

Final Report on Footprints to Health in the Franklin Neighborhood Wausau, WI

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Nutrition, Physical Activity, and Obesity
Program
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METHOD

INTERVENTION

The Wisconsin Department of Health Services' Nutrition, Physical Activity, & Obesity Program (WI-NPAO), in conjunction with the Marathon County Healthy Eating, Active Living (HEAL) Coalition, conducted the Franklin Neighborhood aspect of the Footprints to Health Intervention between 2006 and 2008. This intervention targeted parents of approximately 365 children attending Franklin Elementary School in Wausau, Wisconsin. The intervention was designed, with local input, to meet Centers for Disease Control and Prevention (CDC) requirements as described in the cooperative agreement between WI-NPAO and CDC.

The long term outcome evaluation goals of the intervention were to:

- 1) Increase fruit and vegetable consumption by:
 - Increasing the number of family meals per week
 - Increasing access to fruits and vegetables via neighborhood restaurants and grocery and convenience stores
- 2) Increase physical activity levels by:
 - Improving the neighborhood environment
 - Increasing access to facilities
 - Increasing opportunities to be active

Short-term goals of the initiative also included increasing knowledge and skills regarding healthy meals (incorporating fruits and vegetables, whole grains, etc.) and increasing knowledge and positive intentions regarding physical activity.

Key process objectives for the Footprints to Health-Franklin Neighborhood Intervention included the following:

- Objective #1: Produce 10 fruit and vegetable messages & simple recipes, include 10 tips for family meals, and disseminate through existing communication tools.
- Objective #2: Create and disseminate 20 messages related to family meals and increased physical activity through various media outlets.
- Objective #3: Work with grocers, convenience stores, and restaurants to provide recommendations and technical assistance, based on results from the completed Nutrition Environment Measures Survey (NEMS).
- Objective #4: Work with neighborhood businesses to implement policies that support healthy eating.
- Objective #5: Complete an inventory of existing physical activity programs and disseminate through existing communication tools.
- Objective #6: Offer technical assistance with a Safe Routes to School Program and create environmental changes to make the neighborhood more conducive to walking and biking.
- Objective #7: Work with the school to promote physical activity during after-school hours.

EVALUATION DESIGN

The design for the intervention's evaluation was a three-year parent survey, involving only a treatment group, conducted during the spring of 2006, 2007 and 2008. However, this analysis primarily compares sample responses for the first and last time points (Figure 1).

Figure 1: *Outcome evaluation design*

	Spring 2006	Spring 2008
	Pretest survey	Post-test survey
Evaluation data gathered in spring each year	O ₁	O ₃
Ongoing intervention	—————→	
Number of surveys sent	196	236
Number of surveys completed (Response rate)	131 (67%)	105 (45%)

O = observation (parent survey)

SURVEY INSTRUMENT

The outcome evaluation of the Footprints to Health intervention consisted of a self-administered questionnaire, mailed, along with a return envelope, to each household with a child attending Franklin Elementary School in Wausau, Wisconsin. Several follow-up mailings were also conducted, to attempt to reach non-respondents. One parent from each household was randomly selected to complete the survey, and mailings were consistently addressed to that individual.

The instrument changed somewhat during the second year, to reflect intervention modifications, based on evaluation results. However, the core questions remained the same over all three administrations of the survey (Table 1).

Table 1: *Topics included in all survey versions (2006-2008)*

	# of items
Responsibility for meal preparation	1
Eating together as a family in the past week	8
Family meal practices	8
Meal planning and preparation	4
Servings of fruits and vegetables	2
Exercise among parents and children	8
Knowledge of activities related to the intervention	4

The survey used during years 1 and 2 included questions about purchasing fruits and vegetables at a local farmers' market. These questions were dropped in the Year 3 survey because the relevant intervention component was stopped after Year 1. Most results from Year 2 have been reported previously, so the analysis contained in this report primarily compares results from Year 1 and Year 3, as a means of assessing overall change in the target population. However, Year 2 and Year 3 surveys included items about parents' and children's consumption of milk and soft drinks. Those items are presented at the end of this report, along with items about restaurant dining and grocery shopping, which were only asked during Year 3.

ANALYSIS AND LIMITATIONS

The original plan was to compare results for the same individuals across survey years, despite the fact that some level of attrition would be expected due to children leaving the school. However, only 37% of the baseline sample completed all three annual surveys. So, to preserve statistical power and to help reduce self-selection bias, we primarily focused our analysis on comparisons of the entire survey sample between Year 1 and Year 3. Because organizational and environmental changes (as well as individual-level strategies) were included in the intervention, we anticipated that the participants who joined the survey after the first year were still likely to have been exposed to several active aspects of the intervention.

For the primary analysis for most outcome variables, we used an independent samples t-test to compare the entire group of survey participants at Year 1 and Year 3. Results based on the non-parametric Mann-Whitney tests have fewer assumptions but produced highly similar results, so only t-test results are presented. Changes between Year 1 and Year 3 in demographic variables (with the exception of age) and one dichotomous outcome variable (physical inactivity) were evaluated using the Chi-square test. Significance for all tests was determined at $\alpha < .05$. However, because the sample size was relatively modest and we could have conceivably hypothesized that the intervention would change outcomes in a favorable direction (particularly with respect to organizational and environmental changes), we also considered marginally significant findings ($\alpha < .10$). Pearson's (and non-parametric Spearman's) correlations were used to interpret potential relationships between variables asked only during Year 3.

With respect to limitations, as noted previously, no control condition was included in the intervention design, so it's possible that observed changes may be due to causes in the community that are not specifically intervention-related. Also, because changes between Years 1 and 3 were evaluated for the entire sample, rather than for the same individuals, it is possible that observed differences could instead be attributed to changes in the population of participants. In addition, because healthy behaviors are typically considered socially desirable, responses may have been inflated somewhat by these concerns, which were not specifically evaluated within the survey. We also know that survey response rates were less than ideal (see Figure 1). About two-thirds of those asked to participate at baseline did so, and this number declined to 45% at Year 3. We have no available means of comparing individuals who participated in the survey with those who were asked to participate but never did. As a result, findings may not necessarily be representative of the larger population of parents at Franklin Elementary School in Wausau.

