partnered with the Trotter Wellness (Sheboygan, WI), an administrator of employee wellness programs nationwide, to administer its HRM program. Pinnacol Assurance also contracted with the Segue Consulting (Denver, CO) to create its HRM program and the Inte-

grated Benefits Institute (IBI) (San Francisco, CA), a nonprofit employee health and productivity research organization, to advise on measurement and process data for the research study. For employees, the HRM program includes an HRA questionnaire, a feedback report, advice on developing an action plan for improving wellness and reducing health risks, access to health educational materials, and unlimited telephonic coaching. For employers, the HRM program includes summary reports on employee needs, development of an action plan on the basis of employee health goals, ongoing feedback regarding employee participation and progress, educational content for distribution to employees, and advice on program enhancements. Employers also receive a formal Risk and Recommendations Report, which includes industry baseline comparisons and cohort reporting when applicable. Employers with fewer than 50 employees receive a condensed version of the Risks and Recommendations Report.

Employers were actively recruited to enroll in the HRM program through insurance agents and through joint HRM training sessions conducted by the Trotter Wellness and Pinnacol Assurance team members. In addition, employers were able to self-enroll. Employer enrollment began in May 2010. Employers could enroll at any time. The Pinnacol HRM program was made available to all Pinnacol Assurance policyholders and offered at no direct cost to policyholders to enroll their employees in the program. Pinnacol Assurance encouraged policyholders to actively promote the program to their employees and support a culture of wellness.

Employers who enrolled in the HRM program completed a New Policyholder Information enrollment form and corresponding privacy agreement. The New Policyholder Information form captured essential employer information used by the Trotter Wellness to activate the employer, and for Pinnacol Assurance to monitor the characteristics of the employer enrolled in the program.

Once enrolled, employers received a welcome packet that contained information on the HRA start and end dates, the telephonic health coaching start date, and instructions for accessing the employer Web portal. The portal also contained information regarding rollout and implementation of the HRM program, as well as instructions that each enrolled HRA employee participant used to access the online HRA. Employers who indicated that they have English- and Spanish-speaking employees received welcome packets in both languages. Employers subsequently participated in a Wellness Program Orientation, conducted via webinar by the Trotter Wellness or in-person by Pinnacol Assurance. This webinar provides additional information on topics such as communications, leadership involvement, incentives, and participation goals, as well as information on other resources available through employer and employee portals. Employers participating in the HRM program receive ongoing feedback and support. The extent to which employers engaged with advisors varied.

### Health Risk Assessment

The HRA served as the primary modality of risk assessment and data collection for the Pinnacol HRM program. An online HRA questionnaire was administered as part of the HRM program to assess health risks. The questionnaire used in this study was provided by the Trotter Wellness and was certified by the National Committee for Quality Assurance.<sup>20</sup> The Trotter Wellness HRA includes questions in the following categories: biographical information, health history, medical care, physical activity, nutrition, substance use, mental/social health, injury prevention practices, readiness to change, and job satisfaction. For this study, the Trotter Wellness HRA questionnaire was supplemented with 58 additional selected questions from the World Health Organization-Health and Work Performance Questionnaire (HPQ)<sup>21</sup> and a modified version of the HPQ, the HPQ Select—which were provided by the IBI.<sup>22</sup> These additional survey questions further elucidated health and lost-time information to assess lost productivity as measured by attendance, absence, and job

performance. In total, the HRA took approximately 20 to 30 minutes to complete. The data presented below provide an analysis of participating employees' overall health status and health risks on completion of an initial HRA, prior to health promotion interventions (eg, health coaching and education).

### Participating Employer Survey

To better understand the reasons why small businesses chose to participate in the HRM program and the aspects they value most highly, Pinnacol Assurance conducted a survey of employers. Questions probed the reasons driving their decision to participate in the HRM program, what they hoped to achieve by participating, and their valuation of various aspects of the program. Participants were also provided an open text response option, where they could indicate what they would improve about the program.

### Measures

Employee participation rates were calculated using the following two measures: (1) using the number of participants who completed an HRA, divided by the number of eligible employee participants as defined by the individual employer, and (2) using the number of participants who completed an HRA, divided by employee counts as defined by Pinnacol Assurance.

