

## Report to MA Department of Public Health

### PWTF Worksite Wellness Data Management and Evaluation



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## Executive Summary

### Overview

In Massachusetts, as well as in the rest of the country, worksite wellness programs are most often offered by larger employers and accessed by healthier, more educated workers. The Massachusetts “Working on Wellness” (WoW) program ([www.mawow.org](http://www.mawow.org)), funded by the Prevention and Wellness Trust Fund (PWTF), is an initiative specifically designed to expand access to worksite health promotion activities for smaller employers in the Commonwealth. This report describes the preliminary results for the participating organizations, as per steps completed and evaluation data received by November, 2016.

Working on Wellness provides training, technical assistance, and seed funding to Massachusetts organizations to initiate new health-promoting policies, environmental supports, awareness and education programs, and other activities directed to health behavior improvements among their employees. The program is designed on the basis of current best practices, in particular emphasizing the influence of the physical work environment as well as the organizational and social climate on individual behaviors.

The WoW program has successfully reached and delivered services to organizations that previously had no formal wellness program and few wellness policies or supportive environments. In particular, this program has reached a large number of small and moderate-size employer organizations, and a substantial number of low-wage, non-college-educated, and racial/ethnic minority workers. A substantial proportion of these employees had moderate to high health risks, especially being overweight or obese and not consuming the recommended amount of fresh produce per day. This highlights the high relevance of the WoW program to the needs of the Commonwealth’s citizens.

The program was delivered with high fidelity to its original design, with multi-level program activities in most organizations. Most employers complied with program instructions to implement changes in organizational policy and the work environment to support healthier behaviors by employees. This is an important strength of the WoW program design, and it is very much to the credit of the program delivery personnel that they were able to provide technical information and support sufficient to achieve this.

Numerous community partnerships were developed with local organizations to provide services. The program champions of participating employers were enthusiastic about the overall quality of the program and the usefulness of the educational materials and supports that they received.

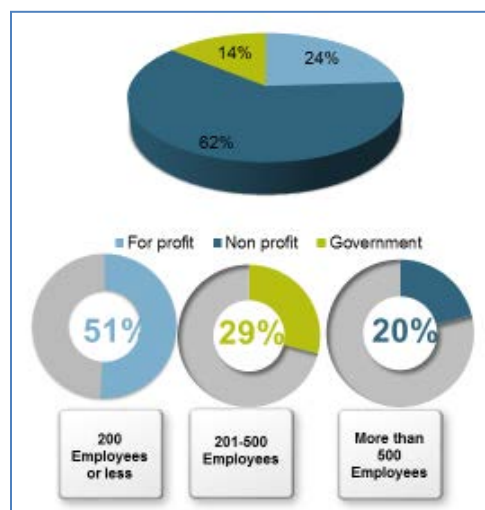
The effectiveness of the interventions is yet to be fully evaluated, as the follow-up employee survey data are still being collected. Substantial health benefits and healthcare cost savings are anticipated over a longer period of time, as the program progresses. However, it is evident already that the program has helped increase the supports for employers and from them to their employees. A high proportion of employees are ready to make positive changes that will likely reduce their morbidity, healthcare utilization and costs.

## Key Results

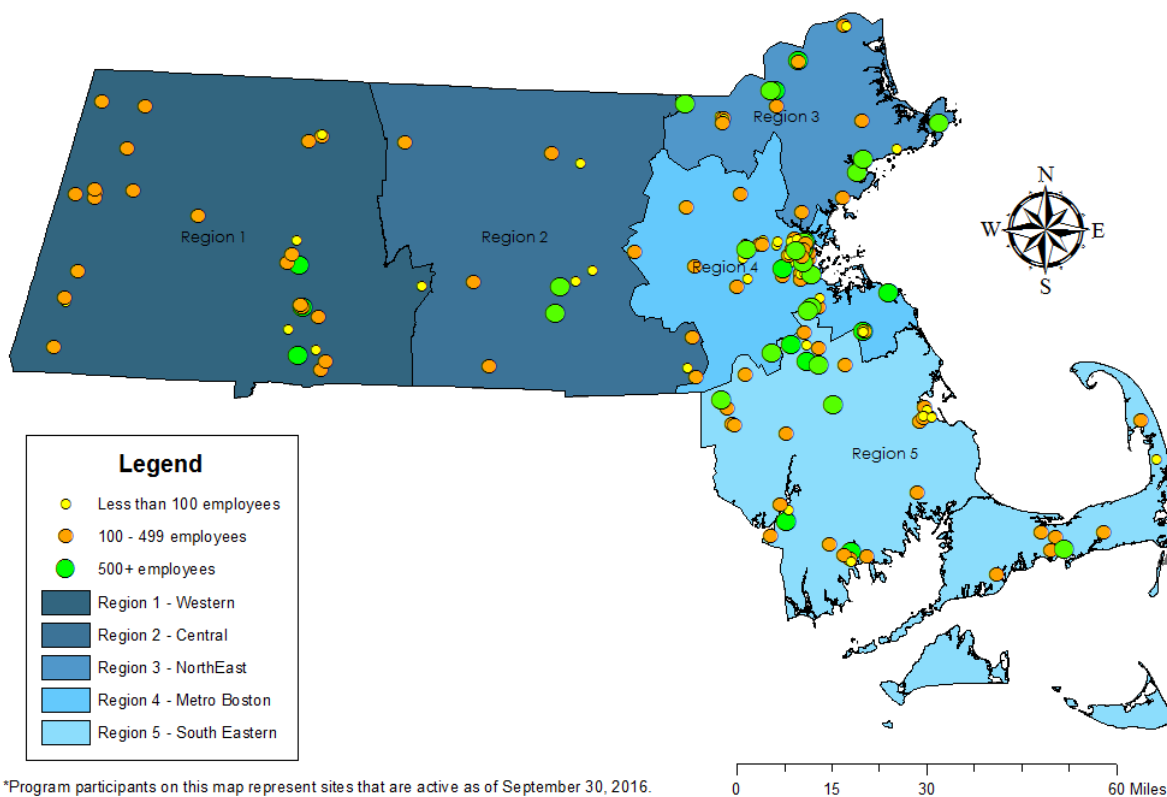
As of November 2016, 205 employer organizations in four cohorts were accepted into the program, distributed throughout Massachusetts. The first 3 cohorts comprised 144 employers, of which 110 have provided the first set of baseline measures to date and 108 have returned their surveys from individual employees.

Participating organizations are predominantly non-profit (61%) and highly represented by the healthcare and social assistance sector (33%).

About one-half of participating organizations have 200 or fewer employees, a priority for this program. Two-thirds of the participating organizations indicated that at least some of their employees were low-wage workers.



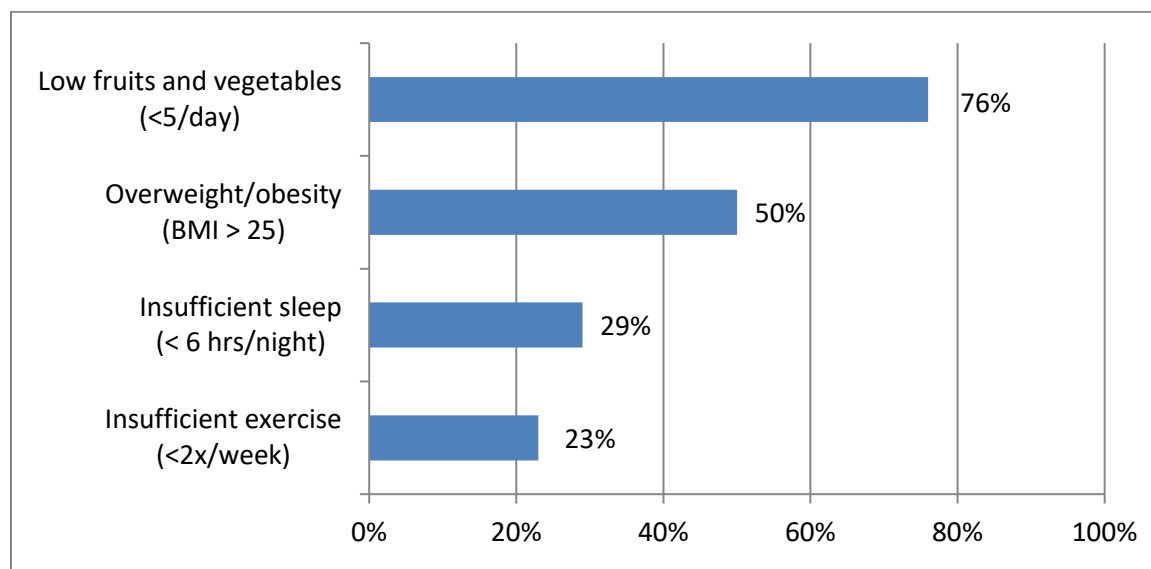
## Massachusetts Working on Wellness Program Participants by Organization Size, Cohorts 1-4



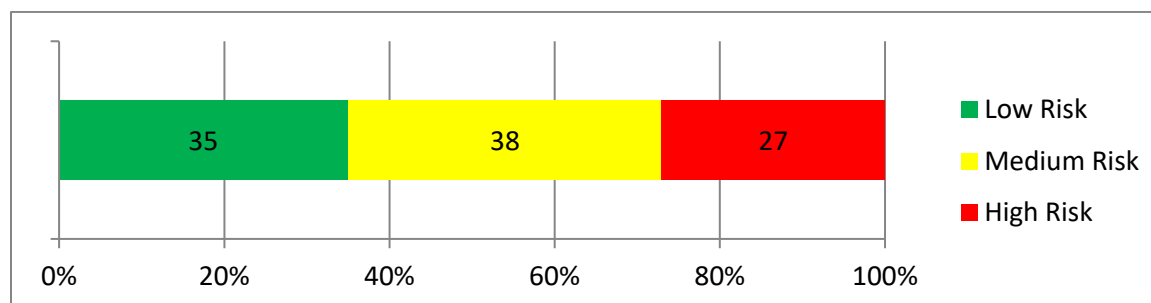
As reported by employers, the pooled workforce includes 63% women, about 60% non-Hispanic Whites, and 60% hourly wage (non-salary) workers. About one-quarter have only a high school education or GED or less and 17% work evening, night or rotating shifts.

At the beginning of the program, about half of the participating organizations offered no formal wellness program, and they had few policy/environmental supports to encourage employee physical activity, nutrition, or tobacco-free lifestyle, or to support work/life balance.

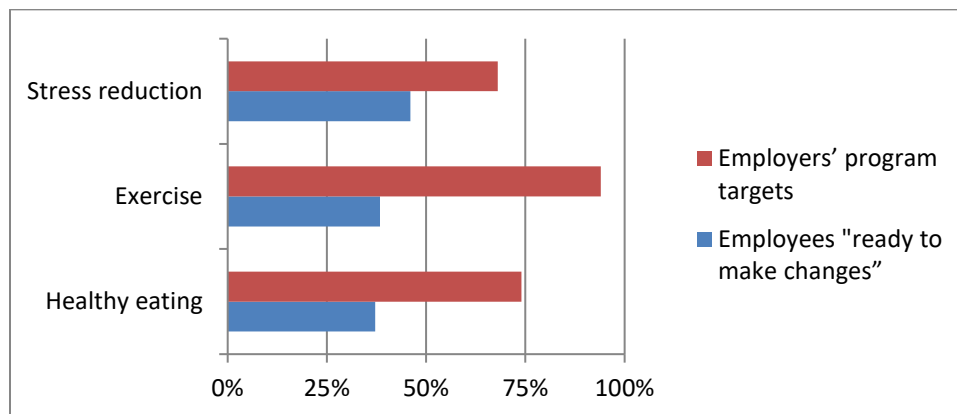
The employees of participating organizations were ready to make positive changes to improve their health behaviors, specifically to become more physically active, eat healthier diets, manage their weight, and control their stress levels. These goals were highly appropriate in light of the fact that most of them did not eat the recommended 5 servings of fruit and vegetables per day, and over one-half were overweight or obese (figure below). Employees also expressed a great interest in obtaining services and supports to make these changes.



Based on a score of nine self-reported health risk indicators, about two-thirds of all employees in Cohorts 1-3 were designated as being at either medium or high risk at the beginning of the program (figure below).



Participating employers received specific feedback about the priorities indicated collectively by their workers, as well as information about timing and other logistical features that would make program activities more accessible. Employers' baseline program goals were predominantly to improve nutrition, increase leisure-time physical activity, and reduce stress; these were also the top three health goals endorsed by their employees (figure below).