Whenever possible, limitations were considered during the analysis and interpretation of results. Also, because of the difficulty making causal generalizations, given the limitations of the

analysis and design, we also conducted several ancillary analyses to help interpret findings. We controlled for demographic variables (using a general linear model procedure) to determine whether or not they might represent an alternate explanation for any observed changes in outcomes between baseline and post-test. In addition, although we expected comparisons for the panel (those who completed the survey during both Year 1 and Year 3) to be less useful than those for the overall group, we used paired t-tests to assess whether or not changes in indicators for the panel were the same as (or were at least directionally consistent with) those observed for the overall population. We also examined the presence and direction of associations between some variables that, based on the literature, we expected to be causally related to one another but were only asked during Year 3. To examine predictors of participant retention, we also assessed demographic differences between those who continued to participate and those who did not.

SURVEY RESPONDENTS

Demographics were similar for participants who responded to the pre-test and those who responded to the post-test (Tables 2-8). Nearly all respondents at each time point were parents, and more than 60% of each sample was female. Compared with the baseline sample, the Year 3 sample contained a significantly lower proportion of married (versus unmarried) participants, primarily due to an increase in the proportion of divorced respondents. Average participant age was nearly identical for the Year 1 and Year 3 samples (38-39 years). Also, at both time points, the population was overwhelmingly non-Hispanic and roughly 4 in 5 individuals were White. For each year, the second largest group was Asian (13-15%), and based on responses to the question about the languages spoken at home, most individuals in this group were Hmong. The overall education level of the sample did not change significantly from baseline to post-test. At both time points, respondents were highly educated: at least 40% had a college degree and more than an additional quarter had had at least some college experience.

The 2008 survey introduced a new question about how long the family had had a student at Franklin Elementary School. Forty-two percent did not have a student at Franklin at the time of the pretest (2006). However, almost a third of the families had had a student at the school for five or more years.

Table 2. *Gender of respondents*

	Year 1 (N=131)		Year 3 (N=104)	
	N	Percent	N	Percent
Females	83	63.4%	66	63.5%
Males	48	36.6%	38	36.5%

Table 3. *Relationship of respondents to students attending Franklin School*

	Year 1 (N=131)		Year 3 (N=104)	
	N	Percent	N	Percent
Mother	81	61.8%	64	61.5%
Father	48	36.6%	38	36.5%
Stepfather	0	0	1	1.0%
Grandmother	2	1.5%	1	1.0%

Table 4. *Age of respondents*

	Year 1 (N=130)		Year 3 (N=103)	
	N	Percent	N	Percent
Under 25 years	3	2.3%	1	1.0%
25 – 29 years	17	13.1%	11	10.7%
30 – 34 years	26	20.0%	21	20.4%
35 – 39 years	24	18.5%	23	22.3%
40 – 44 years	32	24.6%	26	25.2%
45 – 49 years	19	14.6%	9	8.7%
50 years and older	9	6.9%	12	11.7%

Table 5. *Race and ethnicity of respondents*¹

	Year 1 (N=131)		Year 3 (N=105 top; N=104 bottom)	
	N	Percent	N	Percent
Non-Hispanic	127	98.4%	99	97.1%
Hispanic	2	1.6%	3	2.9%
Missing	2	--	3	--
White	103	78.6%	87	83.7%
Asian	20	15.3%	13	12.5%
African American	2	1.5%	2	1.9%
American Indian	2	1.5%	1	1.0%
Native Hawaiian or Other	1	0.8%	0	0
Multiple Races	3	2.3%	0	0
Alaskan Native	0	0	1	1.0%
Missing	0	--	0	--

¹ Based on two questions: a) Are you Hispanic or Latino? b) What is your race?

Table 6. *Marital status of respondents*

	Year 1 (N=131)		Year 3 (N=104)	
	N	Percent	N	Percent
Married	100	76.3%	66	63.5%
Divorced	14	10.7%	20	19.2%
Widowed	1	0.8%	2	1.9%
Never married	16	12.2%	13	12.5%
Separated	0	0	3	2.9%

Table 7. *Education level of respondents*

	Year 1 (N=130)		Year 3 (N=104)	
	N	Percent	N	Percent
Completed grade school or less	5	3.9%	4	3.9%
Some high school	12	9.2%	5	4.8%
Completed high school	27	20.8%	20	19.2%
Some college	34	26.2%	31	29.8%
Completed college	32	24.6%	26	25.0%
Graduate or professional school	20	15.4%	18	17.3%

Table 8. *Length of time respondents had a family member at Franklin School (2008 only)*

	Year 3 (N=104)	
	N	Percentage
This year only	26	25.0%
Last 2 years	18	17.3%
Last 3 years	16	15.4%
Last 4 years	11	10.6%
5 or more years	33	31.7%
Don't have a student at Franklin now	0	0

COMPARISON OF PRE-TEST TO POST-TEST DATA

As previously noted, results presented in this report primarily involve a comparison of responses to 22 nutrition and 12 physical activity questions for all individuals who took the survey during Year 3 and those who took the survey during Year 1.

MEALS

Meal Preparation

During both the pre-test and the post-test, the majority of female participants and a minority of male participants reported having primary responsibility for meal preparation (Table 9). Males were more likely to report sharing responsibility than to report having primary responsibility for meal preparation. Between Year 1 and Year 3, there was no significant change in the overall distribution of meal-preparation responsibilities for respondents.

Table 9. Respondents' responsibility for meal preparation by gender¹

	Year 1 (N=130)		Year 3 (N=101)	
	Male	Female	Male	Female
I have primary responsibility	18.8%	63.4%	21.6%	70.3%
My spouse/partner does	43.8%	6.1%	37.8%	4.7%
My spouse/partner and I share equally	35.4%	26.8%	37.8%	21.9%
Someone else	2.1%	3.7%	2.7%	3.1%

¹ Who in your family has primary responsibility for meal preparation?

Meals Eaten Together during the Last Week

No significant differences were apparent between the Year 1 (2006) and Year 3 (2008) with respect to responses to eight questions about family meals (Table 10). At both pre-test and post-test, samples were likely to eat an evening meal together on about 5½ days per week and likely to eat breakfast together on about 3 ½ days per week but (as one might expect) only likely to eat lunch together on about 2 days per week.