Employee-level data were obtained from employees' self-reported responses to the Trotter Wellness HRA questionnaire and HPQ-Select questions. Scheduled biannual data transfers from the Trotter Wellness included blinded employer and employee data. Additional employer and workers' compensation data were provided by Pinnacol Assurance. All primary data described in this study were transferred to the IBI for participant matching and de-identification according to the Health Insurance Portability and Accountability Act guidelines. De-identified data were provided to the Center for Worker Health and Environment (CWHE) at the University of Colorado for analysis. The institutional review boards for the University of Colorado (Colorado Multiple Institutional Review Board) and the Colorado State University reviewed this study and considered it to be exempt (nonhuman subjects' research).

For this study, most results are presented as frequencies of individual characteristics within the employer and employee cohorts. One calculated measure is the Overall Wellness Score (OWS). This score is calculated for each participant on the basis of the individuals' responses to questions within the HRA. The OWS each individual receives falls into one of the following categories: "excellent" (score  $\geq 80$ ), "doing well" (60 to 79), "needs improving" (20 to 59), or "caution high risk" ( $<20.0$ ) based on the Trotter Wellness guidelines. Body mass index was calculated according to the standard formula  $[\text{weight (pounds)} / [\text{height (inches)}^2] \times 703]$  using self-reported height and weight data. Body mass index classification was reported according to the World Health Organization's International Classification Scale. Alcohol consumption guidelines for males and females were based on the National Institute on Alcohol Abuse and Alcoholism guidelines and state that moderate to low risk consumption for men is  $<14$  drinks/week and for women  $<8$  drinks/week. Nevertheless, those guidelines also include single-day alcohol consumption limits for men and women, which the HRA questionnaire did not assess.

For purposes of this study, employee stress was characterized as low or moderate/high on the basis of responses to three individual questions included in the HRA. Employees who responded that they "never" or "sometimes" experienced stress at home or at work and also responded that their stress over finances was "little or none" were classified as having low stress. Employees who responded that they had "often" or "permanent or continual" stress at home or work or had "moderate" or "high/severe" financial stress were characterized as having moderate/high stress.

### Analysis

Employer and employee data were reported as frequencies, with means and standard deviations reported for some measures. All data analysis was performed by the CWHE at the University of Colorado using Stata 12 data analysis software (StataCorp, College Station, TX).

### RESULTS

A total of 276 employers of all sizes enrolled in the HRM program between May 15, 2010, and May 15, 2013. In this article, we report on 260 of these companies (Table 1). We excluded 16 large employers from this analysis to focus on small businesses, which we have defined as having fewer than 500 employees. The ongoing recruitment of small employers into the program since its inception in May 2010 is illustrated by the yearly employer participation data shown in Table 1. In the first, second, and third full years of the program, 75, 114, and 71 small businesses with fewer than 500 employees enrolled, respectively. Although there was some variation in the geographic and industry type characteristics of employers enrolling in individual years, this likely represents eligibility and timing of recruitment (eg, a business newly insured by Pinnacol would become eligible in the year it obtained a policy). The 260 employers represented a range of business sizes from microbusinesses with fewer than 10 employees (18.8%) to those with more than 250 employees (8.5%). More than half (53.4%) of employers had fewer than 50 employees. Because Pinnacol Assurance primarily provides workers' compensation insurance to businesses operating in Colorado, the geographic regions listed in Table 1 are for Colorado, with non-Colorado businesses comprising less than 1.0% of the total, which matches the percentage of the Pinnacol's non-Colorado book of business overall. The majority of participating businesses, more than 70.0%, were located in the urban Front Range. The more rural Western Slope region, which includes among its more populated areas the cities of Grand Junction, Montrose, Glenwood Springs, Aspen, and Vail, comprised 18.0% of employer policyholders. Of the 260 companies that enrolled in the HRM, 71% remained in the HRM program after 1 year. Of those who continued with the HRM, 82% remained with the program through the end of the second year.