Guided by this information, WoW participant employers are successfully implementing their programs. The most commonly planned intervention activities to increase exercise were on-site fitness or yoga classes, walking clubs, and personal health coaching or educational seminars. To improve employees' dietary behaviors, the most commonly planned activities were educational workshops, organizational policies to provide healthier food at meetings, and healthier options in vending machines. To reduce or help manage stress, the most common activities planned were yoga classes, demonstrations and practice of stress management and coping skills, and meditation or mindfulness classes.

The program delivery elements were revised after Cohort 1 was enrolled, in particular to reduce the number of required goals from three to one. This change appears to have facilitated a substantial increase in the number of participating employers in the later cohorts.

Each participating organization had an internal Wellness Champion responsible for participating in training, carrying out WoW program activities, and submitting data for evaluation. All Champions identified prospective partners that could serve as resources to their employees. Many of these were local small businesses providing wellness-related services (e.g., fitness, yoga, massage, health coaching). Non-profit organizations and health insurers (combined with healthcare provider organizations) were also cited frequently. Town or municipal wellness partners referred to city or town offices, many representing programs specifically supported by the Massachusetts Department of Public Health (e.g., Mass in Motion).

The program education and technical support provided were of high quality and were enthusiastically endorsed by participating employers. Despite seed funding, which was greatly welcomed by the participating organizations, staffing resources to implement in-house programs remain a challenge for small employers.

With regard to the specific goals stated by the state legislature in establishing this program, there has not yet been sufficient length of follow-up of the covered workforce to document specific changes in preventable health conditions or their costs. Nonetheless, it was possible to estimate predicted reductions in chronic disease and in health care expenditures, given the types of program activities being carried out by WoW employers and the prevalence of specific conditions and unhealthy behaviors in the workforce.

As required by the legislation, we have calculated the expected benefits of this program in terms of predicted reductions in the prevalence of chronic health conditions and associated healthcare cost savings. We have reviewed the existing literature for evidence of the effectiveness of workplace wellness activities similar to those carried out by the employers participating in the WoW program. We then compiled the data from those studies in terms of reductions in chronic disease and key risk factors for those conditions.

Our summary of these potential impacts has been used to predict improvements in daily consumption of fresh fruits and vegetables, regular (weekly) exercise, weight loss, and reductions in stress that interferes with health. Our estimates show that each area targeted by employers in the program is expected to benefit thousands of their employees. Further, employers may expect to achieve savings in medical expenditures by improving health for workers who are unhealthy and thus reducing service utilization. Potential reduction in medical care expenditures has been estimated for the WoW combined workforces, based on the actual prevalence of risk factors reported in this population and the plausible range of success rates for risk mitigation for the activities carried out by these employers. The estimated cost savings for medical care for the combined workforces range from \$0.76 million to \$4.07 million for the top three Action Plan targets together (diet and nutrition, leisure-time exercise, and stress reduction).

Therefore, the initial estimate based on the medical cost reduction through health improvement alone indicates that the WoW program may potentially yield \$0.38 to \$2.04 in direct medical care cost reduction from these three target areas for every \$1 PWTF investment on the WoW program (\$2 million as of December 2016). The magnitude of cost saving could be greater if savings from other target areas are considered, including keeping healthy people stay healthy, preventing chronic disease complications, synergistic effects when targeting multiple areas simultaneously, increased productivity, and reduced absenteeism. Additionally, further expansion of the WoW program could yield higher returns since a solid foundation of program delivery and data processing infrastructure has been developed and such upfront developmental costs are likely non-recurrent in the future. Nevertheless, the estimates for overall cost reductions will be provided when the data on program cost to employers become available.

## Methods

The program design, recruitment, and engagement of employers are described elsewhere. This report covers data collection, analysis, and interpretation for evaluation of the WoW program and its benefits to date. Relevant data elements are summarized in Table 1 (below).

### Evaluation Instruments and Measures

#### 1. Baseline Assessments

*Program Application:* The initial application, completed on-line, obtained the information necessary to determine employer eligibility for the WoW program.

*On-Boarding Survey:* Once an employer organization was accepted and provided a signed Memorandum of Understanding, an on-line follow-up survey was requested for more detailed demographics and descriptive information about the workforce.

*Employee Needs and Interest Survey:* A survey was distributed to individual employees through their employers and returned online or via postal mail directly to the WoW program evaluation team. The survey was administered anonymously in order to protect employee privacy. The survey gathered data on employee health behaviors and indicators, as well as their interest in specific types of programs which their employers might offer. Items were extracted from previously validated instruments to the extent possible. The baseline survey was distributed approximately two months into the program, for the most part. The survey was provided on-line, and supplemented with paper surveys as needed. A Spanish-language survey was also available upon request.

*Environmental Scan:* Employers were also asked for information on the physical attributes of the workplace, as well as existing programs and policies related to employee health. This questionnaire was provided in hard copy for the wellness committee or Champion to use in needs assessment. The data were compiled and submitted in electronic format to the evaluation team.

Organizations with multiple physical locations were not instructed or required to provide Environmental Scans for every physical facility, due to the potential paperwork burden. However, some multi-site organizations chose to do so, voluntarily, in order to report separately the physical features of each site.

*Action Plan:* All participating employers are required to submit a Worksite Wellness Action Plan (WWAP). The WWAP sections correspond to the steps in the WoW Program Development Cycle. The WWAP documents the intended program priorities, goals, objectives and intervention activities planned by each employer. It is used to determine the level of funding to be provided to each employer. For each goal selected for action, employers were explicitly instructed to include activities to promote behavior change at three levels: organizational policy and/or environmental supports, individual behavioral skill-building, and awareness-raising.



## 2. Follow-up Assessments

*Process Evaluation Interviews with HRiA/AW:* Two group interviews were conducted with Health Resources in Action (HRiA) and AdvancingWellness (AW) staff during the program delivery period. Data collected focused on successes, challenges, and recommendations related to planning, recruitment, survey administration, project management, communication and collaboration.

*Interview/Survey with Wellness Champions:* At the end of the formal program activities (September-October 2016), Cohort 1 worksite wellness coordinators (or “Wellness Champions”) completed a written survey or were interviewed to gather feedback about the WoW program. The questions asked about the usefulness and value of the program, levels of employee involvement and satisfaction, any challenges with implementation, and recommendations for program improvement. Additionally, they were queried about the likelihood that their own program would continue once the WoW support ends.

*Worksite Wellness Evaluation Report (WWER):* Near the end of the program, participating employers are asked to submit a report to document and summarize their actual program implementation. After these are received, the evaluation team will be able to compare each WWER with the action plan (WWAP) that was submitted at baseline by the same organization.

*Employee Needs and Interest Survey:* The follow-up survey is distributed by employers to their employees eleven months after enrolling into the program, following the same procedures as used for the baseline survey. Submission of the received questionnaires is required in order for the employer to obtain the final seed funding allocation. (These data have only been collected from employees in cohort 1 participating organizations to date; they are not yet formatted or ready for analysis.)

Table 1. Overview of data collection instruments for “Working on Wellness” program

<b>Instrument</b>	<b>Source of information</b>	<b>Time of administration</b>	<b>Key measures</b>
Program application	Employer representative	Baseline	Economic sector; workforce size and turnover; proportion low-wage employees; employer readiness to participate in WoW
On-boarding survey	Employer representative	Baseline	Workforce demographics; conditions of work; current wellness activities
Non-Participant survey	Employer representative	Post-enrollment deadline	Top reasons for not participating; opinions of the program; recommendations for the future
Needs and& interests survey	Employee self-administration	Baseline; End of program	Health/disease conditions; health behaviors; overall health risk; wellness topics and activities of interest
Environmental scan	Employer representative	Baseline; End of program	Employee health, safety, and wellbeing policies and programs in the workplace
Action plan	Employer representative	During program	Program assessment and planning: objectives, interventions, community partners, and resources
Group interviews with program delivery staff	HRiA and AW Staff	End of program	Process evaluation: Programmatic successes, challenges, recommendations for changes
Worksite wellness evaluation reports	Employer representative	End of program	Values/benefits, community collaborations, reach, program goals met, costs, evaluation metrics
Interview or survey of Wellness Champions	Employer representative	End of program	Usefulness, value, involvement, and satisfaction levels, recommendations for improvements, challenges, sustainability

### Data Management and Analysis

Each participating employer’s Employee Identification Number (EIN), or Federal Tax Identification Number (Federal Tax ID), was used to match records across the various instruments. Industry sector was categorized using North American Industry Classification System (NAICS) codes, which were assigned based upon information provided by each employer on the on-boarding survey. In cases where the information was not available, was

insufficient, or seemed questionable, a search was performed in the InfoUSA database using employer name and location; the resulting organization's NAICS code was assigned as the primary code. In a few cases the evaluation team further re-classified employers based on additional information obtained from the employer's own on-line description.

Data on employer organizations and employee characteristics (as reported by the Wellness Champions or other employer representatives) were summarized across the first four cohorts. (Cohort 4 employers are still submitting initial information.) Data on employer policies, programs, and physical facilities at baseline were summarized to describe needs and areas for potential improvement which could benefit employee health.

Preliminary information about existing wellness activities and programs was obtained in the Application. Ten items were scored (1=None, 2=Partial or limited, 3=Already in place) and then added to give a total "Existing Program" score that could range from 10 to 30. A similar score of "Program Readiness" was computed by adding 7 items (each scored 0=Don't Know, 1=Strongly Disagree, 2= Disagree, 3=Agree, 4= Strongly Agree), constructing a scale that could range from 0 to 28.

More detailed information about the employer's existing policies, programs and facilities relevant to employee health was obtained in the Environmental Scan (ES). Similar to the preceding two scores, the ES information was compiled and scored, in this case within seven categories: physical activity, nutrition, tobacco and substance abuse, supports for parents/families, stress and mental health, supports for those with specific medical conditions, and occupational health and safety. The total number of possible points varied within category, according to the number of possible policies or facilities.

The Application and On-Boarding Survey collected information about the entire employer organization, regardless of how many physical worksites it was comprised of. In contrast, the Environmental Scan covered many features of the physical environment and facilities and these could obviously vary among sites within an organization. For Cohort 1, individual employees could only be identified with respect to the entire organization. For later cohorts, the Needs and Interests Survey included an item to identify the site where the employee worked, customized for each multi-site organization, to facilitate matching individuals to their specific location and hence the specific characteristics reported on the Environmental Scan.

Data reported by employees through the Needs and Interest survey were aggregated at the employer organization level, as well as pooled across employers and cohorts. These summaries include the prevalence of chronic health conditions, unhealthy behaviors, and working conditions among respondents that might pose obstacles to their health.

We constructed a summary risk score for each individual employee, reflecting their responses to nine risk factors specified in the Needs and Interests Survey. These nine risk factors were high blood pressure, cholesterol, diabetes, body mass index (BMI), physical activity, nutrition, smoking, stress, and insufficient sleep. Individuals were classified into three levels based on their number of risk factors: Low (0-1 high risk measure), Medium (2-4 high risk measures), and High (5 or more high risk measures).

The overall health risk for each participating organization is represented by the proportion of employees in each of the three risk levels. The literature has shown that similar sets of scored health risk indicators are associated with increased morbidity, absenteeism, presenteeism, and health care expenditures [e.g., Edington, 2001; Burton, 2006; Henke, 2011; White, 2015].

The distribution of employees' risk level, along with employees' interest in and needs for specific types of wellness activities, were reported back to their employers, to summarize the overall health risk for each participating organization and to guide decision-making about what program activities to offer.

Planned program activities from the Worksite Wellness Action Plans in Cohorts 1 and 2 (the data available as of October, 2016) were coded manually by at least two members of the evaluation team (to verify agreement) to assign each activity to a specific intervention type. For each program priority area (e.g. increase physical activity, improve healthy eating, and reduce stress), organizations planned a range of activities (awareness, behavior change, policy/environment supports) to meeting their stated goals. Once activity codes were assigned, overall wellness activity frequencies were computed across all organizations to determine the overall distribution.

To address the goals set by the Massachusetts state legislature, we conducted extensive literature reviews to facilitate calculation of the expected long-term benefits that could be obtained from the types of wellness activities that participating employers carried out. The literature reviews separately addressed the three primary goals which virtually all employers targeted: healthier diets, increased physical activity, and stress reduction. For each goal, we extracted data from published scientific studies, as much as possible for programs with similar design. Data were compiled for the typical or expected success rate (achievement of desired behavioral goals, e.g., increasing exercise to a recommended level), and reductions in chronic disease and in related costs (if reported). These were used to estimate the expected longer-term benefits for employees and for the Commonwealth.

