

## Introduction and Program Description

The Heart of New Ulm Project (HONU) is a 10-year demonstration project aimed at reducing myocardial infarctions (MI) and modifiable heart disease risk factors in New Ulm, Minnesota. For more information, visit [www.heartsbeatback.org](http://www.heartsbeatback.org).

To obtain baseline information, free heart health screenings were offered to all adult residents and held at worksites, the medical center, churches and other community venues. Participants completed a questionnaire and biometric measures (i.e., blood pressure, height, weight, fasting blood draw).

Unhealthy lifestyles are associated with low workplace productivity. However, lifestyle risks tend to cluster and the impact of this is not well-studied. This analysis examined the cross-sectional association between an optimal lifestyle score (OLS) and overall workplace productivity using HONU baseline data. It was hypothesized that a higher OLS would be associated with higher workplace productivity relative to a lower OLS.

## Methods

A total of 5,198 adults were screened in 2009. For this analysis, the group was narrowed to those age 18–85 who reported no heart disease, no diabetes and a work commitment of at least 15 hours per week. Complete data was available from 2,986 adults (with ≥0.40 FTE work agreement).

For each participant, an OLS of 0–4 total points was created by summing one point for each of the following factors: non-smoker, ≥ 150 minutes per week of moderately equivalent physical activity, 1–14 alcoholic drinks per week, and ≥ 5 servings per day of fruits and vegetables.

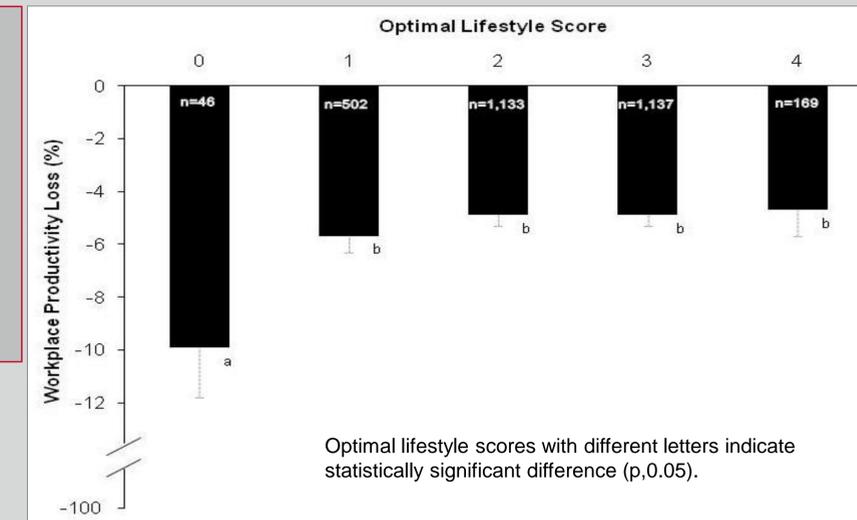
Overall productivity loss combined absenteeism and presenteeism from the Work Productivity and Activity Impairment questionnaire, reflecting the percentage loss of all available work hours (per work agreement) due to health reasons.

Analysis was done using SAS (version 9.1). Frequencies were used to describe the sample. The relationship between OLS and work productivity was first examined by comparing mean workplace productivity loss for each level of the OLS. Adjusted means were then calculated using linear regression (PROC GLM) with adjustment for age, gender, body mass index and stress score.

**Table:** Descriptive characteristics of 2009 screening participants with a work commitment of at least 15 hours per week and no history of heart disease or diabetes (n = 2,986)

| Variable  | n           | Percent |
|---|-------------|---------|
| <b>Age (mean ± sd yrs)</b>  | 46.3 ± 11.8 |         |
| <b>Female</b>   | 1685        | 56.4    |
| <b>White</b>  | 2885        | 96.6    |
| <b>College Degree or Higher</b>   | 1065        | 35.7    |
| <b>Health Care Covered</b>  | 2914        | 97.6    |
| <b>High Stress (8-16)</b>   | 370         | 12.4    |
| <b>BMI (mean ± sd kg/m<sup>2</sup>)</b>                                 | 28.9 ± 5.8  |         |
| Obese (>30kg/m <sup>2</sup> )   | 1090        | 36.5    |
| <b>Optimal Lifestyle Score Component</b>                                |             |         |
| Physical activity (≥ 150 minutes/week of moderate intensity equivalent) | 1987        | 66.5    |
| Fruit and vegetables (≥ 5 servings/day)                                 | 406         | 13.6    |
| Alcohol consumption (1-14 drinks/week)                                  | 1825        | 61.1    |
| Current non-smoker  | 2634        | 88.2    |
| <b>Optimal Lifestyle Score</b>  |             |         |
| HONU Score (Mean +/- sd)  | 2.3 ± 0.9   |         |
| Adherence to 0 HONU components  | 46          | 1.5     |
| Adherence to 1 HONU component   | 502         | 16.8    |
| Adherence to 2 HONU components  | 1133        | 37.9    |
| Adherence to 3 HONU components  | 1136        | 38.0    |
| Adherence to 4 HONU components  | 169         | 5.7     |

**Figure:** Workplace productivity loss by each level of optimal lifestyle score.



## Results

After adjustment for age, sex, body mass index and Perceived Stress Scale score, least squares adjusted mean±SE productivity loss was 9.9±1.9% for an OLS of 0, 5.7±0.6% for an OLS of 1, 4.9±0.4% for an OLS of 2, 4.9±0.4% for an OLS of 3, and 4.7±1.0% for an OLS of 4 (overall Model p<0.001).

Post hoc comparisons revealed that OLS's of 0 were significantly different from all other OLS's, while OLS's of 1, 2, 3 or 4 were statistically indistinguishable from one another.

## Conclusions

A beneficial threshold of having at least one optimal lifestyle factor was observed. When productivity loss is converted to lost dollars under the assumptions that all employees work full-time with an annual salary of \$50,000, an OLS of 0 (-\$4,950/employee) has more than two-fold higher annual estimated workplace productivity losses relative to an OLS of 4 (-\$2,350/employee). Employees with no optimal lifestyle habits, however, represent a very small proportion of the total workforce.

As such, greater absolute economic benefits may be realized by focusing interventions primarily on supporting the maintenance of existing optimal lifestyle habits.

## Acknowledgments

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