A total of 6507 small business employees enrolled in the HRM program between May 15, 2010, and May 15, 2013, and completed a baseline HRA questionnaire. Employee participation as defined by completing a baseline HRA represents 47.9% of eligible employees, with a range of 0.8% to 100% participation, and 44.4% of total employees, with a range of 0.5% to 100%. Overall, the mean age of HRM participants was  $41.4 \pm 13$  years, with a predominance of married (74.3%), white (80.6%), male (55.7%), and full-time employees (86.2%) (Table 2). More than 40% of all employees (41.7%) completed a 4-year college degree, and 40% of the college graduates had additional postgraduate education. Three fourths of employees (75.3%) had at least some education beyond high school. The professional job category, which includes engineers, accountants, and systems analysts, accounted for 28.6% of employees' self-reported job descriptions, the most frequently reported (Table 2). Nearly one quarter of employees (24.9%) reported an annual income of less than \$25,000 and nearly two thirds (65.8%) reported an annual income of less than \$50,000. Part-time employees (9.9%) and those who listed their employment type as "other" (0.9%) were included in these calculations.

As part of the HRA survey, employees classified their overall health as excellent (15.1%), very good (39.5%), good (37.2%), fair (7.4%), or poor (0.5%). For comparison, the OWS calculated for the same population were 80 to 100 or "excellent" (17.6%), 60 to 79 "doing well" (53.7%), 20 to 59 or "needs improving" (28.7%), and 0 to 19 or "caution high risk" (0.0%). The average OWS for the entire employee group was  $66.7 (\pm 13.3)$ , with a range of 5 to 100.

**TABLE 1.** Participating Employer Characteristics (May 2010 to May 2013)

Participating Employer Characteristics	Employer Frequency (%)			
	2010–2011 (n = 75)	2011–2012 (n = 114)	2012–2013 (n = 71)	Total (N = 260)
Employer size (by employee number)				
<10	17.3	21.9	15.5	18.8
10–49	38.7	32.5	33.8	34.6
50–99	21.3	21.0	15.5	19.6
100–249	14.7	16.7	25.3	18.5
250–499	8.0	7.9	9.9	8.5
Geographic region (in Colorado)				
Urban Front Range	76.0	71.9	69.0	72.3
Western Slope	9.3	22.8	19.7	18.0
Eastern Plains	9.3	2.6	7.1	5.8
Mountain	5.4	1.8	4.2	3.5
Other/out of state	0.0	0.9	0.0	0.4
Industry type				
Special trade contractors	9.3	8.8	9.9	9.2
Manufacturing	6.7	8.8	7.0	7.7
Mining, construction	5.3	1.8	4.2	3.5
Transportation, communication, utilities, sanitary	4.0	6.1	4.2	5.0
Public administration	6.7	4.4	7.0	5.8
Finance, insurance, real estate	10.7	3.5	11.4	7.7
Wholesale trade	9.3	4.4	5.6	6.2
Business services	9.3	10.5	9.9	10.0
Retail trade	12.0	8.8	5.6	8.8
Social services	4.0	14.0	5.6	8.8
Educational services	5.3	10.5	8.5	8.5
Health services	8.0	7.0	7.0	7.3
Engineering, accounting, research, management, and related services	2.7	2.6	9.9	4.6
Other	6.7	8.8	4.2	6.9

Of the 6507 employees, 38.9% were classified as normal weight, 34.3% as overweight, and 25.6% as obese (Table 3). Less than 17% of employees were current cigarette smokers. No data were available on the use of other forms of tobacco, marijuana, or illicit drugs. The majority (81.7%) of female employees reported consuming seven or fewer servings of alcohol per week. More than 98% of male employees reported consuming 14 or fewer alcoholic drinks per week. For female employees, this means 18.3% consume alcohol at levels considered high risk by National Institute on Alcohol Abuse and Alcoholism guidelines, whereas only 1.9% of males are at high risk (Table 3). Approximately one in 10 employees were sedentary (11.5%), reporting no significant exercise during the week, and 4.3% reported no daily consumption of fruits or vegetables. Nevertheless, more than 60% of employees reported exercising at least three times per week (62.0%), and 82.1% reported eating at least three servings of fruit or vegetables daily (Table 3). More than half of employees (53.7%) reported getting seven or more hours of sleep daily. The majority of employees wore seatbelts all of the time (76.6%). As a group, 71.5% reported moderate or high stress in their lives over work, home, or finances.