Respondents reported eating at restaurants on fewer than 1½ days per week. (Similar indicators for the US population vary, but are typically considerably higher than this.). Most of the time, participants prepared dinner at home (5 ½ days per week). On average, children in the family helped prepare dinner on about 2 days per week and snacks on about 2 ½ days per week.

Table 10. *Eating together as a family and involving children in food preparation during the past week*

Year 1 N=131 ; Year 3 N=101 unless otherwise noted		Means	Percentages							
			Never	1 day	2 days	3 days	4 days	5 days	6 days	7 days
Did all, or most, of your family living in your house eat breakfast together?	Year 3	3.35	7.9	11.9	33.7	3.0	7.9	14.9	5.0	15.8
	Year 1	3.31	18.3	9.9	20.6	9.2	4.6	12.2	3.1	22.1
Did all, or most of your family living in your house eat lunch together at home?	Year 3	2.14	9.9	13.9	61.4	3.0	2.0	4.0	1.0	5.0
	Year 1	2.24	8.4	16.8	55.7	6.1	2.3	1.5	3.8	5.3
Did all, or most of your family living in your house eat dinner together at home?	Year 3	5.74	0	1.0	2.0	4.0	10.9	21.8	17.8	42.6
	Year 1	5.49	0.8	1.5	7.6	6.1	10.7	12.2	17.6	43.5
Was dinner prepared at home?	Year 3	5.61	0	0	2.0	6.9	12.9	16.8	28.7	32.7
	Year 1	5.53	0	1.5	3.1	5.4	6.9	26.2	27.7	29.2
Was dinner from a restaurant, fast-food place or take-out?	Year 3 (N=102)	1.24	27.5	44.1	16.7	5.9	3.9	0	1.0	1.0
	Year 1	1.24	26.2	44.6	19.2	4.6	2.3	1.5	0.8	0.8
Was dinner half home-prepared and half take-out food?	Year 3 (N=100)	0.52	73.0	19.0	3.0	1.0	1.0	0.0	1.0	2.0
	Year 1 (n=128)	0.44	78.9	10.9	4.7	3.1	0	0	2.3	0
Did your child help with the food preparation for dinner?	Year 3 (N=102)	1.91	21.6	27.5	22.5	13.7	4.9	3.9	2.9	2.9
	Year 1	1.87	23.7	28.2	19.8	15.3	3.8	2.3	1.5	5.3
Did your child help prepare snacks?	Year 3 (N=103)	2.37	29.1	13.6	16.5	12.6	9.7	6.8	1.9	9.7
	Year 1	2.53	26.0	14.5	14.5	16.0	7.6	7.6	3.1	10.7

Family Meal Practices

No significant differences were observed between eight pre-test and the post-test questions regarding beliefs and past behavior related to the perceived importance of healthy food, family meals and eating together (Table 11). For each question, the average response reflected agreement for questions concerning relatively healthful beliefs or behaviors and disagreement for questions concerning relatively unhealthful behaviors. Relatively stable positive beliefs about family meals support the finding from the previous table that a high proportion of dinners were eaten as a family throughout the evaluation period. The relatively high reported level of family dinners and the relatively low reported levels of dining at fast food restaurants and ordering take-out at baseline may have limited the ability of the intervention to impact these factors. Also, indicators related to beliefs and past behavior had relatively low levels of variability, perhaps limiting the usefulness of these items.

Table 11. *Family meal considerations and practices*

		Means	Percentages			
			Strongly Disagree (0)	Disagree (1)	Agree (2)	Strongly Agree (3)
Year 1 N=131; Year 3 =104 unless otherwise noted						
I try to schedule dinner so that the whole family can eat together	Year 3	2.43	1.0	4.8	44.2	50.0
	Year 1	2.42	0.8	6.1	43.5	49.6
When I'm in a hurry, I pick up "take out" food for dinner	Year 3	1.38	11.5	43.3	40.4	4.8
	Year 1	1.36	12.2	42.7	42.0	3.1
I consider my family's health when I buy food	Year 3	2.41	0	2.9	52.9	44.2
	Year 1	2.33	0.8	6.9	51.1	41.2
When I get home at night, I'm just too tired to fix much of a meal	Year 3 (n=103)	0.98	25.2	52.4	21.4	1.0
	Year 1 (n=129)	1.01	24.8	51.2	22.5	1.6
Because of my schedule, we frequently go to a fast food place for dinner	Year 3	0.69	43.3	45.2	10.6	1.0
	Year 1	0.69	40.5	51.9	5.3	2.3
Eating family meals together helps to improve my child's self-esteem	Year 3	2.37	0	2.9	57.7	39.4
	Year 1	2.33	0.8	4.6	55.7	38.9
Eating family meals together helps to increase my family's consumption of fruits and vegetables.	Year 3	2.22	0	10.6	56.7	32.7
	Year 1	2.15	1.6	13.2	54.3	31.0
It is important to me to prepare meals that the whole family enjoys	Year 3	2.45	0	0	54.8	45.2
	Year 1	2.44	0.8	0.8	51.9	46.6

Meal Planning and Preparation

The survey also posed four specific questions about meal preparation including frequency of planning meals ahead of time, involving the child in meal preparation, planning prior to shopping, and making extra food to use as leftovers for other meals (first four questions in Table 12). No differences between pre-test and post-test were apparent for responses to these items, and this was also true when the sample was limited to just those with primary responsibility for meal preparation. It should also be noted here that, because of limited success, the family meal planning components of the intervention were reduced or discontinued after year 1.

