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EFFECT OF EXPOSURE TO HEALTHY LIFESTYLE INFORMATION ON OPENNESS TO HEALTH INITIATIVES

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THE FLORIDA STATE UNIVERSITY
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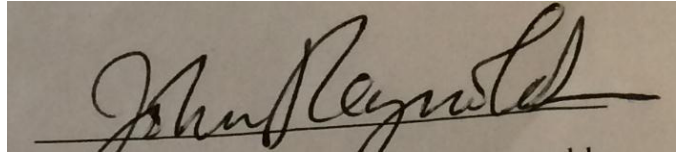
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SEAN DORAN

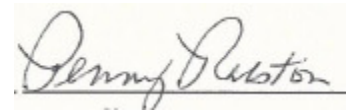
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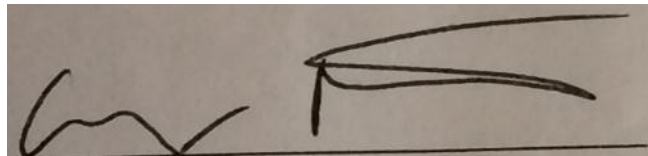
The members of the Defense Committee approve the thesis of Sean Doran defended on April 18, 2016.

A rectangular image showing a handwritten signature in black ink on a light-colored background. The signature is cursive and appears to read "John Reynolds".

Dr. John Reynolds
Thesis Director

A rectangular image showing a handwritten signature in black ink on a light-colored background. The signature is cursive and appears to read "Penny Ralston".

Dr. Penny Ralston
Outside Committee Member

A rectangular image showing a handwritten signature in black ink on a light-colored background. The signature is cursive and appears to read "Amy Burdette".

Dr. Amy Burdette
Committee Member

Effect of Exposure to Healthy Lifestyle Information on Openness to Health Initiatives

Obesity has quickly become one of the most glaring public health issues over the past half century. Given the myriad of illnesses associated with obesity, including some of the leading causes of death in the United States, intervention and prevention methods in the fields of medicine and public health have drawn more attention. The purpose of this study is to identify if individuals that are more informed of data and recommendations on diet, exercise, and the current obesity climate are more open to personal and community health initiatives. Individuals were randomly sorted into either the control group or experiment group. Each group completed a survey on their general behaviors and attitudes pertaining to diet and exercise then indicated their openness to a collection of personal and community health initiatives. The experiment group, however, was presented with public health data and recommendations at multiple points throughout the survey. The results indicated that those individuals who were more informed on public health data and recommendations were more open to community health initiatives than those in the control group, however the relationship did not hold for personal health initiatives. These results carry implications for obesity prevention campaigns, emphasizing the importance of information and health education for creating buy-in for community health initiatives.

Literature Review

Obesity affects close to one-third of the United States population while another one-third is considered overweight (1). Combined, the rate of obese and overweight individuals in the United States, including children and adolescents, has more than doubled since the early 1970s (2, 24) and although stagnated, shows few signs of regressing. Of the financial, health, and social consequences of being obese or overweight, in youth, a greater chance for being an overweight or obese adult (3,4) is the most concerning as those consequences are magnified.

Obese and overweight adults and children encounter both physiological and psychological consequences with both personal and social implications. Physiologically, an increased risk of type 2 diabetes, hypertension, atherosclerosis, dyslipidemia, metabolic syndrome, liver disease, asthma, and obstructive sleep apnea (5, 25). Psychologically, studies show that overweight and obese youth report lower levels of self-esteem (6,7) poorer academic performance (8), increased school absenteeism (9,10), and higher levels of depression and anxiety (11). These consequences have the potential to carry financial consequences as personal and national health care costs in the near and distant future. Studies estimate that the medical care costs are as high as \$147 billion per year while lost-productivity costs range between \$3.38 and \$6.38 billion annually (26, 27).

The prevalence of obesity in the United States varies demographically. Non-Hispanic blacks have the highest rates, followed by Hispanics, non-Hispanic whites, and non-Hispanic Asians (1). Among these groups, disparities exist by age and gender. Approximately four in ten obese Americans are between the ages of 40-59, while approximately 35% are 60 or above, followed by 30% of those age 20-39, and 17% of children and adolescents (1). Overall, males

have a marginally higher rate of overweight or obesity, though black non-Hispanic women are more likely than their male counterparts to be both overweight and obese (28).

Socioeconomic status has also been studied in respect to obesity. No relationship between obesity and education level has been found for men, however, attaining a college degree is related to lower obesity levels among women (28). Family income and parents' education have an inverse effect on overall childhood obesity, though this relationship breaks down across racial and ethnic classes (12). It is important to note that the majority of obese children and adolescents are not considered low income, defined as below 130% of the federal poverty line (12). This, combined with the lack of relationship between men's education and obesity, is a marker that adiposity pervades social classes (12).