Table 4 includes a list of the most common health conditions and risk factors reported by HRM participants. More than one third of HRM participants reported being overweight (37.8%) and experiencing seasonal allergies (34.8%). Approximately one in five participants (22.0%) reported depression. Other common health con-

ditions affecting 15% or more of the total enrollees include chronic fatigue (20.4%), chronic sleeping problems (18.4%), headaches (17.2%), arthritis (16.3%), high cholesterol (15.7%), and hypertension (15.3%). Chronic and long-term health conditions reported, including diabetes (3.8%), cancer (3.3%), osteoporosis (2.9%), coronary heart disease (1.7%), and chronic lung disease (0.7%), are reported by fewer than 5% of study participants.

Twenty-one percent of policyholders who have ever participated in HRM completed a follow-up survey to determine how they learned about the HRM program, reasons why they elected to participate in the HRM, and how they valued various aspects of the program. The vast majority (97%) indicated that they believed that wellness is an important aspect of improving workplace safety. The top-ranked priority for participating in HRM was to improve employee health status, followed by a desire to reduce costs. The drivers for policyholders' decision to participate fell into the following three broad categories: agent recommendation, Pinnacol's recommendation, and the policyholder searching for a wellness program. More than 6% cited a preference to work with a company other than their health insurance provider as their primary driver to selecting HRM. There was high satisfaction noted for the wide range of tools and support provided, although the single most frequent suggestion for improvement was more on-site support for implementing and maintaining the HRM program. It should be noted that this survey did not ask specifically if employers chose

**TABLE 2.** Demographic Characteristics of HRA Participants (May 2010 to May 2013)

Demographic Characteristic	Frequency N (%)
<b>Total N = 6,507</b>	
Sex	
Male	3,626 (55.7)
Female	2,881 (44.3)
Age group, yrs	
18–34	2,339 (36.0)
35–44	1,513 (23.3)
45–54	1,408 (21.6)
55–64	1,043 (16.0)
≥65	204 (3.1)
Mean age	41.4 ± 13
Marital status	
Married	4,835 (74.3)
Not married	1,434 (22.0)
Null	238 (3.7)
Race/ethnicity	
White	5,246 (80.6)
Black	127 (2.0)
Hispanic/Latino	784 (12.1)
Other	262 (4.0)
Null	88 (1.3)
Education	
Postgraduate education	1,138 (17.5)
College degree (4 yrs)	1,573 (24.2)
Some college or 2-yr degree	2,195 (33.7)
High school diploma or GED	1,157 (17.8)
Did not complete high school	289 (3.2)
Null	232 (3.6)
Employment type	
Full-time	5,607 (86.2)
Part-time	644 (9.9)
Other	62 (0.9)
Null	194 (3.0)
Job category (example)	
Executive/administrator/senior manager CEO/sales VP/plant manager	984 (15.1)
Professional engineer/accountant/systems analyst	1,858 (28.6)
Technical support laboratory technician/legal assistant/computer programmer	159 (2.4)
Sales sales representative/ stockbroker/retail sales	534 (8.2)
Clerical and administrative support secretary/ billing clerk/office supervisor	888 (13.7)
Service occupation security officer, food service worker, janitor	858 (13.2)
Precision production and crafts worker mechanic/carpenter/machinist	164 (2.5)
Chemical/production operator shift supervisors/hourly employees	39 (0.6)
Laborer truck drivers/construction workers	793 (12.2)
Null	230 (3.5)

*(continues)***TABLE 2.** (Continued)

Demographic Characteristic	Frequency N (%)
<b>Total N = 6,507</b>	
Annual income (in dollars)	
<25,000	1,621 (24.9)
25,000–34,999	1,255 (19.3)
35,000–49,999	1,408 (21.6)
50,000–74,999	1,088 (16.7)
75,000–99,999	439 (6.8)
>100,000	324 (5.0)
Null	372 (5.7)

CEO, chief executive officer; GED, General Education Diploma; HRA, health risk assessment; VP, vice president.

the HRM because it was free of charge, because that option was not provided in the survey after an earlier pilot survey found that less than 8% of employers considered this to be a factor in deciding to participate.