Table 12. *Meal planning and preparation during the past month*

		Means	Percentages					
			Never (0)	Very Seldom (1)	Once in a While (2)	Frequently (3)	Very frequently (4)	I'm not involved in meal prep
Year 1 N=130; Year 2 N=122; Year 3 N=104 unless otherwise noted								
How frequently did you plan family meals ahead of time?	Year 3	2.59	3.8	12.5	23.1	37.5	20.2	2.9
	Year 1	2.74	3.1	7.7	26.9	33.9	26.2	2.3
How frequently did you involve your child in planning meals?	Year 3	2.13	4.8	19.2	42.3	25.0	8.7	0
	Year 1	2.24	3.9	15.4	41.5	27.7	9.2	2.3
How frequently did you plan out meals before going grocery shopping?	Year 3 (N=103)	2.76	4.9	9.7	18.5	38.8	28.2	0
	Year 1	2.76	5.4	10.0	20.0	29.2	33.1	2.3
How frequently did you make extra food to use as leftovers for other meals?	Year 3	2.41	2.9	17.3	33.7	27.9	18.3	0
	Year 1	2.46	3.1	13.9	35.4	25.4	20.0	2.3
Did your dinner include vegetables?	Year 3	3.48	0	0	14.3	23.1	62.5	0
	Year 2	3.48	0	1.7	9.1	28.9	60.3	0
Did your dinner included fruit?	Year 3	2.15 [#]	4.8	19.2	43.3	17.3	14.4	1.0
	Year 2	2.44	4.1	13.1	37.7	25.4	19.7	0

¹ Mean was calculated after eliminating one response of “I am not responsible for meal preparation.”

Marginally significantly lower than Year 2 value (p<.10).

Consuming Fruits and Vegetables

During Year 2 and Year 3 only, participants were asked about the frequency with which fruits and vegetables were included at dinner. For vegetables, there was no difference in mean reported frequency by year. However, contrary to expectations, participants reported a marginally significantly lower frequency of fruit consumption in Year 3 than in Year 2. Nevertheless, it should also be noted that one individual who chose the response “I’m not involved in meal preparation” was excluded from the analysis. In retrospect, the meaning of this response category (included with the entire block of indicators) is not clear for questions concerning the frequency of fruit and vegetable consumption, and this choice was located next to that representing the highest possible consumption frequency. Like all results, this one must be interpreted within the larger context of findings.

During each year, respondents were also asked about their daily intake of fruits and vegetables (Table 13), and were provided with examples of what constitutes a serving. During each year, the

average daily consumption of both fruits and vegetables was about two servings per day, and values for Year1 and Year 3 did not differ from one another.

Table 13. *Average number of servings of fruits and vegetables consumed*

		N	Means	Percentages					
				0 servings	1 serving	2 servings	3 servings	4 servings	5 or more servings
Year 3	Servings of fruit eaten ¹	104	1.95	5.8	35.6	31.7	15.4	7.7	3.8
	Servings of vegetables eaten ²	103	2.29	1.0	28.2	28.2	31.1	6.8	4.9
Year 1	Servings of fruit eaten ¹	130	2.15	7.7	20.8	36.9	23.8	5.4	5.4
	Servings of vegetables eaten ²	130	2.27	3.1	25.4	33.9	23.1	8.5	6.2

¹ In a typical day, how many servings of fruit do you eat?

² In a typical day, how many servings of vegetables do you eat?

PHYSICAL ACTIVITY

Adults were asked questions about their level of physical activity, their child’s level of physical activity, whether or not they were physically active with their children, and their knowledge concerning health and opportunities for physical activity for themselves and for their children

Parents’ Level of Physical Activity

The physical activity level of adults was first assessed by asking on how many of the past seven days the respondent exercised or participated in moderate or vigorous physical activity for at least 30 minutes. Moderate physical activity was defined as including activities such as walking briskly, mowing the lawn, dancing, swimming or bicycling. The percentage of respondents who reported being physically inactive (not engaging in at least 30 minutes of moderate or vigorous activity on at least on day during the past week) varied considerably across survey years (Table 14). The net result was that the percentage of inactive individuals was marginally significantly lower in Year 3 than in Year 1.

For respondents who reported engaging in activity during the past week, the frequency of engaging in moderate or vigorous physical activity for at least 30 minutes was 3½ days per week, and this did not change between Year 1 and Year 3 (Table 15). The average length of time per activity session reported by active adults also did not change between pre-test and post-test (Table 16).

Similarly, the average number of days that adults reported walking for at least ten minutes at a time (approximately 4) did not change between Years 1 and 3 (Table 17). However, the reported stage of commitment for adults regarding engaging in regular physical activity improved significantly between pre-test to post-test (Table 18). Also, changes from baseline to post-test in

the proportion of adults at a given stage appeared somewhat greater at relatively low levels of commitment.

In sum, combined results for adults regarding physical activity provide some indication that positive change in intentions or behavior occurred within the overall group over the intervention period. This change appeared to be more closely associated with a distinction between inactivity and activity than with increases in activity levels for active individuals.

Table 14. *Engagement in moderate to vigorous exercise of at least 30 minutes duration*¹

	N	Percentage
		Physically inactive
Year 3	103	5.8%#
Year 1	131	12.2%

¹ On how many of the past 7 days did you exercise or participate in moderate or vigorous physical activity for at least 30 minutes total?

Marginally significantly lower than Year 1 value (i.e., $p < .10$).

Table 15. *Frequency of engaging in moderate or vigorous activity for at least 30 minutes duration for respondents reporting some level of activity*¹

	N (physically active only ²)	Means	Percentages						
			1 day	2 days	3 days	4 days	5 days	6 days	7 days
Year 3	97	3.59	19.6	21.7	8.3	13.4	16.5	9.3	11.3
Year 1	115	3.57	10.4	17.4	27.0	17.4	13.9	6.1	7.8

¹ On how many of the past 7 days did you exercise or participate in moderate or vigorous physical activity for at least 30 minutes total?

² Means do not include responses of “not physically active” or “0 days” of exercise during the past week.

Table 16. Amount exercise time during each activity session for respondents who were physically active¹

	N (physically active only ²)	Means	Percentages					
			Less than 10 min. (1)	10 min. or more, but less than 20 min. (2)	20 min. or more, but less than 30 min. (3)	30 min. or more, but less than 40 min (4)	40 min. or more, but less than 60 min. (5)	60 min. or more (6)
Year 3	103	4.41	1.9	8.7	10.7	32.0	18.5	28.2
Year 1	122	4.47	3.3	5.7	14.8	25.4	18.9	32.0

¹ On days when you are physically active, how much time on average do you spend being physically active?

² Means do not include responses of ‘I’m not physically active.’