Beyond the surface cause of overweight and obesity—greater caloric intake than energy expenditure over an extended period of time—a number of food environmental factors have been studied in relation to the dietary choices that cause this imbalance. Food security—defined by the USDA as having access to enough food for a healthy and active lifestyle—is partially dependent on the availability of mainstream grocery stores that offer an assortment of fresh produce, dairy and meats on a regular basis relative to fringe food venues like fast food restaurants and convenience stores (13).

In addition to healthy food access, other factors influence dietary behavior: cost and quality of food, location of stores and individuals' perceptions of their food environment (14). Studies have found that low-income communities and predominantly minority neighborhoods have less access to mainstream grocery stores and higher dependence on more proximate fringe food venues that offer lower-cost, less nutritious food choices (15, 16, 17). The food environment, combined with lifestyle choices like inadequate daily physical activity and

excessive screen-based leisure time sedentary behaviors (LTSB), contributes to higher rates of overweight among youth (18).

Socially, U.S. adults and youth are surrounded by more overweight or obese adults than those of normal weight. According to National Health and Nutrition Examination Survey data, close to one-third of US adults are overweight, one-third obese and another 5.7% qualify as extremely obese (19). These adults were raised in a culture of increased advertising focus on fast food, restaurants, snacks, and prepared entrees (20). The period from 1970-2001 saw seven times the number of fast food outlets and an adolescent population that, on average, consumed fast food twice per week. This was associated with a diet higher in calorie-dense foods and lower in fruits, vegetables, and dairy (21).

Given that children and adolescents develop their norms and behaviors through primary and secondary sources of socialization—comprised of nuclear family in the former and extended family, friends and their families, educators, and other public figures in the latter—today's children and adolescents in the United States are highly susceptible to developing poor eating habits and accepting overweight and obesity as societal normalcy. This dietary behavioral normalcy, though, is perpetuated by an individual's demographic profile, socioeconomic status and food environment, which can deprive them of the knowledge and resources to sustain healthy dietary behaviors, which then perpetuates the cycle of socialization mentioned prior.

Recent studies also suggest that parents incorrectly perceive their overweight or obese child as normal weight (22, 23), which points to a clear shift in normalcy. The aim of this study is to evaluate if individuals that are more informed of data and recommendations on diet, exercise, and the current obesity climate are more open to personal and community health initiatives.

Health Behavior Literature

An example of a successful public health campaign in Florida that targeted the individual to, in turn, create a healthier community is the “truth” anti-smoking campaign of the late 1990s and early 2000s. The campaign used counter-marketing strategies to bring the truth to light on tobacco’s harmful and deadly effects, while simultaneously recruiting youth to the anti-tobacco group Students Working Against Tobacco (33). The youth smoking rate declined rapidly in the first year of the “truth” campaign, and in comparison to their national peers, Florida youth held stronger negative attitudes toward the tobacco industry (33). This state-run public health campaign presented the facts to the individual, influencing them to refrain from a behavior harmful to their health while also fostering a community of advocates.

Grounded in social cognitive theory, Bandura identified core determinants that influence individuals’ health behaviors, including knowledge of health risks and benefits of different health practices, commenting that if “people lack knowledge about how their lifestyle habits affect their health, they have little reason to put themselves through the travail of changing the detrimental habits they enjoy” (29). Central to this is an individuals’ perceived level of self-efficacy to control their health habits, which separate studies have found contribute to both individuals’ translation of health knowledge to healthful behavioral practices and adoption of healthy eating habits and regular exercise (30, 31).

In regards to socially-oriented approaches to health, Bandura claims that the field of health faces a dualism between individual responsibility for their health and the environmental, political, and economic conditions that in which individuals are uncontrollably situated (29). He argues, however, that improvements in public health require collective agency, which is dependent on individual agency. Therefore, according to social cognitive theory, behavior is

influenced by the community health environment, as well as, personal knowledge and agency. Further, according the theory of socialization, adults who adopt these behaviors and children and adolescents who are raised in healthier social and physical environments may improve public health in decades to come.

Given these factors, I hypothesize that, when given current and pertinent data and recommendations on the current public health environment as it relates to diet and exercise, individuals will be more open and accepting of various personal health initiatives and community health initiatives.

H1: Educational feedback on public health topics related to diet and exercise will increase an individual's openness toward personal health initiatives.

H2: Educational feedback on public health topics related to diet and exercise will increase an individual's openness toward community health initiatives.

Design

Data for this analysis were drawn from an online survey created by the researcher. After reporting on basic social and demographic characteristics, respondents answered questions designed to encourage them to think critically about their diet, their health behaviors, their food sources, public health, and the desirability of health-related initiatives at the individual- or community-level. The experimental condition introduced to one half of the respondents, selected randomly, is feedback information that might challenge what the respondent deems to be appropriate behaviors related to diet, exercise, and eating. This feedback was provided at eight different times during the survey

The sociodemographic information that was gathered includes age, gender, height, weight, race/ethnicity, household income, marital status, education level, employment status, household composition, mode of transportation, zip code, and perceived socioeconomic status (SES). Subjective SES was measured by asking respondents to choose on a ladder graphic where they thought their family stood relative to the rest of the United States population (See Figure 1).