## CONCLUSIONS

This is the first field-based study that examines a broad-scale implementation of a worksite wellness program in a large number of small businesses. We have demonstrated that Colorado small businesses are prepared to adopt worksite wellness programs, if the program is provided free of charge and are given company-specific advice in program design and execution. The cohort's self-reported health risks and disease rates suggest that there are opportunities to address important modifiable health risks in the small business workforce. In this study, we found that small businesses with fewer than 500 employees were willing and able to adopt a worksite wellness program. Despite the many potential barriers to adoption of health promotion programs that have been reported in the literature for small businesses,<sup>18,23–25</sup> even the smallest companies and their employees—across many industrial sectors—demonstrated the ability and willingness to participate, when provided with guidance and access to resources. A key factor in the success of this program may be that the HRM is offered at no direct cost to employers. Program costs are frequently cited as a primary reason why small businesses do not offer health promotion programs.<sup>18,23</sup> The program described herein also provides employers with the added benefit of offering a well-established HRM program to their employees, without necessitating the investment of company resources into vetting various different HRM program options. Lack of resources for and lack of expertise about HRM programs are also cited as barriers for small businesses to adopt worksite wellness programs,<sup>18,23</sup> and the “plug and play” nature of this program helps overcome both, as well as the extensive assistance provided by both the Trotter Wellness and Pinnacol Assurance.

Nevertheless, despite the successful enrollment of 260 small businesses in this program, there are limitations that need to be addressed. Some are related to recruitment of employer policyholders and subsequent employee participation. Although all policyholders were deemed eligible for enrollment and all received at least one direct communication from Pinnacol about the program, it is not known how many small businesses were simply unaware of the program or directly declined participation, thus introducing potential bias regarding the 260 businesses enrolled. Thus, we are unable to assess the effectiveness of program communication and recruitment efforts. Because the study was capped at 300 businesses of any size and was offered to all 55,000 policyholders, we are unable to calculate the rate of small business adoption.

**TABLE 3.** Health and Lifestyle Characteristics of HRA Participants (May 1, 2010 to May 1, 2013)

Health or Lifestyle Characteristic	Frequency, N (%)
<b>Total HRA Respondents (N = 6,507)</b>	
Self-assessed overall health	
Excellent	982 (15.1)
Very good	2,571 (39.5)
Good	2,418 (37.2)
Fair	484 (7.4)
Poor	35 (0.5)
Null	17 (0.3)
Body mass index (BMI): weight (lb)/[height (in)] <sup>2</sup> × 703	
<18.5, underweight	79 (1.2)
18.5–24.9, normal weight	2,528 (38.9)
25–29.9, overweight	2,235 (34.3)
30–34.9, class I obesity	1,011 (15.5)
35–39.9, class II obesity	409 (6.3)
≥40, class III obesity	245 (3.8)
Tobacco use	
Never smoked	3,828 (58.8)
Former smoker	1,617 (24.9)
Current smoker	1,062 (16.3)
Alcohol use (drinks/wk), by sex	
0	
Males (N = 3,626)	1,556 (42.9)
Females (N = 2,881)	865 (30.0)
1–3	
Males	1,345 (37.1)
Females	953 (33.1)
4–7	
Males	490 (13.5)
Females	537 (18.7)
8–14	
Males	166 (4.6)
Females	344 (11.9)
15–21	
Males	54 (1.5)
Females	124 (4.3)
22+	
Males	15 (0.4)
Females	58 (2.0)
Exercise (d/wk) “How many days each week do you get at least 30 min of moderate to vigorous physical activity?”	
0	750 (11.5)
1–2	1,725 (26.5)
3–4	2,114 (32.5)
5+	1,918 (29.5)
Fruit and vegetable consumption (1/2 cup servings daily)	
0	276 (4.3)
1–2	887 (13.6)
3–4	1,616 (24.8)
5+	3,728 (57.3)
Seatbelt use “When riding in a car, what percentage of the time do you wear a seat belt?”	
0%	123 (1.9)
25%	175 (2.7)