Table 17. Frequency of walking for at least 10 minutes per day¹

	N	Means	Percentages							
			0 days	1 Day	2 days	3 days	4 days	5 days	6 days	7 days
Year 3	104	3.96	8.7	7.7	12.5	14.4	10.6	19.2	6.7	20.2
Year 1	131	3.76	14.5	6.9	9.9	16.0	10.7	15.3	5.3	21.4

¹ In a typical week, on how many days do you walk at least 10 minutes at a time for recreation, exercise or to get from place to place?

Table 18. Stage of commitment regarding regular physical activity¹

	N ²	Means	Percentages				
			Yes, I have been for more than 6 months (4)	Yes, I have been for less than 6 months (3)	No, but I intend to in the next 30 days (2)	No, but I intend to in the next 6 months (1)	No, and I do not intend to in the next 6 months (0)
Year 3	104	2.93*	44.2	21.2	22.1	8.7	3.8
Year 1	131	2.53	35.1	21.4	16.0	16.8	10.7

¹ Regular exercise is physical activity that is done 3 to 5 times per week for at least 30 minutes. Do you exercise regularly according to that definition?

² Means include those who responded “No, and I do not intend to in the next 6 months.”

* Significantly greater than Year 1 value at p<.05

Time Spent Being Physically Active with Child

Parents were asked how much time they spent on an average day being physically active with their child (Table 19). There was no significant difference in mean response between Year 1 and

Year 3. On average, adults reported spending between 10 and 30 minutes per day being physically active with their child, and the most common response during each year was 20-30 minutes.

Table 19. *Amount of time spent being physically active with child*¹

	N	Means	Percentages						
			None (0)	Less than 10 min. (1)	10 min. to 20 min. (2)	20 min. to 30 min. (3)	30 min. to 40 min. (4)	40 min. to 60 min. (5)	60 min. or more (6)
Year 3	103	2.83	12.6	11.7	13.6	28.2	17.5	9.7	6.8
Year 1	131	2.62	11.5	14.5	22.1	24.4	13.7	7.6	6.1

¹ On an average day, how much time do you and your child spend being physically active together?

Assessment of Child's Physical Activity

Between Year 1 and Year 3 there was a marginally significant increase in respondents' assessment of the length of time that their child engaged in physical activity on an average day (Table 20). With respect to engaging in at least 60 minutes of activity per day, 47% of children during Year 1 and 55% of children during Year 3 met this level.

Adults were also asked to report the number of days during a typical week that their child walks to school (Table 21). In this case, although means appeared consistent with a favorable change over time, there was no significant difference between means at pre-test and post-test. Also, during both years, more than 60% of parents reported that their child never walks to school.

Table 20. *Amount of time spent by child being physically active*¹

	N	Means	Percentages						
			None (0)	Less than 10 min. (1)	10 min. to 20 min. (2)	20 min. to 30 min. (3)	30 min. to 40 min. (4)	40 min. to 60 min. (5)	60 min. or more (6)
Year 3	104	5.09#	1.0	1.9	3.8	4.8	12.5	21.2	54.8
Year 1	131	4.73	1.5	3.1	4.6	11.5	16.8	16.0	46.6

¹ On an average day, how much total time does your child spend being physically active?

Marginally significantly higher than Year 1 value.

Table 21. *Number of days child walks to school*¹

	N	Mean	Percentages					
			0 days	1 day	2 days	3 days	4 days	5 days
Year 3	103	1.37	64.1	3.9	3.9	5.8	3.9	18.4
Year 1	129	1.03	69.8	6.2	5.4	2.3	2.3	14.0

¹ In a typical week, on how many days does your child walk to school?

Knowledge of Exercise Opportunities in the Franklin Neighborhood

Knowledge about opportunities for walking or engaging in other types of physical activity in the Franklin Neighborhood was assessed using four questions (Table 22). Significant increases in reported knowledge between pre-test and post-test were observed for two of these questions: knowledge about available opportunities for physical activity in the community or neighborhood and knowledge about safe routes to school. No differences were observed between Years 1 and 3 for knowledge of distances to stores or other nearby places and knowledge about whether or not there is a walking club or group in the neighborhood.

Table 22. *Current knowledge about opportunities for exercise*¹

Year 1 N=131; Year 3 N= 103 unless otherwise noted		Means	Percentages				
			Low 1	2	Mid 3	4	High 5
What opportunities there are for physical activity in my neighborhood or larger community?	Year 3	3.51**	9.7	10.7	23.3	31.1	25.2
	Year 1	3.08	14.5	22.1	22.1	22.9	18.3
Whether there is a walking club or walking group in my neighborhood?	Year 3 (N=102)	1.90	55.9	20.6	9.8	4.9	8.8
	Year 1 (n=130)	1.90	56.2	17.7	12.3	7.7	6.2
What the distances are to stores or places nearby?	Year 3 (N=102)	3.69	10.8	8.8	19.6	22.6	38.2
	Year 1	3.44	10.0	12.3	28.5	22.3	26.9
What is a safe route that my child can walk to school?	Year 3	3.56*	16.5	9.7	13.6	21.4	38.8
	Year 1 (n=128)	3.16	22.7	13.3	19.5	14.1	30.5

¹ Please rate your current knowledge of the following:

* Significantly higher than Year 1 value (p<.05)

** Significantly higher than Year 1 value (p<.01)

BEVERAGES CONSUMED (data collected in years 2 and 3 only)

In 2007 and 2008 (but not in 2006), participants were asked about their own and their child's consumption of various beverages. For both adults and children, the highest observed level of consumption was reported for milk, followed by 100% juice (Tables 23 & 24). For parents, consumption of diet soda ranked third, followed by consumption of sugar-sweetened beverages, but this order reversed for children. For any given category of beverage (e.g., milk, regular soft drinks) there was no change in consumption between Year 2 and Year 3 for either adults or children. However, within any given year, there was a strong positive correlation between adult and child consumption for any given beverage category. Also, consumption of either category of healthy beverages in children tended to be positively related to consumption of healthier beverages in adults, while consumption of sugar-sweetened beverages in children tended to be positively related to parent's consumption of unhealthy beverages in general. Diet soda consumption in adults was related to children's consumption of more healthful beverages. Overall results suggest the presence of a relatively healthful versus unhealthful mindset regarding beverages within a given household.