Figure 1. Subjective socioeconomic ladder question

Think of this ladder as representing where people stand in the United States.

At the top are the people who are the best off -- those who have the most money, the most education and the most respected jobs. At the bottom are the people who are the worst off -- who have the least money, least education, and the least respected jobs or no jobs.

At this point in time, where on this ladder would you place your family?



The set of questions concerning the respondent's typical weekly diet included both items about the frequency of different types of food consumption (fast food, sodas) and items tapping into their attitudes about diet-related matters. Specifically, respondents reported how often they

eat meals prepared outside the home, their soft drink consumption, then questions about their diet and physical appearance, their preference for fruits and vegetables, their awareness of their caloric intake, and their ability to afford a healthy diet.

The next set of questions dealt with the respondent's typical weekly exercise routine. Respondents were asked how often they exercise, at what intensity (high, medium, and/or low), in which settings, and which modes of exercise. Additionally, the survey asked of their perceptions and attitudes related to exercising and whether they exercise enough, whether they perceiving that they had enough time to exercise, and whether they encourage their children to exercise (if applicable).

The fourth set of questions asked respondents about the neighborhood in which they currently lived and their perceptions of place-related public health issues. Respondents were asked whether their neighborhood has enough food variety and fresh produce availability. Additionally, they were asked how many times per a typical week that they purchased food from the following options: full-service restaurant, fast food restaurant, convenience/corner store, grocery store, food bank or soup kitchen, and other. Next, respondents were asked whether the United States population is healthy and if adult and childhood obesity are problems.

The final section of questions tap the study's focal outcomes: acceptability of individual- and community-level initiatives that might improve health through diet and exercise. Respondents were asked about three personal initiatives and six community health initiatives aimed at improving diet and/or increasing physical activity. For the personal health initiatives, respondents were asked to indicate how open they would be to maintaining food/activity logs, decreasing food portions, and increasing exercise. For the community health initiatives, respondents were asked to indicate their openness to an exercise prescription program, a diet

prescription program, community fitness initiatives, a sin tax, a bike share program, and community gardens.

Openness to each initiative was tapped with a Likert-type scale where 1 indicates no interest at all or opposition to the idea, and 7 indicates great openness or very interested in the idea. As explained below the three items for the personal initiatives were summed to create an “openness to personal initiatives” scale and the six items for the community initiatives were likewise summed to create a community initiatives scale. The analyses also look at individual initiatives to determine which are most susceptible to persuasion via feedback.

As noted earlier, experiment group was administered all of these questions plus the condition of educational feedback. This consisted of being redirected to a page with information on the topic to which they had just provided an answer, sourced from either government or academic institutions. To increase the chances that this information was viewed and considered, respondents were not permitted to advance to the next survey question on the subsequent screen for a minimum of ten seconds. Figures 2 and 3 provide an example of the screens seen by control and experimental groups (respectively) when asked about soft drink consumption. As shown in Figure 2, control subjects could immediately proceed with the following question dealing with life satisfaction. The experimental group, in contrast, could not proceed until having been exposed to information on the scientific community’s recommendation about soft drinks for at least 10 seconds. The recommendation in this case, from Harvard’s T.H. Chan School of Public Health, is to consume zero drinks sweetened with sugar, high fructose corn syrup, or artificial sweetener, but if one does drink soft drinks then limit it to a maximum of eight ounces per day.

Figure 2. Line of questioning in the control group

In the past 7 days, how many days have you eaten meals NOT prepared at home?

In the past 7 days, how many soft drinks have you consumed? (fruit drinks, sodas and other carbonated beverages that are sweetened with sugar or other artificial sweeteners)

For the following questions, use the slider to describe your level of agreement with the statement.

Disagree Agree

1 2 3 4 5 6 7

I am a happy person

Figure 3. Line of questioning in experiment group

In the past 7 days, how many soft drinks have you consumed? (fruit drinks, sodas and other carbonated beverages that are sweetened with sugar or other artificial sweeteners)

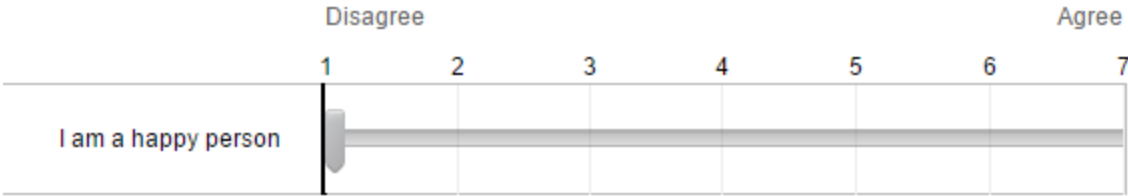
Based on a diet of 2,200 calorie per day, Harvard's T.H. Chan School of Public Health recommends drinking zero drinks sweetened with sugar, high fructose corn syrup, or artificial sweetener (as found in many "diet" sodas), but up to a maximum of eight (8) ounces per day. Standard soft drinks typically come in twelve (12) ounce bottles or cans.