(continues)

**TABLE 3.** (Continued)

Health or Lifestyle Characteristic	Frequency, N (%)
<b>Total HRA Respondents (N = 6,507)</b>	
50%	176 (2.7)
70%	235 (3.6)
90%	811 (12.5)
100%	4,987 (76.6)
Sleep “How many hours of sleep do you usual get daily?”	
Less than 6 h	709 (10.9)
6–6.9 h	2,301 (35.4)
7–8 h	3,133 (48.1)
More than 8 h	364 (5.6)
Stress (high stress = often or continual stress at home or at work or moderate or high stress over finances)	
Low stress	1,852 (28.5)
Moderate/high stress	4,655 (71.5)

BMI, Body mass index; HRA, health risk assessment.

**TABLE 4.** Self-Reported Health Conditions of HRA Participants (May 1, 2010 to May 1, 2013)

Self-Reported Health Conditions	Frequency, N (%)
<b>For HRA Respondents (N = 6,507)</b>	
Overweight	2,462 (37.8)
Allergies or hay fever	2,262 (34.8)
Depression	1,430 (22.0)
Chronic fatigue	1,325 (20.4)
Chronic sleeping problems	1,196 (18.4)
Migraine headache/severe headache	1,116 (17.2)
Arthritis	1,060 (16.3)
High cholesterol	1,023 (15.7)
High blood pressure	993 (15.3)
Heartburn/GERD	869 (13.4)
Irritable bowel disorder	808 (12.4)
Chronic back pain	655 (10.1)
Asthma	625 (9.6)
Stomach/intestine ulcer	306 (4.7)
Cancer of the skin	283 (4.3)
Diabetes	250 (3.8)
Cancer (any type)	215 (3.3)
Osteoporosis	190 (2.9)
Cancer (any type but skin cancer)	162 (2.5)
Coronary heart disease/angina	109 (1.7)
Chronic lung disease	43 (0.7)

GERD, gastroesophageal reflux disease; HRA, health risk assessment.

In addition to the employer-level barriers to worksite health promotion, there are potential barriers to participation at the employee level. Future research is needed to identify the factors that determine the percentage of companies that choose to participate. In our future research, we intend to examine factors associated with employee participation in small businesses. Working with 260 companies introduces substantial variability in the types of businesses and employees and could easily affect participation. Furthermore, many HRM programs offer participation incentives to employees

for completion of an HRA and program engagement. One limitation of this study is that we do not know the exact nature of the incentives which the participating employers offered to their employees for HRA participation. Nevertheless, the Trotter Wellness data, which track incentives offered, as self-reported by the employer, indicated that about 60% offered some sort of incentive for taking the HRA. Only a quarter of the employers with fewer than 15 employees offered an incentive, although they achieved the highest participation rates. Also, as with all studies of this type, there is the potential for introduction of self-selection bias for those who chose to participate. Linnan and colleagues<sup>18</sup> have reported that low participation on the part of high-risk employees is an additional perceived barrier to implementation of HRM programs in small businesses. We were not able to address whether a healthy worker bias occurred among participating employees in our small business cohort, although our data suggest that participants were comparable with Colorado adults in many of their self-reported health risks and medical conditions.<sup>26</sup>

This study has a number of unique characteristics that may help address gaps in the current literature. The majority of published reports on worksite HRM programs include only medium to large businesses. All of the 260 employers described in this article employ fewer than 500 employees. Evaluating the collective effect of the HRM program in these small and microbusinesses will help inform future efforts in worksite health promotion for such employers, which include more than 95% of all US businesses.<sup>27</sup> Specifically, it will be valuable to understand what benefits recognized for larger corporations can be extrapolated to small businesses. A limitation of this study is that 21% of companies responded to the follow-up survey regarding their reasons for participating. Our results suggest that future research should more thoroughly examine the motivations of small employers to adopt HRM programs. Importantly, efforts at broad-scale introduction of HRM programs to small business should include multiple approaches to engagement, including insurance brokers, direct communication by insurers, and health and wellness education sessions. Our data provide an early indication that such programs may be sustainable even in a small business culture. Although we did not systematically examine the effect of Pinnacol's retention efforts, anecdotally we observed activities such as annual planning to create actionable goals, monthly communications and challenges provided to the employers for easy distribution to their employees, a simple online portal, and easily accessed personalized support, which may help small businesses remain engaged.