To evaluate the WoW program itself, qualitative data (open-ended responses) have been collected from MA WoW program staff and from organizations' Wellness Champions, through the data collection instruments described above such as the Employee Needs and Interests survey, process and program evaluation interviews with program staff and Wellness Champions, and the Employer Worksite Wellness Evaluation Report instrument. These data have been examined, coded, organized, and reported on here by main themes, in order to assess contextual factors related to program delivery and health. Interview data from HRiA and AW staff during and after Cohort 1 suggested midcourse adjustments that were made to increase efficiency, uptake, and effectiveness for the subsequent cohorts. Employer qualitative data have been used to document program implementation, goals and expectations that were met, as well as ways to improve the overall program experience for subsequent cohorts and for those who might wish to replicate the program elsewhere.

## Results

### Employers participating in the program

Across all four cohorts of employer organizations, 205 were eligible and accepted into the program. Data from the first 187 organizations were available for this report. Of the 144 employers in the first 3 cohorts, 110 have completed the on-boarding survey to date. Three-quarters were non-profit or public sector agencies and thus not eligible for the Massachusetts Small Business Wellness Tax Credit. Of the participating sites that were eligible, two applied for the tax credit in calendar year 2016. The number of applicants is expected to increase as eligible participating sites complete the program.

Most of the participating organizations were in the sectors of Healthcare and social assistance, Education, and Other services (Table 2, next page). This is generally consistent with Massachusetts' predominant areas of economic activity. Notably, under-represented sectors among program participants were Construction (comprising about 10% of small Massachusetts establishments), Wholesale trade (about 5%), Retail trade (14%), and Professional and technical services (13%). These omissions are not surprising in light of work process characteristics in these sectors. For example, construction work by definition does not have a fixed workplace or a stable workforce, so the physical conditions would not support provision of new facilities or group activities, and the incentive for investing in employees' long-term health would be low. Wholesale and retail trade companies, to some extent, feature a high degree of night shift work in shipping and receiving, which similarly would limit access to facilities and to trainers or coaches who might lead exercise or yoga classes.

Across all four cohorts, 52 percent of participating organizations were small organizations with 200 or fewer employees (Table 2, next page), a priority for this program. The median workforce size was 195 employees (full-time and part-time combined). There was some evidence of a trend in the later cohorts toward larger organizations and a higher proportion of salaried employees. The organizations that completed the first three steps in the process - application, onboarding survey and Needs and Interests survey - represented over 74,000 employees. The average annual turnover rate was estimated by these employers at about 40%, of which three-quarters was voluntary leaving of employment.

It should be noted that these employee counts are very unlikely to include contract workers. Use of contract workers is an increasing trend, especially with regard to certain types of jobs such as housekeeping, maintenance, and food service workers, and it is particularly widespread in some sectors, such as hospitality. Specific attention to recruiting temporary staffing agencies might be necessary to cover these workers.

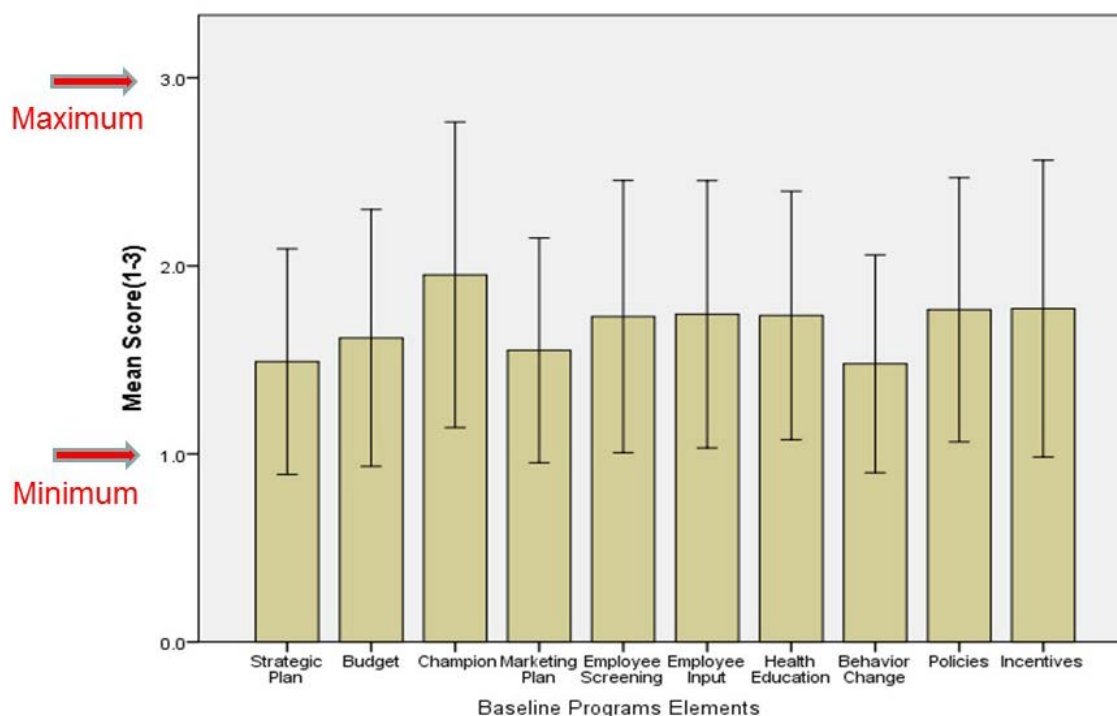
Table 2. Organizational characteristics of the first 187 employers accepted into WoW, Cohorts 1-4, based on data from the program application)

<b>Industry sector</b>	<b>% of employers (n)</b>
Agriculture, forestry, and fishing	0.5% (1)
Arts, entertainment, and recreation	1.6% (3)
Construction	3.2% (6)
Education	12.8% (24)
Finance and insurance	3.2% (6)
Health care and social assistance	16.6% (31)
Information	0.5% (1)
Manufacturing	3.7% (7)
Other services	25.7% (48)
Professional services	5.9% (11)
Public administration	6.4% (12)
Real estate, rental, and leasing	1.6% (3)
Retail trade	1.1% (2)
Transportation and warehousing	1.1% (2)
<b>Type of organization</b>	
For-profit	25% (47)
Non-profit	61% (114)
Public sector (government)	14% (26)
<b>Workforce size</b>	
Small: 200 or fewer workers	52% (97)
Medium: 201 - 500 workers	28% (53)
Large: over 500 workers	19% (36)
<b>Estimated turnover rate (%): avg (SD*)</b>	40% ( $\pm$ 41%)
<b>Existing program score (10-30): avg (SD)</b>	16.8 ( $\pm$ 4.4)
<b>Program readiness score (0-28): avg (SD)</b>	14.2 ( $\pm$ 7.7)

\* SD = Standard deviation

At the time that they enrolled in the WoW program, 48% of these employers offered no formal wellness program, and they had few policy or environmental supports to encourage employee physical activity, nutrition, or tobacco-free lifestyle, or to support work/life balance (Figure 1). The total “Existing Program” score averaged 16.8, or well below the mid-point on a scale from 10 to 30 (Table 2, above). These scores confirm that the organizations accepted into the program had very few supports already in place for offering worksite wellness program activities and thus were good candidates for program assistance. Their “Program Readiness” scores were slightly more favorable, averaging about 14 on a scale from 0 to 28 (Table 2). This demonstrated that organizational leaders were willing to allocate staff time and other resources to initiate and sustain an employee wellness program.

Figure 1. Baseline scores for existing wellness program elements, as reported in employers' program applications (Cohorts 1 – 4).



According to the demographic information provided by employers, the total workforce included 63% women, about 60% non-Hispanic Whites, and 26% with only a high school education or GED or lower (Table 3, next page). Nearly one-half were age 45 or older. Languages spoken by workers at any of these organizations, other than English, included Spanish, Haitian Creole, Portuguese, French, Mandarin Chinese, Japanese, Laotian, and Vietnamese (in descending order of frequency).

About three-fifths of the total workforce comprised hourly wage workers. Of particular note, in light of the program goals, is the fact that two-thirds of the participating employers indicated that they had at least some low-wage workers, meaning hourly wage of not more than \$13.50 per hour. About two-thirds of employers reported no workers with union representation, while nearly 40% had at least some employees covered by collective bargaining agreements. Only two organizations in Cohort 1 indicated that their employees were compensated on any type of incentive system (about one-fourth of the workforce in each case).

Most employees worked standard day-time shifts, but about 17% had evening, night or rotating shift assignments. These schedules would potentially make it more difficult for workers to participate in scheduled wellness activities, whether on or off-site.

Table 3. Workforce demographics of WoW participating organizations, as reported by employers in the on-boarding surveys.

<b>Workforce characteristics</b>	<b>Mean (<math>\pm</math> SD)*</b>
<b>Age:</b>	
Under 18 y.o. (%)	2% ( $\pm$ 10%)
18-34 y.o. (%)	34% ( $\pm$ 18%)
35-44 y.o. (%)	20% ( $\pm$ 9%)
45-54 y.o. (%)	22% ( $\pm$ 8%)
55-64 y.o. (%)	18% ( $\pm$ 12%)
65+ y.o. (%)	6% ( $\pm$ 5%)
<b>Gender (% female)</b>	63% ( $\pm$ 24%)
<b>Race/ethnicity:</b>	
Hispanic or Latino (%)	12% ( $\pm$ 15%)
Black or African American (%)	15% ( $\pm$ 20%)
Asian (%)	3% ( $\pm$ 7%)
White (%)	61% ( $\pm$ 30%)
<b>Education:</b>	
Less than high school (%)	2% ( $\pm$ 9%)
High school or GED (%)	24% ( $\pm$ 27%)
Some college or technical school (%)	20% ( $\pm$ 17%)
College (4 years) (%)	37% ( $\pm$ 21%)
Post-graduate/advanced degree (%)	20% ( $\pm$ 20%)
<b>Workforce levels:</b>	
Hourly wage workers (non-exempt) (%)	60% ( $\pm$ 27%)
Salaried, non-managerial (exempt) (%)	25% ( $\pm$ 24%)
Salaried managers (exempt) (%)	18% ( $\pm$ 19%)
Employees on day shift (%): avg ( $\pm$ SD)	83% ( $\pm$ 24%)
Employees routinely working > 40 hours/week (%): avg ( $\pm$ SD)	18% ( $\pm$ 24%)
Employees covered by union collective bargaining agreement (% of employers)	63.6%
Workforce with use of computer for survey completion and/or access to wellness program resources (%): avg ( $\pm$ SD)	60% ( $\pm$ 27%)
<b>Proportion of low-wage employees (earning <math>\leq</math> \$13.50/hr) among participating organizations:</b>	% (number of organizations)
None	34% (63)
1% - 25%	41% (76)
26% - 50%	13% (24)
51% - 75%	6% (12)
76% - 100%	5% ( 9)
<i>* Mean and standard deviation (SD) show the distribution of reported percentages from each of 187 participating organizations.</i>	



### Baseline employer programs and policies

The Environmental Scans have been completed by 99 organizations to date in Cohorts 1, 2 and 3. Collection of these questionnaires has not yet been initiated for Cohort 4.

Among employers who have provided this information, most had at least some baseline policies and facilities in each of the seven domains or content areas (Table 4, below). However, the status quo before beginning the program was rather low compared to the number of items that were covered in the ES instrument. Except for occupational health and safety, which is covered by legal requirements for most employers, the average scores were below one-third of the possible maximum values. Thus there was substantial opportunity for improvement in all of these areas. There were only negligible differences between the scores of these three cohorts.

Table 4. Descriptive data on employers' workplace health, safety, and wellbeing policies and facilities: Cohorts 1 (n=22 employers), Cohort 2 (n= 46 employers) and Cohort 3 (n=32 employers).