For the following questions, use the slider to describe your level of agreement with the statement.

Disagree Agree

1 2 3 4 5 6 7

I am a happy person



Following their answers on whether they were happy with their appearance and diet, and if they perceived their diet as balanced, the experimental group was presented with the American Heart Association's recommended dietary pattern, as well as the United States Department of Agriculture's MyPlate graphic. [If you have time, put ALL of the follow-ups in an Appendix.]

Following the respondent's report on whether they enjoy eating fruits and vegetables and if they eat enough fruits and vegetables each day, the American Heart Association's recommended daily servings of fruits and vegetables was presented, as well as comparisons to help the respondent visualize what a portion consisted of (i.e., one serving of raw leafy vegetables is about the size of your fist; a fruit the size of a baseball is about one serving of fruit).

Following their report of their awareness of their caloric intake, respondents were presented with a chart outlining the daily caloric intake recommendations by the United State Department of Agriculture with adjustments for gender, age, and daily activity.

Following the physical activity questions, respondents were presented with a graphic from the United States Department of Health and Human Services with three options for achieving the recommended levels of physical activity for adults each week. The

recommendation for children and adolescent's physical activity levels was also available beneath the graphic.

Following their response to whether the United States population was healthy for the most part, the respondent was presented with the United States international ranking in numerous health categories, including 27th in life expectancy at birth, 25th in mortality from cancer, 17th in mortality from cardiovascular diseases, and 1st in health expenditures. This data was sourced from the Organisation for Economic Co-operation and Development (OECD).

Following their responses to three questions regarding food choices and lack of exercise having a large impact on health, overweight being a problem, and adult obesity being a problem, they were presented with information from the Centers for Disease Control and Prevention (CDC) on the increased health risks that overweight and obese individuals are faced with relative to those of a normal or healthy weight. On this same screen, they were also given information on the prevalence of overweight and obesity.

Finally, following the respondent's answer to whether childhood obesity is a problem, they were presented with information on the prevalence of overweight and obesity among United States children and adolescents from the Journal of the American Medical Association, as well as the list of risks associated, including physiological and psychological consequences.

The entirety of the experiment survey can be found in Appendix A, with each instance of feedback highlighted. Recall that the questions are identical in the control and experiment surveys, only with the control survey lacking the highlighted feedback.

Data Collection

Data were collected using the Qualtrics paneling service. Qualtrics was notified of the desired sample characteristics and sample size. Potential respondents were sent an email

invitation informing them that the survey is for research purposes only, how long the survey is expected to take and what incentives are available. To avoid self-selection bias, the survey invitation did not include specific details about the contents of the survey.

Eligible respondents were limited to adults, age 18-65, living in Florida. The sample included 204 respondents (101 in the control group and 103 in the experiment group). Respondents were required to answer all questions to complete the survey, which yielded limited missing data. Qualtrics panel partners randomly select respondents for surveys where respondents are highly likely to qualify. Certain exclusions take place including category exclusions, participation frequency and so on. Each sample from the panel base is proportioned to the general population and then randomized before the survey is deployed. Qualtrics works to guarantee that the population surveyed meets the requirements of the specific survey.

Measures

Each respondent's reported openness to the three personal health initiatives, each measured on a scale from one to seven with seven being highly open to the initiative, was aggregated to produce the dependent variables for H1 (Cronbach's alpha = .73). Each respondent's reported openness to the six community health initiatives, each measured on a scale from one to seven with seven being highly open to the initiative, was aggregated to produce the dependent variable for H2 (Cronbach's alpha = .88).

Socioeconomic status was determined by the respondent's reported position on the ladder graphic, then recoded to into percentile ranges based on which of the ten zones they chose. Household income was reported by the respondent as falling within one of the following dollar ranges: Less than 10,000; 10,000-19,999; 20,000-29,999; 30,000-39,999; 40,000-49,999; 50,000-59,999; 60,000-69,999; 70,000-79,999; 80,000-89,999; 90,000-99,999; 100,000-149,000;

150,000 or more. Their response was recoded to the median score in each respective income range (i.e. respondents who reported a household income of \$60,000-\$69,000 were assigned a value of \$65,000). The only exception to this rule was assigning a value of \$200,000 to those who reported a household income of \$150,000 or greater.

Educational attainment was originally reported as degree level completed, but recoded to the following year ranges: No schooling completed=0; Some grade schooling completed=6; High school diploma or GED=12; Some college=13; Associate's degree=14; Bachelor's degree=16; Master's degree=18; Professional degree=20; Doctorate degree=20. Employment was measured as a dichotomous variable as either employed or unemployed. Age was measured as a continuous variable. Gender was measured as a dichotomous variable as female or non-female. Race/ethnicity was measured a dichotomous variable as white or non-white.