Table 23. *Parent's beverage consumption (Years 2 and 3 only)*¹

		Means	Percentages							
			Never (0)	A few times per year (1)	Once per month (2)	2-3 times per month (3)	Once per week (4)	3-4 times per week (5)	5-6 times per week (6)	Every day (7)
Year 2 N=121; Year N=103 unless otherwise noted										
Milk (any kind)	Year 3 (N=102)	5.56	2.9	3.9	3.9	4.9	5.9	16.7	9.8	52.0
	Year 2	5.44	5.0	3.3	3.3	3.3	5.0	20.7	15.7	43.8
100% juice (real orange or grapefruit juice)	Year 3	3.96	6.8	8.7	8.7	12.6	17.5	23.3	10.7	11.7
	Year 2	3.73	7.4	14.0	9.9	14.9	11.6	19.8	7.4	14.9
Diet soft drinks	Year 3 (N=102)	2.54	43.1	7.8	4.9	6.9	7.8	7.8	5.9	15.7
	Year 2	2.88	36.4	12.4	4.1	5.0	5.0	11.6	4.1	21.5
Regular soft drinks (not diet)	Year 3	2.95	22.3	14.6	8.7	11.7	13.6	12.6	4.9	11.7
	Year 2	2.61	29.8	14.9	8.3	11.6	9.9	10.7	2.5	12.4
Hawaiian Punch, Sunny Delight, Hi-C, Kool-Aid	Year 3	2.21	27.2	21.4	9.7	14.6	5.8	17.5	1.0	2.9
	Year 2 (N=120)	2.20	25.8	25.8	9.2	12.5	8.3	10.0	4.2	4.2

¹ How often do you drink the following beverages?

Table 24. *Child's beverage consumption (Years 2 and 3 only)*¹

		Means	Percentages							
			Never (0)	A few times per year (1)	Once per month (2)	2-3 times per month(3)	Once per week(4)	3-4 times per week(5)	5-6 times per week(6)	Every day (7)
Year 2: N=121; Year 3 N=103										
Milk (any kind)	Year 3	6.50	0	0	0	1.9	3.9	9.7	10.7	73.8
	Year 2	6.53	0	0	0	1.7	2.5	8.3	16.5	71.1
100% juice (real orange or grapefruit juice)	Year 3	4.94	1.0	3.9	5.8	9.7	13.6	23.3	20.4	22.3
	Year 2	4.78	1.7	3.3	3.3	15.7	12.4	29.8	14.9	19.0
Hawaiian Punch, Sunny Delight, Hi-C, Kool-Aid	Year 3	3.20	10.7	16.5	10.7	16.5	14.6	17.5	7.8	5.8
	Year 2	3.32 (n=120)	11.7	13.3	12.5	16.7	12.5	15.8	8.3	9.2
Regular soft drinks (not diet)	Year 3	2.45	18.5	16.5	14.6	20.4	17.5	8.7	2.9	1.0
	Year 2	2.37	18.2	17.4	14.1	26.5	12.4	9.1	0	2.5
Diet soft drinks	Year 3	1.15	56.3	11.7	9.7	9.7	9.7	1.9	1.0	0
	Year 2	1.20	50.4	19.0	6.6	11.6	9.1	3.3	0	0

¹ How often does your child drink the following beverages?

POST-TEST QUESTIONS (Year 3 only)

The post-test survey (2008) also included several items asked for the first time as indicators of implementation success and respondent attitudes regarding potential additional changes, to help the program staff and the HEAL coalition with future interventions.

Grocery Shopping

More than nine of ten female respondents and slightly more than half of male respondents indicated that they were the primary grocery shoppers in their families (Table 25). Also, the vast majority (88%-99%) of respondents answered either 'somewhat likely' or 'very likely' to each question concerning their likelihood of taking advantage of available healthful purchasing choices or lower prices for healthy items (Table 26).

Table 25: *Primary grocery shopper (2008 only)*

Year 3 N=99		N	Percentages	
			Yes	No
Are you the primary grocery shopper in your household?	Females	63	92.1	7.9
	Males	36	52.8	47.2

Table 26. *Likelihood of taking advantage of healthy options while grocery shopping (2008 only)*^{1,2}

Year 3 N=75	Means	Percentages			
		Would not consider (0)	Unlikely (1)	Somewhat likely (2)	Very likely (3)
More variety of fresh fruits and vegetables	2.59	0	4.0	33.3	62.7
Locally grown foods	2.44	1.3	6.7	38.7	53.3
Taste testing opportunities for healthier items	2.37	2.7	9.3	36.0	52.0
Lower prices for healthier items	2.80	0	1.3	17.3	81.3
Increased selection of healthier items	2.55	0	2.7	40.0	57.3

¹ When you shop for groceries, how likely would you be to take advantage of these options if they were offered?

² Primary shoppers only

Eating at Restaurants

The vast majority of respondents—here, between 78% and 90%—also indicated that they would be ‘somewhat likely’ or ‘very likely’ to take advantage of opportunities to order healthier menu options or reduced pricing for healthier items, if these were made available (Table 27). Also, despite the relatively low levels of dining out in the sample, 73% of respondents during Year 3 still reported eating dinner out at least once during the previous week.

Most respondents (64-78%) also said that they would be likely to respond to signs or information in restaurants to promote healthier food (Table 28).

Table 27. *Likelihood of taking advantage of healthy options at a restaurant (2008 only)*¹

	Means	Percentages			
		Would not consider (0)	Unlikely (1)	Some-what likely (2)	Very likely (3)
Year 3 N=104					
Fresh fruit dishes	2.04	5.8	16.4	46.2	31.7
Fresh or cooked (non-fried) vegetable dishes	2.32	1.9	11.5	39.4	47.1
Locally grown foods incorporated into the menu	2.04	4.8	19.2	43.3	32.7
Healthier menu items if they were lower priced than other foods	2.46	1.0	8.7	33.7	56.7
Smaller portion sizes if they were lower priced	2.21	1.0	14.4	47.1	37.5

¹ When you and your family eat at a restaurant, how likely would you be to order the following options if they were available?