Domain (total possible number of points)	Mean ( $\pm$ Standard Deviation)			Range (Minimum – Maximum)		
	Cohort 1	Cohort 2	Cohort 3	Cohort 1	Cohort 2	Cohort 3
Physical activity (42)	9.91 ( $\pm$ 4.97)	10.29 ( $\pm$ 5.67)	10.83 ( $\pm$ 6.66)	2-21	1-27	1-31
Nutrition (46)	12.73 ( $\pm$ 4.13)	12.23 ( $\pm$ 4.10)	11.71 ( $\pm$ 53.82)	6-25	6-23	6-23
Tobacco and substance abuse (21)	6.91 ( $\pm$ 2.79)	6.89 ( $\pm$ 3.39)	6.74 ( $\pm$ 3.05)	3-15	0-15	1-12.5
Supports for parents/families (16)	3.98 ( $\pm$ 3.99)	3.91 ( $\pm$ 3.04)	4.14 ( $\pm$ 3.19)	0-15	0-11	0-13
Stress and mental health (15)	6.20 ( $\pm$ 2.15)	5.98 ( $\pm$ 2.24)	6.72 ( $\pm$ 2.82)	2.5-10	2-11	2-13
Medical and chronic conditions (7)	1.34 ( $\pm$ 1.19)	1.36 ( $\pm$ 1.23)	1.38 ( $\pm$ 1.47)	0-4	0-5	0-5
Occupational health and safety (11)	5.16 ( $\pm$ 3.11)	5.35 ( $\pm$ 3.64)	4.94 ( $\pm$ 3.12)	0-11	0-11	0-11

### Employees' baseline health needs and interests

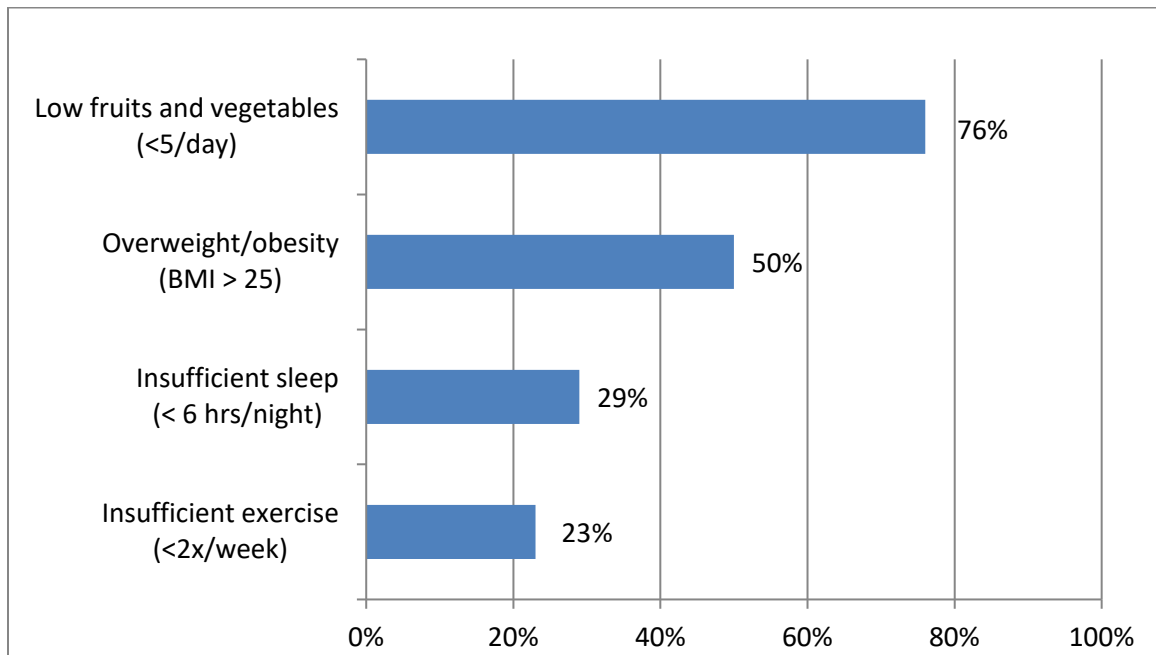
In Cohorts 1-3, 108 organizations distributed and collected the Needs and Interests survey of their employees. A total of 11,010 employees at these workplaces completed and returned the Needs and Interests survey.

#### *Employee health:*

Nine health risk factors were used to compute health risk profile for employees: high

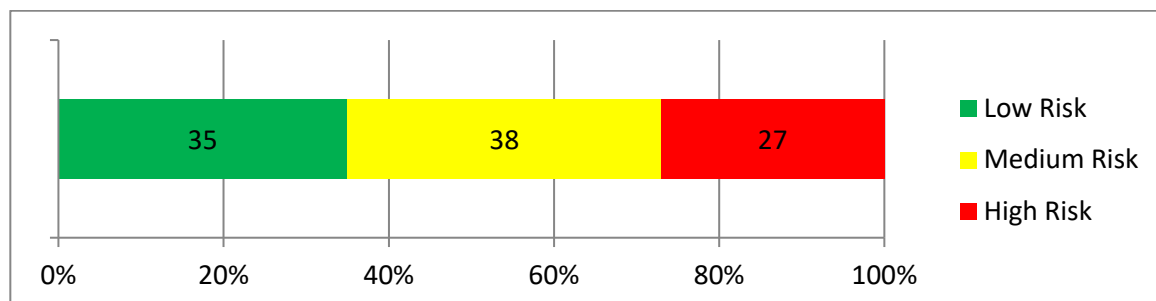
blood pressure, cholesterol, diabetes, body mass index, physical activity, nutrition, smoking, stress, and insufficient sleep. Of these nine health risk indicators listed above, the most prevalent risks reported by employees were low fruits and vegetables, overweight, insufficient exercise, and insufficient sleep (Figure 2, below). Substantially fewer numbers reported stress interfering with health (19% of respondents) or notable depression or anxiety (8%), which are indicators of stress selected to represent more severe potential outcomes.

Figure 2. Top health risk factors reported by WoW employees through the individual Needs and Interests surveys (Cohorts 1-3).



When the nine health risk indicators were summed to generate the overall risk score, the respondents were categorized in roughly equal proportions as low risk (0-1 factors), medium (2-4 factors), and high (5 or more factors). Thus about two-thirds of employees were designated as being at either medium or high risk (Figure 3).

Figure 3. Distribution of health risk scores, based on WoW employees completing the individual Needs and Interests surveys (Cohorts 1-3).



### *Workplace opportunities for healthy lifestyles:*

Eighty percent of employees who responded to the survey stated that their employers already provided them with a tobacco-free workplace. The majority of employees also stated that their employers offer them the opportunity to be physically active, eat a healthy diet, and manage stress (68%, 64% and 53%, respectively).

Employees further expressed interest in new wellness activities that their organizations might offer through the WoW program. They indicated that they were most likely to participate in activities to become more physically active, eat healthier diets, manage stress, and prevent injuries through ergonomics (Table 5, below).

Regarding specific policy or environmental supports for healthier behaviors, employees were most interested in tobacco-free grounds (70%), extending the current MA smoke-free workplace law to include exterior grounds. They were also interested in discounted gym memberships (67%), flexible work schedule (67%), and paid time for physical activity (61%).

Employees also expressed readiness to change their behaviors to become healthier (Table 5). The area with the most endorsements was in being ready to make changes to reduce stress (46%). Other areas in which employees were especially ready to change were to lose weight or maintain a healthy weight (50%), to be physically active, and to eat a healthy diet.

If a program was offered that was of interest to them, 63% of respondents said they would be willing to participate during personal time, with 46% indicating they would prefer to participate after work. Smaller proportions indicated that the best time for them to participate would be at lunch time, before work and on weekends (28%, 24%, and 21% respectively).

Table 5. Alignment of employer WoW activities with employee health needs and interests.

**A-C:** Employee interest in possible wellness activities, policy and environmental supports and readiness to make health behavior changes (n=11,010 individual responses to Needs and Interests survey, from 108 organizations in Cohorts 1-3).

**D:** Planned employer activity targets (n=50 organizations submitting Action Plans, in Cohorts 1-2).

	A. Types of activities "I am likely to participate in...."		B. Types of policies and environmental supports "I am very interested in...."		C. "I am ready to make changes"		D. Employers' selected program targets	
	n	%	n	%	n	%	n	%
Healthy eating	4,919	44.7%	6,377	57.9%	4,094	37.2%	37	74%
Exercise	6,948	63.1%	7,456	67.7%	4,227	38.4%	47	94%
Stress reduction	6,296	57.2%	6,677	60.6%	5,068	46.0%	34	68%
Workplace ergonomics	3,545	32.2%	-----*	-----	-----*	-----	8	16%

\* Question not asked for ergonomics.

## Planned WoW Employer Wellness Programs and Policies

A total of 53 Action Plans have been submitted to date from Cohorts 1 and 2. In Cohort 1, organizations were asked to name 3 health targets, and to undertake one activity or other change for each of the targets. However, selecting three turned out to be somewhat ambitious for new trainee Wellness Champions. It was too complex to plan interventions in 3 areas simultaneously, and some organizations had too few resources available to implement 3 interventions in the same short time period. Therefore, in Cohorts 2-4, participating organizations were asked to select 1 health target for their programs, which was more in line with the available resources. This allowed organizations to focus more deeply, using a range of strategies to make an impact on the selected topic. It seems likely that this change was also responsible for the higher employer enrollment in the later cohorts.

In all cohorts, employers' selected program targets were predominantly to increase physical activity, improve nutrition, and reduce or manage stress. These goals were well aligned with the health needs and program interests that were identified from the surveys of individual employees at the same organizations (Table 5, above). Certain specific activities were designated by large numbers of employers in Cohorts 1 and 2 (Table 6 below).

Table 6. Most frequently submitted employer activities from their submitted Action Plans, in rank order: Cohorts 1 and 2.

Most frequent interventions	Physical Activity		Nutrition		Stress Reduction	
	Freq	Intervention	Freq	Intervention	Freq	Intervention
1	25	On-site yoga/general fitness classes	21	Workshop on nutrition and healthy eating	20	Yoga classes
2	21	Walking Club	15	Meeting food policy	13	Stress management and coping skills trainings, demos, and/or practice
3	19	Personal health coaching, fitness education, seminars	12	Healthier options in vending machines	11	Meditation/mindfulness classes

Overall, employers complied with program guidance by developing activity mixes focused on establishing long-lasting organizational policies and environmental supports for adopting healthy behaviors, and on providing skill-building opportunities either on-site during the work day or in the local vicinity. Activities to encourage social connections between employees as they engage in health and wellness activities were also commonly reported. Examples included walking clubs, fitness classes and challenges, farm shares, community

gardens, and yoga classes (Tables 7-9 below). Of note, the Department of Public Health explicitly dis-allowed employers from financial penalties for workers who opted not to participate in organized activities.

Environmental change was most frequently achieved toward the goal of dietary improvement, as many organizations introduced meeting food policies and provision of healthier food options on campus (Table 8). To address the goal of stress reduction, several organizations committed to addressing work organization factors such as work overload and social support in the workplace, although few specifics were provided. These factors related to job stress are important contributors to chronic disease, and represent a progressive “Total Worker Health” approach to improving workplace health through primary prevention, according to the Centers for Disease Control and Prevention.

Table 7. Physical Activity interventions submitted in Action Plans from Cohorts 1 and 2.

Type of intervention	Sample of most common activities	Frequency of interventions
Physical access	On-site yoga (with or without meditation), on-site aerobic/strength class	53
Financial access	Discount gym membership	29
Information	Promotion of nearby walking paths/routes	43
Point-of-decision prompts	Motivational signs to encourage use of stairs, reminders to move	15
Incentives/rewards	Pedometer/fitness challenges with potential rewards	9
Individual or group workshop, counseling, training, etc.	Learning opportunities such as health coaching and seminars	24
Staff competitions/challenges	Team pedometer/fitness challenges	32
Social support	Walking clubs/sports leagues	24
Policy support	Incorporating physical activity breaks at meetings; paid time for physical activity	35

Table 8. Nutrition interventions submitted in Action Plans from Cohorts 1 and 2.

Type of intervention	Sample of most common activities	Frequency of interventions
Information	Posters, newsletters, recipe sharing	21
Physical access	Meeting food policy; healthier options in vending machines	56
Financial access	Cost-sharing of healthier food	6
Financial incentives, rewards, challenges	Weight Watchers program	10
Individual or group counseling, training, workshop (face-to-face, internet etc.)	Workshops on nutrition and healthy eating, cooking demos	30

Table 9. Stress reduction/coping interventions submitted in Action Plans from Cohorts 1 and 2.