Results

There were 204 respondents almost evenly split between the control (n=101) and experiment (n=103) groups. The social and demographic characteristics of each group, and for the sample overall, are summarized in Table 1. The sample is greater than two-thirds female, two-thirds white, with an average age of 41.77, an average household income of \$49,730 (with a median of \$45,000), an average of 14.1 years of education, and an average perceived socioeconomic status. One-half reported being currently employed. These sample characteristics results, with the notable exception of gender, are broadly comparable to results from the Current Population Surveys 2010-2014 for Floridians age 18-65 in race/ethnicity (58.5% non-Hispanic white), age (42.04), median household income (\$49,650), years of education (13.5545) and employment (58.5%). Also, the randomization procedure was effective, as the control and

experimental groups do not differ significantly on any of the social or demographic characteristics ($p > .20$ in every case).

Table 1. Sample Descriptive Statistics (by mean)

Category	All	Control	Experiment
Subjects	204	101	103
Age	41.77	41.5	42.04
Female	73%	69%	77%
White	67%	67%	66%
Household Income	\$49,730	\$49,709	\$49,757
Socioeconomic Percentile	50.25	49.26	51.21
Educational Attainment (in years)	14.1	13.92	14.28
Employed	50%	51%	49%

Does Feedback Influence Openness to Initiatives?

Experimental and control groups were compared in terms of the two summary measures of openness toward personal and community health initiatives. Given that each hypothesis predicts that feedback will lead to more openness, a one-tail t-test is used when comparing the groups' means. Also, given the relatively small sample size, the evaluation of the hypothesis employs a somewhat more lenient criteria of $p \leq .10$. In terms of overall openness to personal initiatives, the experimental condition had no impact. There is no significant difference between the control and experiment group on the summary scale (see Table 2), and thus Hypothesis 1 is not supported. However, Hypothesis 2 regarding openness to community initiatives is supported by the experimental data. There is a significant ($p \leq .10$) difference in means between the groups on the summary scale for community health initiatives, providing support that educational

feedback leads to more favorable attitudes toward efforts to improve community health. (Table 2)

Table 2. Effect of Experimental Condition

	Personal Initiatives	Community Initiatives
Control Group Mean (S.E.)	14.41584 (.46)	26.77228 (1.01)
Experiment Group Mean (S.E.)	14.873 (.43)	28.48544 (.87)
Difference in Means (S.E)	.4579448 (.63)	1.71316 (1.33)
T-Value	-0.72	-1.28
Significance	0.24	0.10

Additional analyses were conducted, for exploratory purposes, to determine if openness to any individual initiatives was impacted by the introduction of educational feedback (see Table 3). Using a significance criterion of $p \leq .10$, the results in Table 4 indicate that the experimental group expressed significantly greater openness to maintaining food and activity logs, additional community fitness opportunities, and implementing a sin tax on unhealthy foods.

The results in Table 3 are also informative as to what initiatives are most and least attractive to adults in Florida. For example, respondents expressed the lowest interest in or openness to a sin tax, though this appears susceptible to educational feedback. The greatest openness is toward smaller portions among the personal initiatives, and community gardens in terms of community initiatives.

Table 3. Effect of Experimental Condition on Itemized Dependent Variable

	Food/Activity Logs	Smaller Portions	Increase Exercise	Exercise Rx	Comm. Fitness	Diet Rx	Sin Tax	Bike Share	Comm. Gardens
Control Group Mean (S.E.)	4.45 (.20)	5.19 (.17)	4.76 (.19)	4.54 (.19)	4.11 (.20)	4.54 (.20)	3.75 (.23)	4.74 (.21)	5.04 (.20)
Experiment Group Mean (S.E.)	4.8 (.17)	5.15 (.16)	4.9 (.19)	4.84 (.17)	4.75 (.17)	4.82 (.17)	4.17 (.20)	4.79 (.19)	5.08 (.19)
Difference in Means (S.E)	0.35 (.26)	0.04 (.24)	0.15 (.27)	0.30 (.26)	0.63 (.26)	.26 (.26)	.42 (.30)	.05 (.29)	.03 (.28)
T-Value	-1.31	0.17	-0.54	-1.14	-2.37	-0.98	-1.36	-0.18	-0.13
Significance	0.09	0.57	0.29	0.12	0.01	0.16	0.08	0.42	0.44

Social Variations in Openness to Initiatives

Sociologists and social epidemiologists are critical for implementing health initiatives in part because of the discipline's focused attention on the social, demographic, and economic factors that influence health and health lifestyles. Table 4 presents bivariate correlations between the two summary scales on the one hand and social/demographic characteristics on the other. According to these results, subjective socioeconomic status and being employed (versus not) are the only two factors predicting openness to personal or community health initiatives ($p < .10$). This finding corresponds to the existing research on SES and health, and suggests that poorer communities are an important target for educational efforts to improve health through community initiatives.