Table 28. *Likelihood of being influenced by health information at a restaurant (2008 only)*¹

	Means	Percentages			
		Would not consider (0)	Unlikely (1)	Somewhat likely (2)	Very likely (3)
Year 3 N=104					
Signs or posters in the restaurant promoting healthier food choices	1.77	2.9	33.7	47.1	16.4
Nutrition information available on the menu indicating healthier foods	1.99	2.9	19.2	53.8	24.0

¹ When you and your family eat at a restaurant, how likely is it that your menu selection would be influenced by the following?

Footprints to Health Implementation

The post-test (2008) asked several questions related to the implementation of the intervention, including the distribution of community recreation guides or maps depicting safe routes to school, the use of school green space, and perceived barriers for having students walk to school.

Based on these questions, a quarter of participants reported using Safe Routes to School maps, and nearly 40% more of the sample reported having some awareness of the existence of these maps (Table 29).

With respect to barriers to walking, more than a quarter of the sample reported that nothing could change the frequency with which their child walks to school. Such responses may have been strongly influenced by an attempted abduction, which occurred in the neighborhood during the intervention. In addition, for those who saw a possibility for improvement regarding the frequency of their child walking to school, the two most endorsed ways to overcome barriers involved having adults or other children accompany their child. Safety strategies that involved

increasing knowledge levels appeared to be of somewhat lesser concern. This relative ranking was similar if the sample was limited to only those participants whose child never walked to school (the majority of participants). However, nearly 40% of these individuals still felt that there was some possibility of change.

Three-quarters of respondents said that their family had used the new green space at Franklin School (Table 30). Nearly two-thirds of the sample said that they used the space independently, and a sizeable minority said that they had participated in school events.

The majority of respondents also said that they used the recreation guides during the past year. Guides were typically obtained from the schools or Park Department, rather than downloaded (Table 31).

Table 29: *Overcoming barriers for walking to school (2008 only)*

		Percent-ages
Maps with safe routes to school and school drop off locations are on the Franklin website. Please select the answer that best describes your use of the maps. (n = 103)	I don't remember getting the maps	35.9
	I remember getting the maps, but I didn't do anything with them	38.8
	I looked at the maps and have used the Safe Routes to School	25.2
What, if any, factors would increase the likelihood of your child being able to walk or bike to school? ¹ (n=104)	Safety education at school	10.6
	Knowing which are the safe routes to school	13.5
	Walking in groups of children	25.0
	Having an adult along	45.2
	Nothing will increase the likelihood that my child will walk or bike to school	27.9

¹Multiple responses were possible, so percentages do not add to 100%

Table 30: *Use of new green space (2008 only)*

Year 3 N=102	Total Yes = 75.5%	
Q 67 Rd 3---The Franklin School has increased the playground green space for outdoor activities. Have you and your family used this green space?	If YES , what type of activities has your family participated in?	% of yes responses ¹
	School planned gatherings	45.5
	Walking club on the paved track	16.9
	Family or organized non-school group activities (ex. YMCA, Boys & Girls Club, etc.)	13.0
	Free play	65.4

¹Multiple responses are possible, so percentages do not add to 100%

Table 31: *Use and availability of recreation guides (2008 only)*

Year 3 N=102	Total Yes = 63.7%	
In the past year, have you used either: (a) the Recreation Guide from the Marathon County Park and Recreation Department listing recreational opportunities; or (b) the Active Recreation Guide listing organizations (Little League, etc) and other recreational opportunities throughout the county?	If YES , where did you receive either of these resources?	% of yes responses ¹
	Doctor's office	4.6
	Park and Recreation Department	43.1
	Child' backpack	47.7
	Grocery store	16.9
	On-line/ from the web site	10.8
	Other	16.9

¹Multiple responses are possible, so percentages do not add to 100%

DISCUSSION

As noted previously, several factors limit the ability to draw firm conclusions from the survey. A control group was not considered feasible for this project, and survey response rates, (particularly those for Year 3) were much lower than ideal, despite the considerable level of effort put toward maximizing survey participation. In addition, the panel of individuals who completed the survey during both Year 1 and Year 3 was relatively small, which limited the usefulness of making paired comparisons over time.

As a result, primary analyses were based on comparisons of survey participants in aggregate, and competing explanations for findings were considered whenever possible. Other available evidence, such as demographic comparisons and ancillary findings, were taken into consideration during interpretation. Based on all of the available information, there is support for a modest favorable impact of the intervention on the target population. However, this was limited to the physical activity component of the intervention.

Nutrition indicators showed little or no evidence of any effect due to the intervention. When all respondents were compared during Year 1 and Year 3, there were no significant differences for any indicators, including those for eating together as a family, healthy family meal practices, meal planning or preparation, or meal content. When analyses were limited to only those individuals who completed the survey during both years, a similar overall conclusion was drawn. (In this case, only a significant favorable change was observed for involving the child in dinner preparation).

To examine nutrition findings more closely, a reanalysis of differences in nutrition indicators was conducted for the entire sample between consecutive years of the survey (i.e., Year 1 to Year 2 and Year 2 to Year 3). Although some significant favorable and unfavorable differences were observed, none persisted across the intervention period and no clear pattern of change was apparent. For example, significant unfavorable changes were observed between Year 1 and Year 2 for two meal planning variables, and two variables concerning including fruits and vegetables with dinner. Trends for these same indicators reversed between Year 2 and Year 3, resulting in no net change during the intervention period. However, no similar trends were apparent for the panel of individuals who took the survey during consecutive years. Also,

changes in the overall sample between years disappeared when demographic variables were controlled. An exception was a marginally significant increase between Year 1 and Year 2 in the belief that family meals help increase fruit and vegetable consumption, but this observed change did not persist to Year 3.

Because much of the nutrition side of the intervention was focused at the individual level, it's possible that some level of resistance occurred in response to some aspects of the intervention while other aspects were effective, resulting in a net null effect. However, it would seem perhaps more likely that little or no change occurred in nutrition outcomes due to the intervention. Different reasons are likely to have contributed to this apparent lack of change. At baseline, the sample reported relatively high levels of eating dinner together as a family and cooking at home, rather than eating out. Because it may be more difficult to promote family meals for breakfast and lunch, relatively little room for improvement may have existed for increasing family meals in general. Also, because questions about family meal practices typically showed relatively little variation, these indicators may have had little ability to detect change.