Providing an HRM program to employers and employees whose commonality is obtaining workers' compensation insurance from a single carrier is another unique aspect of this study. The idea of an alternative model of workers' compensation insurers, rather than health insurers, offering such programs may prove to be an appealing alternative, especially for smaller businesses. Most previously reported studies of health promotion interventions have evaluated employees of a single, large enterprise, which may influence whether results can be applied to a more diverse group. Studies of small businesses have also been limited to either single or small numbers of study sites. The results of this study may be more generalizable than previous studies because all participating businesses share a single workers' compensation carrier, regardless of business type, employee job, or geographic location. To our own knowledge, this is the first example of a workers' compensation carrier providing such services. Importantly, through this approach, we were successful in attracting small businesses from a range of economic sectors.

Our data strongly support the need for effective interventions to address modifiable health risks among people who work in small businesses. Participants in the Pinnacol Assurance HRM program were almost exclusively employed by businesses in Colorado, which comprised 99.6% of enrolled employers. In general, Colorado is viewed as a relatively "healthy" state, with the prevalence of many chronic illnesses below the national average. For example, obesity

is an acknowledged factor influencing many aspects of health and wellness, including costs and workers' compensation,<sup>10,11</sup> and Colorado is currently the leanest state in the nation.<sup>28</sup> Nevertheless, the small business employees who participated in the HRM study had a rate of obesity of 25.6%, which aligns more closely with the national average of 28.1% than the Colorado rate (20.1%).<sup>28</sup> The burden of chronic illness and health risk factors in this study of more than 6500 small business workers is substantial. Furthermore, when we take into consideration the possibility that primarily healthier workers may choose to complete an HRA,<sup>18</sup> the estimated health risks and chronic illnesses in the small business community reported here may underestimate the true extent of the problem.

In conclusion, we have demonstrated that small businesses can overcome barriers to adoption of worksite wellness programs. When such programs are offered to their employees, small business workers are willing to complete online HRAs at rates that are within the range seen in larger corporations. Importantly, the modifiable health risks detected in the small business workforce are substantial and warrant public health consideration. This described study represents the foundation of ongoing analyses of the Pinnacol Assurance HRM study population. Further longitudinal analyses will address whether the HRM program results in measurable changes in health risks, workers' compensation costs, and employee productivity.