Type of intervention	Sample of most common activities	Frequency of interventions
Onsite classes and activities (seminars) for stress reduction	Yoga classes*, mindfulness or other stress management training	44
Physical access to stress reduction spaces or activities (indiv., group)	Designated space for quiet stress reduction activities	8
Policy supports	Reducing work organization stressors (breaks, work pace, decision authority)	8
Information/communication	Wellness fair, awareness communications	6
Team building and social support	Planned social activities, work team building	5
Individual counseling, coaching, etc. (face-to-face, internet etc.)	Coaching	4

## Community Partnerships

All WoW employers named community partners that they could engage to provide resources (either in-kind contributions or for purchase by employees) for specific wellness activities for their employees. Specific potential partners named frequently in Cohorts 1 and 2 included organizations providing fitness facilities, such as YMCA (mentioned specifically 14 times) or other privately owned gyms, and farms to promote access to fresh produce. Local businesses and non-profit organizations were the types of partners mentioned most often (Table 10 below); many of these were small businesses providing wellness-related services (fitness, yoga, massage, health coaching, etc.). Health insurers (combined with healthcare provider organizations) were also commonly cited. Town or municipal wellness partners referred to city or town offices, many representing programs specifically supported by the Massachusetts Department of Public Health (e.g., Mass in Motion).

Several employers initiated unusual partnerships with local businesses and retailers to promote health in the workplace. A community health center established a partnership with “Fresh Truck” (a mobile produce stand) to bring fresh produce onsite weekly for employees to shop. This organization is planning to expand service hours to make the produce available to their health center clients as well. Other employers connected employees with existing resources such as websites that locate restaurants with healthy food choices and walking route maps in nearby areas.

Table 10. Community Partner organization types submitted in Action Plans for Cohort 1 and Cohort 2.

Organization type	Examples	Number
Business	Gyms, food retailers, yoga studios, Weight Watchers, Nutrition Center, Charles River Canoe and Kayak	69
Non-profit organization	YMCA, farms, farmers markets, HubWay Bikes	50
Healthcare insurer	Blue Cross Blue Shield, Harvard Vanguard, Tufts, Massachusetts Interlocal Insurance Agency	39
Town or government	Town departments, parks, vocational technical schools	16
College or university	Gordon College, Roxbury Community College, Smith College, UMass	16
Healthcare provider organization	Berkshire Health Systems, Lowell General Hospital	8
Associations/coalitions	Coastal Rail Trail Coalition, Southcoast Worksite Health Collaborative	4
Other		20



## Program Implementation: Curriculum, Facilitators, and Challenges

Worksite Champions from Cohort 1 organizations were surveyed (7) or interviewed (11) to gather feedback about the Working on Wellness program during September and October 2016. Three additional Champions did not respond to the interview/survey request (missing).

### *Quality of Working on Wellness curriculum:*

Cohort 1 organizations were highly satisfied with the quality of the WoW training program (Table 11 below). Nearly all (89%) of the Champions said that they would recommend the Working on Wellness program to other MA employers. Although some participants noted the time commitment was greater than expected, ratings and remarks were highly favorable.

Nearly all (95%) of the participating organizations reported that opportunities for peer learning were excellent or good. Overall, participants preferred the format of group technical assistance calls with a technical advisor, over the online learning portals. Technical assistance calls were reported to be the most useful for the topics of gaining management buy in, program planning/implementation, and evaluation. Participants stated a desire for more face-to-face interactions in the future, if MA WoW program resources permit.

Some Wellness Champions found the guidance on Community Partnerships less useful than the other learning topics, either because they already had strong community partnerships, or there was a lack of relevant community partner organizations in their immediate vicinity.

Table 11. Quality of “Working on Wellness” curriculum and technical support, as reported by participating employers.

<b>Quality Indicator</b>	<b>% rated “Agree” or “Strongly Agree”</b>
Online curriculum organized and presented clearly	95%
Instructions for accessing assignments and tools were clear	83%
Instructions for completing and submitting assignments were clear	83%
Tools were useful for creating organization's program	100%
WoW program met expectations	95%
	<b>% rated “Good” or “Excellent”</b>
Overall value of WoW online curriculum rated	100%
WoW Expert Series quality (reported by the 64% that attended)	100%
Opportunities for peer learning	95%
Online discussion portal	37%
	<b>%</b>
Respondents that used the online discussion forum	60%
Technical assistance calls rated very useful	67%

*Participant recommendations for improving Working on Wellness:*

When asked how the Working on Wellness program could be improved, these were some of the suggestions offered:

- Six organizations suggested specifying a work plan/timeline prior to starting the program, to identify the required time commitment and resources required for the program.
- Four organizations suggested improving clarity and simplicity of materials and tailoring parts of the program to meet organizational needs, such as providing opportunities to customize the questions in the Needs and Interests survey.
- Tailoring the guidance on developing community partnerships was recommended to make the program content more relevant to a) agencies with strong existing community partnerships, and b) organizations located in areas with few potential partner organizations.
- Increasing face-to-face collaboration was another common theme. Three employers suggested opportunities for onsite meetings with technical advisors, and two suggested having a kick-off or quarterly meeting to share ideas with other organizations about the program.

*Champion appraisal of wellness program implementation and support within their organizations:*

WoW organizations were required to assign a key upper-level leader within the organization to lead and support the new wellness initiative. Wellness Program “Sponsor” was the term used to refer to this leader. The majority of respondents were pleased and satisfied with their Sponsor’s support (and management support generally) of the wellness program (Table 12, next page). Most Sponsors met regularly with the Champion and/or wellness committee to review progress of the wellness initiative, and WoW materials such as the Worksite Wellness Action Plan and Worksite Wellness Evaluation Report were cited as useful in this process. A recurring theme was the importance of encouragement, support, and engagement from the Wellness Program Sponsor and top management generally, and how this can make a difference for the program outcomes.

*“It has helped changed the mindset of the organization.” -- WoW Champion*

Table 12. Program support and engagement in WoW Cohort 1 organizations (18)

<b>Wellness Program Sponsor Support</b>	<b>% rated “Agree” and “Strongly Agree”</b>
Sponsor communicated regularly with organization about health, safety, and wellbeing	94%
Sponsor participated in wellness activities	89%
Sponsor generally could be seen practicing or modeling positive health behaviors	100%
Sponsor encouraged employee participation in wellness activities	89%
Sponsor met with the Champion and/or wellness committee to review progress of the wellness initiative	89%

*Employee involvement:*

Most Wellness Champions reported high engagement levels among employees and attributed the success of their programs to high employee involvement (Table 13 below). Four specifically stated that they observed increased employee involvement and excitement among employees about the wellness program. At three organizations, there was some difficulty with participation due to the nature of people’s job responsibilities or outside work commitments.

*“It has been great and really exciting to see employees excited and engaged in the wellness program. Our program success has been due to high employee engagement. We have had more people want to join the wellness committee and it is expanding.” -- Wellness Champion*

Table 13. Employee wellness involvement in 18 WoW Cohort 1 organizations

<b>Employee Involvement</b>	<b>% of Champions reporting</b>
Employees are participating in wellness policies and programs	94%
Wellness committee members are actively engaged in leading the wellness program	80%
Some non-wellness committee members are taking action to initiate wellness policies and programs in the workplace	66%

*Program implementation challenges:*

When asked about the most challenging aspects of implementing a worksite wellness program, the Wellness Champions most frequently cited the steps of gaining buy-in (6 participants) and implementing activities (7 participants) as the most challenging aspects. Four organizations reported challenges with obtaining employee participation. Three Champions stated that their greatest challenges were assessing employee needs and interests and developing community partnerships. The reasons were primarily related to resource and time

limitations. These concerns (resources and time) were the single most common reason given when some employers left the program after enrolling. This trend is consistent with issues that have been described generally in the worksite health promotion research literature.

When asked what they would have done differently to make their program more successful, seven of the Champions said that they would have involved the wellness committee members, Sponsors, and other managers much sooner at the start of the program. Two said that they would organize and disperse tasks differently to reach deadlines and save time.

#### *Program sustainability:*

Nearly all Wellness Champions (84%) reported that it was very likely that their wellness initiative would continue once the Working on Wellness program ends. Almost one-half (45%) reported it very likely that their organization would allocate resources to support their wellness initiative after the end of Working on Wellness seed funding. All organizations said that they would welcome continued seed funding, if available.

If WoW resources continue to be available in the future, nearly two-thirds of the Champions said that these resources would be the most useful:

- Annual in-person networking meetings with peers
- Continued electronic resource sharing
- Continued access to technical advisors

#### *Evaluator recommendations for quality improvement and future program delivery:*

Time and complexity of the online process were concerns raised by some participants. These concerns were addressed by the HRiA program delivery team as Cohort 2 was enrolled by shortening the length of the online learning modules, removing some training content (and providing it as optional material), and narrowing the focus of wellness program implementation from three health topics to one in order to deepen the program impact. Beyond these adaptations, the program delivery team could enhance the experience for future program participants by adopting one or more of the following recommendations:

1. Provide a clearer time estimate for the individual in the role of the Wellness Champion. This would allow prospective applicants to understand whether they are making a feasible commitment.
2. Provide an easy-to-follow graphical timeline for implementation of each program step. This would make it easier for participants to track and report their progress to the wellness program Sponsor (top leadership).
3. Encourage Wellness Champions to engage their wellness program Sponsor and committee immediately in the program implementation activities.

Although the quality of peer learning opportunities was rated high, participants expressed a desire to have more face-to-face interactions with technical advisors and other program participants. The program delivery team could provide additional opportunities, as

budget allows, by adopting one or more of the following recommendations:

1. Technical advisors visit each participating site once during the start-up phase of the program (or before wellness plans have been created and implemented).
2. Host an annual sharing meeting for program participants.
3. Host quarterly or semi-annual networking/sharing/education meetings in various regions of the state.

#### Projected Benefits of WoW Program Activities

We sought published scientific studies that documented the effects of similar programs on health behaviors, health status, and/or costs related to health conditions. We used data from these studies to project likely health and financial benefits of the WoW program, given the prevalence of unhealthy behaviors in the workforce (Figures 2-3) and the numbers of employers planning related activities or policies (Table 7-9). For this report, the published program benefits have all been expressed as percentages of baseline values from the employee population. The results have been tabulated separately for the three major intervention targets, i.e., healthier diets, physical exercise, and stress reduction (Table 14).

The benefits shown in these published studies range from as high as 20% or more of baseline value in individual items, down to as low as zero (i.e., no change), depending on the study and the outcome. (This range of effects may be due to differences in the specific intervention activities, workforce demographics and baseline health status, length of follow-up, and other factors.) There is ample evidence here that an improvement of 10%, 20%, or even higher is plausible from a well-conducted intervention. The expected success rate in risk mitigation is shown over a range for each measure that is consistent with the evidence summarized above, to allow transparency in the estimations.

Most of the outcomes reported in these studies are expressed in terms of average units for the entire population, which does not translate directly into change in the number of people with (or without) a specific risk factor. However, it can reasonably be assumed that in a population with an average reduction in BMI over the follow-up period, some individuals moved from “obese” to “overweight” or from “overweight” to normal weight. For purposes of calculating expected health benefits, we assumed that a 5% change in a measured outcome was roughly equivalent to 5% of the population changing risk category. Nevertheless, the improvement of BMI could also have subsequent/secondary benefits on employee’s health, e.g., preventing complications from diabetes or high cholesterol. The combination of exercise, healthy diet, and stress reduction could also have positive interactions among them and lead to greater benefits beyond each individual activity alone. The calculation that is presented in this report only includes the direct cost saving on medical care from each individual target area without considering potential secondary benefits and possible synergistic effects of multiple concurrent intervention approaches.

As shown in Table 15, the Action Plan activities can be predicted to lead to improvements in daily consumption of fresh fruits and vegetables, regular (weekly) exercise, weight loss, and reductions in stress that interferes with health. The biggest likely area of

impact is represented by as many as 12,485 employees increasing their daily intake of fresh produce, in the combined workforces of about 74,000 individuals. The planned exercise activities would likely lead to both increases (up to 4,800 employees) in regular weekly exercise, which has a wide range of health benefits, as well as a predicted reduction of up to 6,956 people in obesity prevalence. The lowest predicted impact is in the area of stress reduction, which follows from the low baseline prevalence of stress reported to interfere with health.

Since these outcomes represent items in the summary risk factor score, we could, if desired, estimate their impact on that total score. Thus, a 10% improvement in one of the 9 items could be assumed to represent an average improvement of about 1% in the total score, and a 20% improvement in one item would shift the entire score by about 2%. As noted above, the summary score used here is similar to other sets of scored health risk indicators that have been associated with increased morbidity, absenteeism, presenteeism, and health care expenditures [e.g., Burton et al. 2006; Eddington 2001; Henke et al. 2011; White et al. 2015; Caretto et al. 2016].