However, significant changes were also absent for intervention goals that did not appear to have these same measurement issues, such as fruit and vegetable consumption or involving children in meal preparation. Here, it's relevant to raise the point that, for a variety of reasons, several aspects of the intervention were not implemented as planned. For example, family meal trainings were curtailed after Year 1 due to a lack of interest. Also, several aspects of the intervention aimed at changing higher social ecological influences on behavior, such as modifying stores and restaurants, changing organizational policies, and broadcasting media messages, were only partially implemented. Creating a community intervention with sufficient "dosage" to measurably change health behaviors can be challenging. However, in this case, because key policy and environmental aspects of the intervention were not completed as intended, implementation could instead be the source of an apparent lack of positive change in nutrition outcomes.

In contrast to the findings for nutrition outcomes, indicators of physical activity outcomes support the occurrence of some level of positive change due to the intervention. For several indicators, the level of evidence for change was relatively weak, and it's also possible that some observed differences were due to chance. However, of the 12 indicators of physical activity or its predictors, 5 were at least marginally significant, and all differences occurred in a favorable direction. Some positive differences were apparent for both adults and children and were observed for indicators of both knowledge (opportunities for activity; safe routes to school) and behavior (adult inactivity / intention to exercise; child activity level). Differences in adults appeared more closely associated with initiating rather than increasing physical activity.

For the overall sample, only one indicator, child activity level, appeared potentially explainable by demographic factors. However, this indicator also improved significantly over time for the panel of individuals who participated in both the pre-test and post-test. In general, for physical activity indicators, effects for the panel were typically weaker but still directionally consistent with those for the overall sample. Motivation to provide socially desirable responses due to awareness of the intervention might also explain changes in physical activity indicators in the overall sample. However, if this were true, one might also expect to see comparable positive changes in nutrition indicators over time, and this was not the case.

Some other support for a positive change in physical activity indicators comes from consideration of specific characteristics of the findings. For example, indicators related to knowledge of opportunities for physical activity and safe routes to school increased during the time periods that one would expect to see changes, based on the timing of the intervention (Year 2 and Year 3, respectively). Also, as one would expect if the intervention had caused the

observed positive changes, increases in reported activity levels either followed or appeared concurrently with changes in relevant knowledge.

Despite the fact that perceived knowledge of Safe Routes to School increased significantly in the sample during the intervention period, the fact that the reported frequency of children walking to school did not change would seem to argue against a positive effect of this particular aspect of the intervention. However, this program was not implemented until relatively late during the last year of the intervention, and specific questions asked only during Year 3 provide some indication that a favorable impact on children's activity level may have been underway.

Specifically, those participants who reported having used Safe Routes to School maps also reported a significantly higher average number of days that their child walked to school. However, because this relationship is cross-sectional, it's impossible to know whether reading Safe Routes maps increased the frequency with which children walked to school or if parents whose children already walked to school regularly paid more attention to the maps. Nevertheless, knowledge is likely to often be an intermediary step between these two variables, and results for the knowledge variable are also consistent with the idea that the intervention was likely to have had a positive impact on child activity level. Participants who reported using the distributed maps also reported having significantly higher levels of knowledge about safe routes, relative to those who either did not remember receiving the maps or those who received the maps but did not do anything with them. Also, because knowledge was positively related to the frequency with which children walked to school, combined results support the idea that parents' attention to Safe Routes maps increased knowledge levels and that this increased the frequency with which children walked to school.

It is also of interest that participants who received the maps but did not use them actually reported a significantly lower number of days that their children walked to school, compared with parents who did not remember receiving the maps. This supports the previous observation that, for a significant minority of the sample, seemingly insurmountable barriers may have existed regarding having children walk to school. However, results also suggest that a potentially persuadable part of the sample had not yet been reached by the intervention.

A few other observations regarding the survey data are also worthy of note. For example, based on responses to questions asked during Year 3, participants appeared highly receptive to the idea of increased access to healthful choices in grocery stores and restaurants. This lends some support to findings from focus groups, conducted prior to the intervention, that participants were concerned about the affordability of healthy food choices. It also suggests that some planned environmental aspects of the nutrition intervention, had they been implemented, may have had a favorable influence on outcomes. Along these same lines, results from the Year 2 survey suggested that participants liked the idea of having increased access to facilities for physical activity. However, this objective could also not be fully implemented. Examination of these barriers may be useful for enhancing the intervention's potential to impact health outcomes in the future. Also, responses to questions asked only during Year 3 regarding beverages choices may offer some additional strategies for future consideration. Results suggest that encouraging healthy beverage choices in adults may represent a useful strategy for reducing access to unhealthful beverages in general for children.

With respect to observed differences in nutrition and physical activity indicators based on demographic differences within the sample, relative to Whites, minority participants (primarily Asians) reported relatively low levels of activity for both adults and children and relatively high levels of fruit and vegetable consumption. However, focus groups prior to the intervention suggested that Hmong participants may have not defined physical activity as including physical

labor. In general, participants who were unmarried or who had low education levels, tended to report lower levels of physical activity knowledge and behavior, compared with their married or more highly educated counterparts. However, both disadvantaged groups also reported being relatively more likely than their respective comparison groups to engage in physical activity with their children.

With respect to retention of participants in the sample over time, individuals who only participated in the survey at baseline tended to be somewhat younger than those who took the survey during both Year 1 and Year 3. In addition, those who dropped out were significantly more likely than those who did not to be of a minority race or to have a relatively low level of education, suggesting the presence of literacy or time barriers. Demographic results may also provide some clues concerning the ability to generalize survey results. The fact that observed changes in physical activity indicators in the survey sample were typically unchanged after controlling for demographic variables suggests that results may be somewhat more applicable to the larger intervention population (as opposed to just the survey sample) than response rates might otherwise indicate.

In summary, despite several limitations that make it difficult to draw firm conclusions from the evaluation, based on consideration of all available evidence, there is an indication of favorable change in physical activity outcomes that appears likely to have been due to the intervention. However, because there was no comparable change in nutrition outcomes, this aspect of the intervention should be examined particularly carefully before attempting to extend aspects of the intervention to other neighborhoods or communities.