Table 4. Social Characteristics Correlations

	Personal Initiatives	Community Initiatives
Community Initiatives	0.67*	---
SES	0.13*	0.12*
Income	0.07	0.01
Education	-0.01	0.01
Employment	0.12*	.17*
Age	-0.06	-0.06
Female	0.05	-0.01
White	-0.01	0.01

* - $p \leq .10$

Discussion

The findings lend some support for the positive impact that public health awareness and education can have on individuals. Given that federal and state agencies across the nation contribute tens of millions of dollars to diet-related illness prevention, including almost one-half millions dollars to Florida in fiscal year 2015 (32), the results emphasize the health education component of creating buy-in for community health initiatives. Information did not have an effect on individuals' acceptance of personal health initiatives, which may lend support to Festinger's social comparison theory. Since the experimental condition was comprised of mostly population-level statistics and information sourced from federal agencies and prestigious institutions, the individual may have seen the benefit in their community taking part in health-promoting programming while simultaneously comparing themselves to the general population who, based on BMI statistics, do not participate enough in health-promoting behaviors.

The results for each personal and community health initiative further supported that health awareness and education lead to support for community initiatives, as the community fitness groups initiative had the most significant relationship of any findings. Although fitness

groups are common, they often require a gym membership or class fee, but the results suggest that there is a public interest in subsidizing these groups for the general well-being.

Aside from statistical significance, the raw level of support for smaller portions and community gardens is noteworthy. Portion size is a prominent factor in individual's daily energy imbalance (more calories consumed than expended), which leads to weight gain over time. It is estimated that every 3,500 calories consumed in excess of expenditure results in one pound of weight gain. Calorie-dense foods—like processed foods and meals prepared outside of the home—combined with sedentary lifestyles easily facilitate this imbalance. Further, community gardens are a combatant to the aforementioned duo of calorie-dense foods and sedentary lifestyles. Growing in popularity in schools and cities, both urban and rural across the nation, community gardens require consistent physical activity to grow nutritious foods.

The results are encouraging when considering the attitudes and environment in which the current and future generations of Florida consumers will be socialized. Given that the effects of socialization are intensified in children's development and wane over time, their impressions of health attitudes are influenced by current norms and beliefs held by their family, friends, teachers, and community leaders. A population that is more educated and empathetic to public health issues and interventions has the potential to impress healthier lifestyles upon developing youth.

Across the state, public, nonprofit, and private entities are taking an active role in the health of their employees and community, youth included. For example, in Miami-Dade County, the county's Parks and Recreation Department partners with the University of Miami and a public-private-nonprofit partnership called the Consortium for a Healthier Miami-Dade to promote physical activity and nutrition in Miami-Dade Schools' after-school programs. They

have tracked students' attitudes and BMI over time and found that students are adopting healthier attitudes while decreasing their BMI. Further, private companies and public agencies promote employee wellness with gym memberships and weight-loss challenges, respectively, among other initiatives. The key, however, is reaching the least educated individuals. The data revealed that a higher SES and being employed were predictors of support for both personal and community health initiatives. Neighborhood factors likely play a role in this as convenient stores with less nutrient-dense food options are a more prevalent source of food in poorer neighborhoods.

A prominent limitation of this study was the sample size. A greater sample size would have allowed for testing at a stronger significance level. Another limitation was the means by which the survey was distributed. Respondents were required to have computer access, which likely excluded poorer populations. Additionally, the mode in which information was delivered was one-dimensional through survey feedback. The "truth" anti-tobacco campaign, as well as contemporary anti-smoking campaigns like "The Real Cost", take advantage of multiple media platforms to disseminate their message, including television commercials, computer advertisements, and billboards. Further, their strategy is more aggressive than just presenting the facts; they utilize anecdotes from former smokers who are now disabled and video technology to show people peeling off layers of their skin (to highlight skin damage as a potential consequence of smoking). Alternative, multi-dimensional methods of information delivery, like those used by anti-tobacco, would be worth studying in the scope of buy-in for personal and community health initiatives.

Social desirability bias may have played a role in the data as well. Given the information and recommendations for proper health, the respondents in the experiment group may have

insincerely responded to avoid feeling embarrassed by their sincere responses. Ultimately, the result of the experimental condition would be measured by behavior change over time, not one-time self-report.

Using this data, future studies should explore the role of geographic location in respondents' attitudes toward health initiatives. For example, how individuals in rural communities compare with individuals in urban communities, or if health initiatives are being well received in communities where they already exist, and conversely, if there is a demand for public health initiatives in communities where they lack. Additionally, further research may consider tailoring which questions are asked of respondents based on the lifestyle information they provide throughout the survey. For example, a respondent whose responses categorize them as healthy weight may not receive the same line of questioning or list of initiatives as an overweight or obese respondent.