Such shifts in risk categories have also been associated with monetary savings to the employer; for example, DiBonaventura et al. [2015] estimated that a normal-weight employee cost an employer about \$600 less per year in indirect costs (e.g., presenteeism), compared to an overweight employee. Caretto et al. [2016] found that increased exercise was associated with reduced medical and prescription expenditures, particularly medical expenditures for endocrine diseases and prescription expenditures for gastrointestinal drugs. An evaluation of a worksite health promotion program in a large company by Henke et al. [2011] showed an average annual per employee savings for \$565. The authors concluded that the return on investment is at the range of \$1.88 to \$3.92 for every dollar spent on the program.

Of particular interest is a recent study of a relatively small organization (172 employees), evaluating an educational program in combination with a health risk screening [Allen 2012]. The authors documented a reduction of about 13% in low-density lipoprotein cholesterol in the entire population after 12 months, and an average reduction of 0.3 points in their disease risk score (6 items) relative to the intervention group. The program represented a financial investment of \$454.23 per one-point reduction in the composite score, which is similar to investment amounts reported by much larger companies.

Financial savings to an employer who implements a workplace health promotion program are achievable in two ways. One is “cost reduction,” which is achieved by improving health for individuals who are unhealthy. The other is “cost avoidance,” which is realized by maintaining healthy people at the same level, i.e., by deterring healthy employees from engaging in new unhealthy behaviors which, in turn, would lead to new medical care expenses. Most published intervention trials have not explicitly attempted to quantify these two phenomena separately. The published data generally represent cost reduction, although they may include cost avoidance as well without explicit acknowledgement. Thus, the savings estimated for this report represent the combination of both program effects but may be underestimated.

We estimated the potential saving in medical expenditures due to the WoW program by considering the total number of employees in participating organizations, the number of employers targeting the specific risk factor, and the proportion of employees with the specific risk factors, the expected success rate in risk mitigation, and the average annual decrease in medical expenditure. We set the annual average cost reduction per unit decrease in risk score at \$150 based on findings from Edington [2001]. (Note that this is an underestimate, as the dollar value has not been inflation-adjusted to 2015 dollars.) For the employees who do not eat sufficient fruits and vegetables at the start of the program, the predicted annual reduction in medical expenditures ranges from \$312,000 for a 5% success rate in healthy eating to \$1,873,000 for a 30% success rate (Table 15). Based on the same expected success rates (5% and 30%), we can anticipate a cost reduction in the range of \$120,000 to \$1,043,000 for employees not getting sufficient exercise, and \$72,000 to \$430,000 for employees whose stress interferes with their health.

In sum, given the actual prevalence of risk factors reported in this population and the plausible range of success rates for the activities carried out by these employers, the estimated savings for medical care expenditures alone range from \$0.76 million (assuming 5% success rate for each of the target areas) to \$4.07 million (assuming 30% success rate for each of the target areas) for the top three Action Plan targets together (diet and nutrition, leisure-time exercise, and stress reduction). For the \$2 million that the PWTF invested in the WoW program as of December 2016, it potentially yielded \$0.38 to \$2.04 in medical care cost reduction from these three target areas for every \$1 that PWTF invested. However, the magnitude of cost saving was likely underestimated because we have not included potential cost avoidance of deterring healthy people from engaging in new unhealthy behaviors, probable prevention of disease complications as subsequent/secondary benefits from each target area, potential synergistic benefits among multiple target areas, and possible gains from increased productivity or reduced absenteeism. Furthermore, the cost saving is expected to be even greater for future expansion of the WoW program. With the previous PWTF investments, the intervention methods and instruments, and infrastructure for program delivery, data collection and processing have been well developed, tested and refined; intervention and evaluation staff are trained and adapted to the settings. These efforts have paved a solid foundation for the continued operation of the WoW program with greater cost-effectiveness in the future. Nevertheless, the current cost saving estimate is solely from the PWTF's perspective. Future analysis should also include the cost to employers as data become available.

Table 14. Expected health benefits, among employees at risk, from published studies of employer wellness programs; change computed as percentage of baseline value, relative to control group where possible.

**A. Healthier diets**

<b>Types of activities</b>	<b>No. of activities proposed by employers</b>	<b>Examples of published interventions</b>	<b>Behavior change; Change in health condition prevalence</b>
Information (only)	21	Geaney [2016]: One study arm = nutrition education only	Change at 7-9 months follow-up: -0.7% in mean BMI -5.9% in systolic BP -4.1% in diastolic BP
		Gans [2015]: 3 groups for nutritional information: NT (Non-tailored written information); TW (Tailored written information); TW+TV (Tailored written + Tailored video information)	Changes at 8 months: -0.3% dietary fat for TW -0.5% dietary fat for TW+TV  Fruit & vegetable intake 1.33 times higher in TW+TV
Physical access	56	(see “multi-component programs,” below)	(see “multi-component programs,” below)
Financial access/support	6	French [2003]: Prices lowered by 50%.	+93% purchases of lower-fat snacks; increased intake of fresh fruit (4-fold) and baby carrots (2-fold).
		Alinia [2010]: Free fruit (one per person per day).	Change in food intake at 5 months: +38.8% fruit +12.3% dietary fiber -14.3% sugar +10.7% vegetables
Financial incentives, rewards, staff competitions, challenges	10	Racette [2009]: on-site Weight Watchers program, team competitions, participation rewards, incentives (& other components)	Change at 12 months: +30% fruit/vegetable intake +25% of participants in lowest risk group



Individual or group counseling, workshop, etc.	30	(see “multi-component programs,” below)	(see “multi-component programs,” below)
Point-of-purchase labeling	0	(see “multi-component programs,” below)	(see “multi-component programs,” below)
Multi-component programs (at least 2 of the components above)		Bandoni [2010]: menu planning, food presentation, motivational strategies.	Increased intake of fruits and vegetables after 6 months: +17.3% crude estimate, +11.2% adjusted
		Geaney [2016]: One arm = combined education and environmental changes in cafeteria, lower prices for fresh fruit.	Changes at 7-9 months follow-up: Lower intake of fats, salt, sugar, total energy. -1% in mean BMI -0.7% in waist circumference
		Johnson [2016]: Educational resources on physical activity and eating (print materials, weekly toolbox, tips, tracking posters, team logbooks); 6-week competition among employees and worksites	No difference after 6 months in daily intake of fruits and vegetables
		Da Silva Franco [2013]: workshop with nutritionists; group talks held at company events; environmental supports	Change at 9 months: +38% in intake of fruits and vegetables
		Salinardi [2013]: Education by nutritionist; “lifestyle modification;” program for structured maintenance of weight-loss	Change at 6 months: -9.5% body weight / BMI -10.8% systolic BP -9.5% diastolic BP -7.6% total cholesterol intake -11.5% sugar intake
		French et al. [2010a]: Increased proportion of healthier foods available; price reduction for healthy items	After 18 months: + 10-42% sales of healthy food items

		French et al. [2010b]: Nutritional information; healthier items in vending machine items; reduced prices for healthy items; fruit & vegetable intake competitions; daily weigh-ins, farmers market; behavioral improvement programs; etc.	Changes at 18 months: -17% energy intake +5% fruit & vegetable intake 0% BMI
		Morgan [2011]: printed handbook; face-to face weight loss information session; encouragement to monitor weight, food intake & exercise	Change at 6 months: 1.8% weight loss +15% more participants lost >5% of initial body weight

## B. Exercise

Types of activities	No. of activities proposed by employers	Examples of published interventions	Behavior change; Change in health condition prevalence
Information	42	(see “multi-component programs” below)	(see “multi-component programs” below)
Physical access	53	Taylor [2010]: 15-min exercise classes led by facilitator	+8% in daily steps +12% in HDL lipids (i.e., -12% high cholesterol)
		Pedersen [2009]: classes for specific resistance training (SRT), or all-around physical exercise (APE)	+10% in VO2 max -2.2% in body fat (similar results for both intervention types)
		Rebold [2015]: 12 week on-site exercise class program, 3x/week for one hour, certified instructor	-1.56% in average BMI
Financial access or support	29	-----	
Incentives, rewards, competitions, challenges	41	Shaw [2007]: Wear pedometer for 3 months; eligible for prize if submit all logs	+8.6% in daily step count
		Macniven [2015]: team pedometer-based program to reach 10,000 steps/day.	+6% in # taking 10,000 steps/day +18.5% in #steps/day
Individual or group counseling, training, workshop, etc.	24	Osteras [2006]: individualized exercise planning.	+11.1% in # of days/week with high-intensity activity > 10 min. +16% in # of days/week with mod-intensity activity > 10 min. +3.9% in VO <sub>2</sub> max
Point-of-decision prompts	15	Swartz [2014]: hourly prompts to get out of chair, or to get out of chair and walk around	Stand-only: +14% in total stepping time; no change in # of steps/day. Stand and walk prompts: +29% in total stepping time; +35% in for stand and walk

			prompts.
Policy supports	35	(see “multi-component programs” below)	(see “multi-component programs” below)
Team-building, social supports	24	(see “multi-component programs” below)	(see “multi-component programs” below)
Multi-component programs		Haines [2007]: Information via computer-based educational programs; log daily steps via pedometer.	+4.8% participants with "normal" BMI -1.03% in mean BMI -3.4% in number with stage 1 or 2 hypertension. - 5.45% in average blood glucose. - 3.18% in average total serum cholesterol.
		Johnson [2016]: Print materials on physical activity and eating behaviors; implementation resources (weekly toolbox, tips, tracking posters, team logbooks); 6-week “friendly competition” among employees and worksites	At 6-months follow-up: +58.98 minutes/week vigorous physical activity; +53.30 minutes/week moderate physical activity. +14% men meeting recommended levels of moderate to vigorous physical activity (150 min./ week), versus baseline.

### C. Stress reduction

Types of activities	No. of activities proposed by employers	Examples of published interventions	Behavior change; Change in health condition prevalence*
Information	6	Cook [2007]: web/print materials on stress, nutrition, and physical activity	Change at 3 months: -4.5% in mean perceived stress -4.4% in mean symptoms of distress
Physical access	8	Engen [2012]: weekly 15-min. chair massages for 10 weeks	Change at 10 weeks: -16.4% in mean perceived stress -17.2% in mean anxiety
Individual or group counseling, training, workshops, etc.	46	Allexandre [2016]: 8-week online stress reduction materials plus expert-led group (weekly 1-hour meetings)	Change at 1 year: -29.1% in mean perceived stress
		Hartfiel [2012]: 8-week DruYoga (50-min. 1x / week), plus DVD for home use	Change at 8 weeks: -11.3% in mean perceived stress
		Wolever [2012]: 12-week Viniyoga stress reduction program or Mindfulness at Work stress management program	Change at 12 weeks: -34.4% in mean perceived stress -27.4% in mean productivity loss
		Bazarko [2013]: 8-week mindfulness classroom/telephonic program	Change at 4 months: -39.4% mean perceived stress +10.4% mean general health +35.1% mean mental health
Policy supports *	12		
Team-building, social supports	5		
Financial access/support	1		

\* Percentages represent change in measurement tool mean scores

Table 15. Expected health benefits, among employees at risk, from employers' WHP programs.

(Total number of employees in participating organizations = approximately 74,000.)

Baseline at-risk behavior (%)	Cost Reduction		
	Expected success rate (%)	Expected number of employees to benefit	Annual savings (\$150 per unit risk score decrease)
<b><u>1. Diet</u></b>	5%	2,081	\$312,132
76% Employees not eating sufficient fruits/vegetables	10%	4,162	\$624,264
74% Employers including this target in their Action Plans	20%	8,324	\$1,248,528
	30%	12,485	\$1,872,792
<b><u>2. Exercise (I)</u></b>	5%	800	\$119,991
23% Employees not getting sufficient exercise	10%	1,600	\$239,982
94% Employers including this target in their Action Plans	20%	3,200	\$479,964
	30%	4,800	\$719,946
<b><u>2. Exercise (II)</u></b>	5%	1,739	\$260,850
50% Employees overweight or obese	10%	3,478	\$521,700
94% Employers including this target in their Action Plans	20%	5,217	\$782,550
	30%	6,956	\$1,043,400
<b><u>3. Stress</u></b>	5%	478	\$71,706
19% Employees with stress interfering with health	10%	956	\$143,412
68% Employers including this target in their Action Plans	20%	1,912	\$286,824
	30%	2,868	\$430,236

## Discussion and Conclusions

### Key findings with respect to the enabling legislation

Although the effectiveness of the interventions is yet to be fully evaluated, as the follow-up employee survey data are still being collected, substantial health benefits and healthcare cost savings are anticipated over a longer period of time. The predicted benefits provided in this report are based on the combination of baseline data collected from the combined WoW workforces and our summary of potential impacts from the existing literature.