## REFERENCES

1. Mattke S, Caloyeras JP, Huang CY, Van Busum KR, Khodyakov F, Shier V. Workplace wellness programs study. Available at [http://www.rand.org/pubs/research\\_reports/RR254.html](http://www.rand.org/pubs/research_reports/RR254.html): RAND Corporation. Published 2013. Accessed August 25, 2014.
2. Bureau of Labor Statistics. American time use survey. Available at <http://www.bis.gov/tus/home.htm>. Accessed August 25, 2014.
3. Centers for Disease Control and Prevention. Healthy people 2020. Available at <http://www.healthypeople.gov/2020/topicsobjectives2020>. Accessed August 25, 2014.
4. Lerner D, Rodday AM, Cohen JT, Rogers WH. A systematic review of the evidence concerning the economic impact of employee-focused health promotion and wellness programs. *J Occup Environ Med*. 2013;55:209–222.
5. Soler RE, Leeks KD, Razi S, et al. A systematic review of selected interventions for worksite health promotion. The assessment of health risks with feedback. *Am J Prev Med*. 2010;38(suppl):S237–S262.
6. Baicker K, Cutler D, Song Z. Workplace wellness programs can generate savings. *Health Aff (Millwood)*. 2010;29:304–311.
7. Sears LE, Shi Y, Coberley CR, Pope JE. Overall well-being as a predictor of health care, productivity, and retention outcomes in a large employer. *Popul Health Manag*. 2013;16:397–405.
8. Parks KM, Steelman LA. Organizational wellness programs: a meta-analysis. *J Occup Health Psychol*. 2008;13:58–68.
9. Kuhnen AE, Burch SP, Shenolikar RA, Joy KA. Employee health and frequency of workers' compensation and disability claims. *J Occup Environ Med*. 2009;51:1041–1048.
10. Ostbye T, Dement JM, Krause KM. Obesity and workers' compensation: results from the Duke Health and Safety Surveillance System. *Arch Intern Med*. 2007;167:766–773.
11. Kuehl KS, Kisbu-Sakarya Y, Elliot DL, et al. Body mass index as a predictor of firefighter injury and workers' compensation claims. *J Occup Environ Med*. 2012;54:579–582.
12. Bidassie B, McGlothlin JD, Mena I, Duffy VG, Barany JW. Evaluation of lifestyle risk factors and job status associated with back injuries among employees at a mid-western university. *Appl Ergon*. 2010;41:106–114.
13. Kleinman NL, Brook RA, Doan JF, Melkonian AK, Baran RW. Health benefit costs and absenteeism due to insomnia from the employer's perspective: a retrospective, case-control, database study. *J Clin Psychiatry*. 2009;70:1098–1104.
14. Laws C, Colon D. NCCI Research Brief: Comorbidities in workers compensation. National Council on Compensation Insurance. 2012. Available at <http://www.workcompprofessionals.com/advisory/2013L5/february/NCCI%20Comorbidity-in-Workers-Compensation-2012-1.pdf>. Accessed August 25, 2014.
15. Musich S, Napier D, Edington DW. The association of health risks with workers' compensation costs. *J Occup Environ Med*. 2001;43:534–541.

16. Serxner S, Gold D, Anderson D, Williams D. The impact of a worksite health promotion program on short-term disability usage. *J Occup Environ Med.* 2001;43:25–29.
17. Small Business Association. White Paper: Size standards methodology. Available at <http://www.sba.gov/content/size-standards-methodology>. Published 2013. Accessed August 25, 2014.
18. Linnan L, Bowling M, Childress J, et al. Results of the 2004 National Worksite Health Promotion Survey. *Am J Public Health.* 2008;98:1503–1509.
19. Bureau of Labor Statistics. Business employment dynamics. In: *Quarterly Census Employment and Wages*. Available at <http://www.bls.gov/bdm/>. Accessed August 25, 2014.
20. National Committee for Quality Assurance. Features and announcements. Available at <http://www.ncqa.org/tabid/834/Default.aspx>. Published 2013. Accessed August 25, 2014.
21. Kessler RC, Barber C, Beck A, et al. The World Health Organization Health and Work Performance Questionnaire (HPQ). *J Occup Environ Med.* 2003;45:156–174.
22. Integrated Benefits Institute. HPQ select tool. Available at: <http://www.ibiweb.org/tools/hpq-select>. Published 2013. Accessed August 25, 2014.
23. Smogor J, Macrina DM. Problems in worksite health promotion: the perspective of small business (continuing education credit). *AAOHN J.* 1987;35:224–228, 246–248.
24. Hannon PA, Garson G, Harris JR, Hammerback K, Sopher CJ, Clegg-Thorp C. Workplace health promotion implementation, readiness, and capacity among midsize employers in low-wage industries: a national survey. *J Occup Environ Med.* 2012;54:1337–1343.
25. Jung J, Nitzsche A, Ernstmann N, et al. The relationship between perceived social capital and the health promotion willingness of companies: a systematic telephone survey with chief executive officers in the information and communication technology sector. *J Occup Environ Med.* 2011;53:318–323.
26. Centers for Disease Control and Prevention. Behavioral risk factor surveillance system. Available at <http://www.cdc.gov/brfss/>. Published 2013. Accessed August 25, 2014.
27. United States Census Bureau. Employment size of employer and nonemployer firms, 2008. Available at <http://www.census.gov/econ/smallbus.html>. Accessed August 25, 2014.
28. Centers for Disease Control and Prevention. Behavioral risk factor surveillance system. Available at: <http://apps.nccd.cdc.gov/brfss/>. Accessed August 25, 2014.