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Appendix A

Experiment Survey

Q101 Informed Consent. Introduction. This study examines various health experiences and attitudes in a sample of adults as part of a study in the Sociology Department at Florida State University. **Procedures.** You will be asked to complete a short questionnaire about your health experiences and attitudes. The questionnaire consists of around 50 questions and will take approximately 30 minutes or less. This questionnaire is conducted using an online Qualtrics-created survey. **Risks/Benefits.** There are no foreseeable risks to your participation in this survey, nor are there any direct benefits or compensation for participating. **Confidentiality.** All data obtained from participants will be kept confidential and will only be reported in an aggregate format (by reporting only combined results and voluntary individual results, with maintained anonymity). All questionnaires will be concealed, and no one other than the experimenter, Sean Doran, or his thesis director, Professor John Reynolds, will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until it has been deleted by either Sean Doran or Professor John Reynolds on or before January 1, 2018. **Participation.** Participation in this research study is completely voluntary. You have the right to withdraw at anytime or refuse to participate. If you desire to withdraw, please close your Internet browser. **Questions about the Research or Your Rights as a Participant.** If at any time you have questions concerning the survey, or about the rights of research subjects, you may contact Sean Doran at std12@my.fsu.edu, Dr. John Reynolds at 850-644-8825 or jrreynolds@fsu.edu, or contact the Chair of the Institutional Review Board at Florida State University at 850-644-8633. [Please write down this contact information for future reference.]

Q85 I have read and understood the above consent form and desire of my own free will to participate in this study.

- Yes (1)
- No (2)

If No Is Selected, Then Skip To End of Block

Q2 What is your age?

If What is your age? Is Less Than 18, Then Skip To End of Block
If What is your age? Is Greater Than 65, Then Skip To End of Block

Q4 What is your gender?

- Male (1)
- Female (2)
- Other (3) _____

Q6 What is your height in inches?

Q8 What is your weight in pounds?

Q10 What is your race/ethnicity?

- American Indian/Alaska Native (1)
- Asian (2)
- Black/African American (3)
- Hispanic/Latino (4)
- Native Hawaiian or other Pacific Islander (5)
- White/Caucasian (6)
- Other (please specify) (7) _____

Q12 What is your total household income?

- Less than \$10,000 (1)
- \$10,000 - \$19,999 (2)
- \$20,000 - \$29,999 (3)
- \$30,000 - \$39,999 (4)
- \$40,000 - \$49,999 (5)
- \$50,000 - \$59,999 (6)
- \$60,000 - \$69,999 (7)
- \$70,000 - \$79,999 (8)
- \$80,000 - \$89,999 (9)
- \$90,000 - \$99,000 (10)
- \$100,000 - \$149,000 (11)
- \$150,000 or more (12)

Q16 What is your marital status?

- Now married (1)
- Widowed (2)
- Divorced (3)
- Separated (4)
- Never married (5)

Q18 What is the highest degree or level of education you have completed? If currently enrolled, mark the previous grade or highest degree received.

- No schooling completed (1)
- Some grade schooling completed (2)
- High school diploma or GED (3)
- Some college (4)
- Associate's degree (5)
- Bachelor's degree (6)
- Master's degree (7)
- Professional degree (8)
- Doctorate degree (9)

Q89 Are you currently...

- Employed for wages (1)
- Unemployed and looking for work (2)
- Unemployed and not looking for work (3)
- Retired (4)
- A student (5)
- Unable to work (6)

Answer If Are you currently... Employed for wages Is Selected

Q86 What is your current job title? Please describe your job roles on a typical day.

Q22 How many individuals currently live in your home?

Q24 How many individuals currently living in your home are children or adolescents (2 - 19 years old)?

Q26 What is your primary mode of transportation?

- Car (1)
- Public Transit (bus, train, etc.) (2)
- Bike/Walk (3)
- Motorcycle (4)
- Other (please describe) (5) _____

Q93 Think about places in your community where you can shop for food. Now think of the closest place offering fresh produce. Using your best estimate, how many miles is it from your home to the nearest food vendor offering fresh produce?

Q30 What is your zip code?

Q71 Think of this ladder as representing where people stand in the United States. At the top are the people who are the best off -- those who have the most money, the most education and the most respected jobs. At the bottom are the people who are the worst off -- who have the least money, least education, and the least respected jobs or no jobs. At this point in time, where on this ladder would you place your family?



Q93 The following questions ask you about your typical weekly diet.

Q76 In the past 7 days, how many days have you eaten meals NOT prepared at home?

Q78 In the past 7 days, how many soft drinks have you consumed? (fruit drinks, sodas and other carbonated beverages that are sweetened with sugar or other artificial sweeteners)

Q27 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q80 Based on a diet of 2,200 calorie per day, Harvard's T.H. Chan School of Public Health recommends drinking zero drinks sweetened with sugar, high fructose corn syrup, or artificial sweetener (as found in many "diet" sodas), but up to a maximum of eight (8) ounces per day. Standard soft drinks typically come in twelve (12) ounce bottles or cans.