**Legislative goal (i):** the extent to which the program impacted the prevalence of preventable health conditions

The published literature shows that multiple health risk factors, e.g., diets, exercise, and stress, can be mitigated by a healthier life style which is associated with low prevalence of preventable health conditions, e.g., diabetes, high cholesterol, and high blood pressure. Through the Massachusetts WoW program, employers have increased the offering of wellness programs with policy and environmental supports. Employees expressed a great interest in obtaining such services and supports. Additionally, employees were ready to make positive changes in their health behaviors.

In light of published effectiveness data, the activities planned by WoW employers are predicted to lead to improvements in daily consumption of fresh fruits and vegetables, regular (weekly) exercise, weight loss, and reductions in stress that interferes with health. The biggest likely area of impact is represented by as many as 12,485 employees increasing their daily intake of fresh produce, in the combined workforces of about 74,000 individuals. The planned exercise activities would likely lead to both increases (up to 4,800 employees) in regular weekly exercise, which has a wide range of health benefits, as well as a predicted reduction in up to 6,956 people of obesity prevalence. The lowest predicted impact is in the area of stress reduction, which follows from the low baseline prevalence of stress reported to interfere with health.

The effectiveness of the interventions is yet to be fully evaluated, as the follow-up employee survey data are still being collected and relevant cost data will not be available for some time. We anticipate that, over time, the supports at the employer level and the readiness at the employee level will lead to sustained healthy behaviors which, in turn, will impact the prevalence of chronic health conditions. As the programs continue, we anticipate decreases in the average number of risk factors, such as unhealthy eating or physical inactivity, and in the proportion of employees having 5 or more risk factors (high risk level). We also anticipate measureable decreases in the prevalence of chronic conditions such as uncontrolled high blood pressure, diabetes, and metabolic syndrome.

**Legislative goal (ii):** the extent to which the program reduced health care costs or the growth in health care cost trends

Cost reductions are achievable by improving health for individuals at the high risk level and cost avoidance can be realized by maintaining health for those at the low risk level. Most of the literature addressing cost savings has not differentiated these two components but it appears that most of the quantified savings represents cost reduction. The high proportion of people with certain risk factors, e.g., 76% with low vegetable and fruit consumption, indicates the substantial opportunity for savings by reducing these risks. The amount of total savings from cost reduction varies among the risk factors, because of their prevalence rates as well as the differing expected success rates of risk mitigation or health maintenance activities. The estimated reduction in medical care expenditures ranges from \$0.3 to \$1.9 million for health eating, \$0.1 to \$1.0 million for exercise, and \$0.07 to \$0.4 million for low stress at work. Although savings can also be realized through cost avoidance by deterring healthy people from engaging unhealthy behaviors, evidence has not been well established and further investigation is needed.

For the top three Action Plan targets together (diet and nutrition, leisure-time exercise, and stress reduction), the estimated savings for the reduction of medical care expenditures alone range from \$0.76 million (assuming a 5% success rate for each target area) to \$4.07 million (assuming a 30% success rate for each target area). Potentially, the WoW program could yield \$0.38 to \$2.04 in medical care cost reduction from these three target areas for every \$1 that PWTF invested on the WoW program (\$2 million as of December, 2016). This likely underestimates the cost saving due to the lack of consideration of potential savings gained from cost avoidance by deterring healthy people from engaging in new unhealthy behaviors, prevention of disease complications from subsequent/secondary benefits in each target area, synergistic benefits from interactions among multiple target areas, and possible gains from increased productivity or reduced absenteeism. If the WoW program is expanded, the cost saving ratio is expected to be greater and the cost-effectiveness of the program substantially better, since a solid foundation for program delivery and data processing has been established. We will update the cost analysis when data on program cost and benefits to employers become available.

**Legislative goal (iii):** whether health care costs were reduced and who (populations, not payers) benefited from the reduction

The WoW program addresses prevention of chronic conditions, and thus immediate reduction in healthcare costs cannot be anticipated within a brief period of time. However, if the program effects are sustained over a longer period of time, reductions in health care costs can be projected (see above) based on changes in the prevalence of risk factors leading to those chronic conditions. Available data do not permit us to predict at this time which specific sub-groups of the workforce might be more likely to benefit than others.

**Legislative goal (iv):** the extent to which workplace based wellness or health management



programs were expanded and whether those programs improved employee health, productivity and recidivism

To date, the Working on Wellness program has enabled 50 Massachusetts employer organizations to plan and implement comprehensive worksite wellness programs in the first two cohorts of the employer participants. Up to 155 more employers have committed themselves to do the same. Prior to the WoW program, these employers had low or no activities related to promoting employee health, with the exception of legally-mandated occupational safety and health activities.

Nearly 100% of participating employers that completed the WoW program have established their own wellness program with a staffing structure and budget, assessed employee needs and interests, and developed action plans targeting key preventive lifestyle factors (nutrition, physical activity, stress management, weight control) which are important to delay or avoid chronic diseases. To date, over 74,000 Massachusetts employees have the potential to benefit from these programs.

As the programs are still in the early phase, data on productivity and recidivism are yet to be collected and analyzed. This issue will be addressed in subsequent program evaluations.

**Legislative goal (vii):** recommendations for whether the funding mechanism for the fund should be extended beyond 2016 or whether an alternative funding mechanism should be established

The goal of the PWTF funding is to invest in primary prevention initiatives that would help achieve the health care cost containment goals of *Chapter 224 of the Massachusetts Acts of 2012*. The Working on Wellness program has successfully recruited organizations since November, 2015, and helped them initiate health promotion activities to improve workplace wellness. In collaboration with MA Department of Public Health and the program delivery team (HRiA/AW), the evaluation team has developed survey instruments, interview guides, and analytical approaches, as well as analyzed and reported on baseline characteristics and summarized success and challenges in implementation. At only 18 months into the WoW initiative, there is evidence that the program is being successfully operationalized within participating businesses, which sets the stage for improved employee health and future cost savings. However, there has not been enough time to collect follow-up data from employers either in the short term or the longer term to track WoW program outcomes.

Extending the fund (PWTF) beyond 2016 will allow us to conduct more in-depth analysis by utilizing the follow-up data which are being collected to investigate changes for organizations and employees after participating in WoW. Continued and in-depth analysis of the follow-up data is necessary for estimating the program impact on employee health, productivity and cost saving, providing the legislation with quantitative evidence for data-driving, evidence-based policy-making about the program.

Specifically, following up on the initial success of increased wellness policies and activities in participating organizations, an extended period of data collection and analysis

would provide valuable information about the effect of WoW on organizations and employees, as well as the sustainability of these efforts. However, ramp-up time is needed for organizations to prepare for changes in policies and organize specific activities, and then to implement new policies and make activities available to employees. Except for changes in policies and activities, effects of WoW are anticipated to emerge beyond the current PWTF funding period. Extending the PWTF will allow us to leverage the foundation and baseline that we have established for a comprehensive evaluation. Additionally, potential future cohorts could be recruited to expand the efforts and provide more longitudinal data for program monitoring and evaluation.

It should be noted that 84% of Wellness Champions reported that it was very likely that their wellness initiative would continue after the WoW program ends, and 45% reported it very likely that their organization would allocate resources to support their wellness initiative after the end of Working on Wellness seed funding. Considering these, the potential return on investment of the PWTF seed funding is very high, and the WoW program is likely a cost-effective investment in the Commonwealth's healthy and productive workforce.

As more recent years of data in the state's All Payer Claims Database (APCD) become available, we plan to evaluate the effects of WoW on health care utilization and expenditures for employer-sponsored insurance. The APCD is the primary data source for comprehensive health care utilization and expenditures for employer-sponsored health insurance. We will utilize APCD data for calendar years 2014 and 2015 to establish the baseline characteristics for the current cohort of WoW participants and to develop an analytical framework for continued monitoring and statistical analysis. However, the claim lag is usually at least one year, and we will not have claims data for 2016 and beyond when the current PWTF funding ends. Extending the PWTF beyond 2016 would allow us to examine APCD for the years after WoW implementation for all four cohorts (and potential future cohorts) to fully evaluate changes in health care utilization and expenditures.

Finally, employers were strongly encouraged – but not required – to link to local health resources and services in the community, and the program delivery team gave them tools to do so. The “community partnerships” curriculum provides information on how investing beyond the employer affects the community, which in turn can improve their business. There is variability in the number and intensity of linkages. Employers with high versus low community engagement can be identified and compared as to health and economic outcomes, their motivations for establishing community engagement, and their perceived benefits and drawbacks.

In summary, the independent evaluation team recommends extended funding for Working on Wellness in these areas:

- Continued delivery of WoW training and technical assistance services to employers in the current WoW program.
- Continued data collection and program evaluation for Cohorts 3 and 4.
- Delivery of an ongoing employer training program for future WoW participants beyond those participating in Cohorts 1-4.

- Development of new strategies/program design for reaching underserved workers (smaller employers, community-work partnerships, etc.) beyond Cohorts 1-4 of the program.
- Evaluation of employee and employer program impacts (Cohorts 1-4 pre-post analysis), at 1 and 2 years following program initiation/implementation.
- Evaluation of changes in health care utilization (Cohorts 1-4 pre-post analysis) using both self-report and All Payer Claims Data.
- Evaluation of employer adoption, maintenance, sustainability after “graduation” from WoW.

### Program strengths and limitations

The WoW program delivery team (HRiA) has designed a thoughtful, evidence-based program and has conducted it in a rigorous manner to provide strong support of employer efforts to enhance the wellbeing of their workers. The program delivery team has also been closely engaged in the design of the evaluation instruments and in collection of employer, employee, and intervention data supporting this evaluation. The ongoing evaluation efforts provided timely and evaluable data to support intervention efforts. The Massachusetts Department of Public Health, as the sponsor of the project, has collaborated closely with the program delivery and evaluation teams, providing valuable guidance and administrative support. Due to this strong, interactive, government-community-academic partnership, the program has efficiently and effectively delivered high-quality interventions to participating employer organizations.

The WoW program delivery team provided extensive technical assistance to participating employers; rather than a “one size fits all” program, employers were educated to use information about their own workforces to provide an appropriate set of activities.

Although employers were educated to consider the physical environment of the workplace, as well as its social and organizational features, they did not succeed in developing primary prevention activities for all program goals. In particular, psychosocial stress was addressed mostly through enhancing individual coping skills rather than through re-design strategies addressing root causes, such as hiring more staff, involving workers in job scheduling, providing better quality supervision, or improving job safety in order to reduce worker fear of injury. In general, primary prevention of stress requires an organization to consider structural changes that create a more health-promoting workplace. However, this is not usually achievable in the short-term, so continued support of these employers might be necessary to move toward such system changes.

While it was not explicitly a requirement of the program, it would have been desirable to engage more employers with a larger proportion of low-wage workers. Their under-representation is not viewed as a failure in recruitment, but rather inherent in the question of which workers employers choose to invest in for the long-term. Lower-wage and -status workers tend to be viewed as more replaceable by their employers and, in turn, they often

have higher turnover rates. This economic reality is not something that WoW or the Department of Public Health would be able to influence through a workplace wellness program.

The program would also be stronger with more emphasis on occupational ergonomics and safety. One webinar was offered on ergonomics, but in general, neither of these areas was emphasized in the technical assistance that employers received. Although these might not seem to belong under the heading of “workplace wellness,” the Centers for Disease Control and Prevention (CDC) and National Institute for Occupational Safety and Health (NIOSH) concept of Total Worker Health® calls for integrated attention to improving working conditions along with individual behaviors, and there is increasing evidence regarding these interactions [e.g., Miranda 2015]. The availability of safe, stable, quality, well-compensated work is fundamentally health-promoting; this is a program area that deserves to be expanded in the future, especially given the high level of interest documented among employees (Table 5).

Furthermore, there is increasing anecdotal evidence, at the least, that on-the-job injuries represent a common pathway to opioid prescriptions and subsequently to off-prescription opioid use and abuse. The possible prevention of future opiate abuse is another area of potential cost avoidance that could not be quantified in this report.

#### Evaluation methodology strengths and limitations

The evaluation team developed a series of instruments and interviews to collect comprehensive quantitative and qualitative information to assist organizations in developing their worksite wellness programs. Based on these needs assessment tools, participating organizations have received actionable information regarding areas of the wellness-related needs and interests of their employees to guide organizations’ planning for wellness policies and activities.

The information collected is also essential for the program evaluation, which uses a combination of quantitative and qualitative approaches. In addition to providing summary statistics of collected information, the study design and analytical framework include plans for a longitudinal analysis to monitor the program implementation and investigate the effectiveness of WoW. The approach can be easily adopted for future cohorts of participating organizations and adapted for multiple waves of follow-up data collection and analysis.

The findings in this report are based on the baseline information from the first two to three cohorts of participating organizations and their employees. Baseline data are being collected for four cohorts in all and will be eventually available for analysis. The program has only been in existence for one year, which is far too short of a time period to permit us to observe future possible long-term improvements in health risks and chronic diseases [White et al., 2015]. As more data become available, the results will be updated and any significant differences among cohorts will be noted. Follow-up information is being collected so that we can examine pre- and post-intervention changes for the effects associated with WoW. Future goals include examining program delivery and impact by economic sector, workplace size, and other workplace characteristics. Analysis of follow-up employee-level data could examine

health benefits by occupational factors (e.g., wage level, sector-level injury rates) and by demographics (e.g., race). These results are planned for future program evaluations, subsequent legislative reports, and eventual publication in the scientific literature.

Several issues warrant attention in interpreting the findings presented here, as well as in consideration for the next phase of the program. First, this is an observational study and organizations have participated in WoW voluntarily without random assignments. Thus, there is an issue of potential selection bias, or of limited generalizability to organizations that chose not to participate. To evaluate this, in 2017 the evaluation team will identify non-WoW participating organizations from the Massachusetts All-Payers Claims Database to form a comparison group for the evaluation. Changes from pre- to post- intervention in participating organizations will be compared to changes in the comparison group for the same time period.

Second, the focus of this evaluation is at the employer (organization) level. Group-level follow-up is available but could differ from individual employee-level analysis, especially to the extent that employee turnover from participating organizations is high and/or is related to employee health status. Of note, the average turnover rate was estimated by these employers at about 40 percent. This level of turnover may not be unusual, but it has the potential to impact employer interest in investing in employee health promotion measures. It would also interfere with our ability to conduct long-term follow-up of individuals to assess the extent to which their health benefited from interventions undertaken at these workplaces.

The external literature used to estimate future program benefits includes many different outcomes assessed in intervention studies with the same targets as the WoW program, making it challenging to summarize this literature for our purposes. A related consideration is that in tabulating the expected benefits from wellness activities documented in those studies, it is necessary to assume that each activity had an independent effect from any others carried out by the same employer. However, the WoW participating employers have committed to implementing activities on multiple levels. The literature demonstrates that multi-component programs are more effective, which was the rationale for this program decision. At the same time, the evidence of stronger benefits cannot easily be transferred to the specific combinations of activities carried out at WoW employers, as we cannot partition estimated effectiveness among the separate components in published studies. Thus, rather than trying to select exact numbers from individual studies to represent expected benefits, we bracketed the plausible range of benefits (see Table 14). This assumption (intentionally) errs on the side of being conservative, as it is not possible to incorporate the potentially interactive effect of multiple, simultaneous activities. Beyond the benefit that each individual activity alone can bring to employees, a combination of these wellness activities can also enhance their respective benefit and reflect on the overall health.

As noted above (see Results), the estimate financial savings resulting from the WoW program was also likely underestimated for two additional reasons. One is simply that the dollar value of cost reduction has not been inflation-adjusted from 2001 (Edington's data) to 2015 dollars. The other is that ideally we would have been able to predict expected savings from both "cost reduction" and "cost avoidance." However, most published intervention trials have not explicitly attempted to quantify these two phenomena separately. The available data

generally represent cost reduction, although it is possible that they include cost avoidance as well without explicit acknowledgement. A few studies have specifically described potential savings from cost avoidance, but these generally are based on pre- and post-comparisons within the intervention group alone [Burton, 2014; Edington, 2001; Musich, 2014]. It is known that some individuals transition from lower to higher risk levels over time, e.g., by gaining weight as they age. However, without an adequate comparison group, we cannot ascertain the true level of the cost avoidance (if any) resulting from the effectiveness of a wellness program to reduce this probability. If the PWTF WoW program could further investigate the potential savings from cost avoidance, this would provide a more complete picture of total cost savings and return on investment of the program, and might better address the legislature's mandate.

### Lessons Learned

From the first phase of the PWTF WoW program included, we learned important lessons in several areas that are important to the continuation and future expansion of the WoW program, including program delivery, outreach, development of community partnerships and evaluation methods.

- Program delivery

Technical assistance, with respect to interventions as well as data collection for evaluation, is well received by the participating organizations, and thus important to the success of WoW programs. The infrastructure developed in the first phase of PWTF WoW programs should be maintained; strategies and approaches should be developed to sustain ongoing wellness policy/program training to Massachusetts employers for new participating organizations. Additional data-gathering to select the critical core elements of the WoW program is needed for effective policy/program implementation by employers.

The WoW training curriculum could be strengthened with information about primary prevention of workplace determinants of chronic disease and injuries—such as job stressors and ergonomics. Employers did not receive technical assistance in these areas. Availability of safe, stable, quality, well-compensated work is fundamentally health promoting and is not addressed by the WoW program. Addressing these topics in the WoW training would be a step toward aligning with national, Centers for Disease Control and Prevention (CDC) and National Institute for Occupational Safety and Health (NIOSH) concepts of Total Worker Health® programs (<https://www.cdc.gov/niosh/twh/default.html>) —programs that integrate health promotion with occupational health and safety.

- Program outreach

The participating employer organizations of the first waves were largely from government agencies and non-profit organizations. Future program design can consider the uniqueness of industries which are underrepresented in the current WoW. These industries might have a large proportion of low-wage employees, contract workers, or off-site staff. New strategies and approaches are needed to enroll organizations in these underrepresented industry sectors. The effort will help expand the reach and realize greater potential of the WoW

programs.

WoW employer workforce demographics show that organizations that enrolled trended toward pay scales that were above the low-wage level. This may be because employer motivation to focus on employee health and well-being may be contingent on a stable workforce for whom the employer is paying health care premiums. For instance, employers are not likely to be motivated to invest in long-term benefits for low-wage workers, who often have higher turnover rates. On the population level, this points to the need for new strategies for reaching workers on the lower end of the wage scale. The WoW program or the Department of Public Health could explore community-based models to reach low-wage workers through communities, or another outreach strategy tied to individual health insurance plans.

Employee counts are very unlikely to include contract workers. There is an increasing general trend toward outsourcing support services to temporary agency contracts – a growing source of employment for low-wage workers in several industries, e.g., cleaning, food service, laundry. These contract workers are less likely to be invited to or eligible for wellness activities at their assigned worksites. Specific attention to recruiting their parent companies, i.e., temporary staffing agencies, and linking these contract workers with their assigned worksites is necessary to provide services to these workers. There is also an increasing trend that more employees work from home or off site. Dissemination of information and the wellness activity design could consider these new trends, either contract worker or people working from home, to improve outreach and engagement through easy-access tools.

- Community partnership

New strategies and approaches can be further developed to effectively reach underserved workers (e.g., people employed by smaller employers, temporary agencies, industries employing high numbers of low-wage workers, as well as those work offsite or at home). Integration of the WoW worksite, community/neighborhood-based interventions, and health care settings should be explored in the future waves of PWTF interventions, to maximize the impact of PWTF programs by covering all steps of work-life cycle.

Strategies and approaches should also be developed to ensure that the effects of work site interventions could be sustained beyond working environment. Knowledge and skills of healthy living and safe working learned from the programs can be translated into daily healthy living for the employees and their families, such that WoW programs are a critical component of the culture of health in communities at large.

- Program Evaluation

Continued evaluation and monitoring of enrolled WoW employer participants is needed to assess the health and business impacts of the program. A two year project period is not long enough to evaluate the results of new policies and programs that were implemented in Cohorts 1-4 organizations. The true effects will not be known without longer term follow-up study.

A time frame of 3-10 years is a realistic timeline for evaluating a primary prevention program. The reason is that there is a latency period for observable changes in health behaviors and health outcomes. People take time to adopt new behaviors, and sustain them. Disease risk

factors such as smoking, high blood pressure, overweight can act on physiology over time before markers or symptoms of disease can be discovered clinically. Short term (1-2 years) pre-post measurement of health outcomes may be long enough to detect changes in behavior for a portion of the population. However, longer term monitoring would be needed to capture changes in clinical indicators and diagnosed conditions over time.

The potential saving of medical care costs as a result of the WoW programs should be further explored. Results should inform health insurance plans. Supported by evidence, effectively maintenance of a healthy workforce should be rewarded with lower premium of health insurance.

In addition to the value of reducing medical care costs, maintaining a healthy workforce, and improved productivity, the societal value of the WoW could be further explored, such as its impact neighborhood/community health promotion, culture of health, and extended benefits to participating employees' families and communities.

### Concluding Remarks

The Working on Wellness program has succeeded in reaching and recruiting hundreds of employers who previously offered no formal wellness program and, in general, had few policy or environmental supports at baseline to encourage employee physical activity, nutrition, or tobacco-free lifestyle, or to support work/life balance or other stress reduction measures.

In particular, this program has reached a large number of small and moderate-size employer organizations, and a substantial number of low-wage, non-college-educated, and racial/ethnic minority workers. A substantial proportion of these employees had moderate to high health risks, especially being overweight or obese and not consuming the recommended amount of fresh produce per day.

Participating employers received specific feedback about the priorities indicated collectively by their workers, as well as information about timing and other logistical features that would make program activities more accessible. Employers' baseline program goals were predominantly to increase physical activity, reduce stress, and improve nutrition; these were generally consistent with the health goals stated by their employees. Further, employees expressed a great interest in obtaining such services and supports, and overall they were individually ready to make positive changes in their health behaviors.

Most employers complied with program instructions to implement changes in organizational policy and the work environment to support healthier behaviors by employees. This is an important strength of the WoW program design, and it is very much to the credit of the program delivery personnel that they were able to provide technical information and support sufficient to achieve this.

The program delivery elements were revised after Cohort 1 was enrolled; these changes appear to have facilitated a substantial increase in the number of participating employers. The program education and technical support provided were of high quality and were enthusiastically endorsed by participating employers. Despite seed funding, which was greatly



welcomed by the participating organizations, staffing resources to implement in-house programs remain a challenge for small employers.

The effectiveness of the interventions is yet to be fully evaluated, as the follow-up employee survey data are still being collected and the APCD data are not available yet. Substantial health benefits and healthcare cost savings are anticipated over a longer period of time, as the program progresses. However, it is evident already that the program has helped increase the supports for employers and from them to their employees. Clearly it has high relevance for the needs of the Commonwealth's citizens.

Overall, the Working on Wellness program was very well received by the participating organizations. A majority reported positive experiences and nearly all of Wellness Champions reported that employees were participating in wellness policies and programs. The vast majority of the Champions thought it very likely that their wellness activities would continue after the end of formal WoW program support. The Working on Wellness program serves as a catalyst for a substantial number of organizations to change both employees' and employers' perspectives on the importance of worksite wellness and health promotion and how to conduct an effective program.

## **Acknowledgements**

We recognize the efforts of several University of Massachusetts Lowell students. Mariah Bourne, Aaron Kearney and Rachel Arnason set up online survey instruments, prepared paper survey instruments, and conducted data cleaning, data management, employer report design and quality assurance, and qualitative data analysis. Cassandra Harding, Mary Jeurgens and Neha Sahasrabudhe assisted with data coding and analysis of employer wellness activities and associated literature review. Mumtahana Nabi assisted with data management and quantitative data analysis. Molly Post designed the scoring system and automated reports for the Environmental Scan survey. Jenny Phan and Fiona Koshy assisted with data cleaning and preparation of data files for analysis.

Working on Wellness is a program of the Massachusetts Department of Public Health, developed and managed in partnership with Health Resources in Action and AdvancingWellness. Funding for the Working on Wellness program and its evaluation is provided by the Prevention and Wellness Trust Fund as established by Chapter 224 of the Acts of 2012.

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