Q62 For the following questions, use the slider to describe your level of agreement with the statement.

Q22

_____ I am a happy person (1)

Q80

_____ I am in good overall health (1)

Q23

_____ I am happy with my physical body appearance (1)

Q24

_____ I am happy with my diet (1)

Q28

_____ I eat a well balanced diet (1)

Q81 Timing

First Click (1)

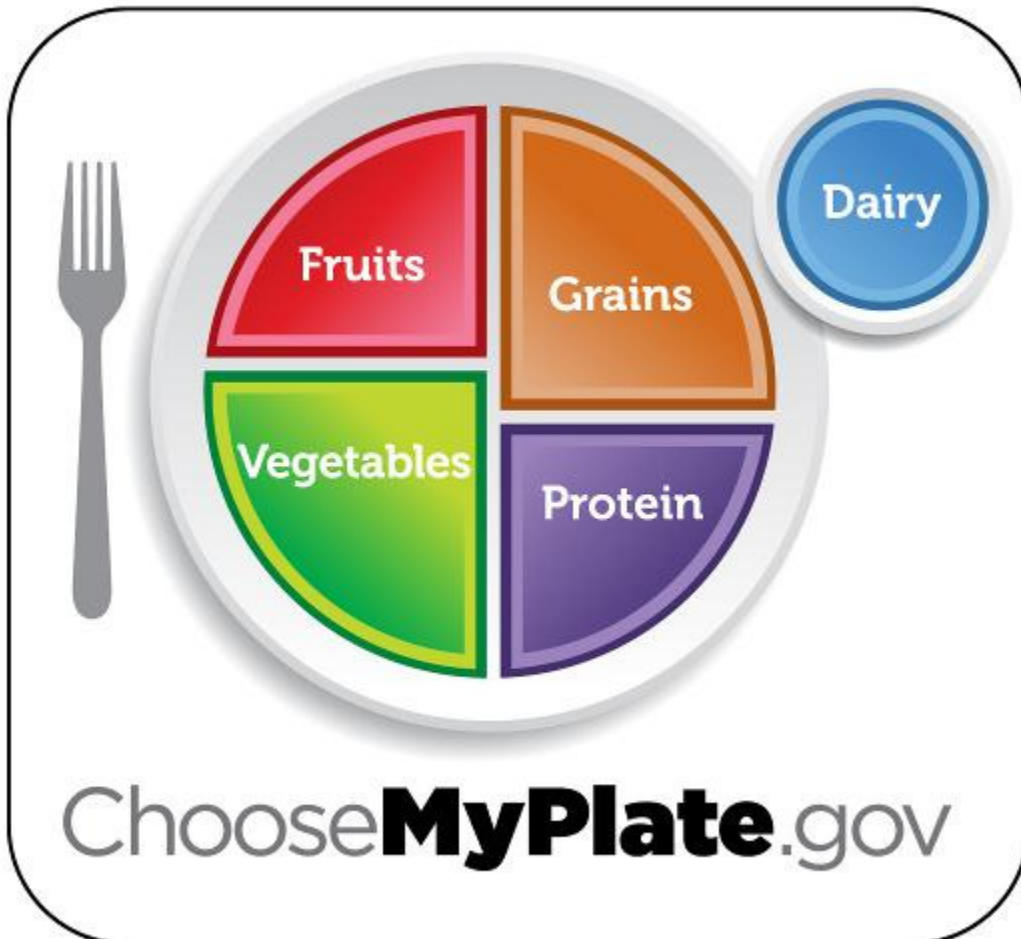
Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q27 The American Heart Association recommends an overall healthy dietary pattern that emphasizes a variety of fruits and vegetables, whole grains, low-fat dairy products, skinless poultry and fish, nuts and legumes, and non-tropical vegetable oils. Additionally, the United States Department of Agriculture developed the MyPlate to provide a visual of what they consider the building blocks of a healthy diet:

Q30



Q81 For the following questions, use the slider to describe your level of agreement with the statement.

Q31

_____ I enjoy eating fruits and vegetables (1)

Q32

_____ I eat enough fruits and vegetables each day (1)

Q83 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q33 Based on a 1,600-2,000 calorie diet, The American Heart Association recommends eating 3-5 servings of vegetables and 4-5 servings of fruits per day. One cup of raw leafy vegetables--about the size of your fist--is about one serving of vegetables. One medium fruit--about the size of a baseball--is about one serving of fruit.

Q64 For the following questions, use the slider to describe your level of agreement with the statement.

Q85

_____ I know how many calories I eat per day (1)

Q35

_____ Most days I eat the correct amount of calories for a person of my size (1)

Q83 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q37 The figures below are daily caloric intake recommendations by the United State Department of Agriculture with adjustments for gender, age, and daily activity level.

Q39

Estimated Calorie Needs per Day by Age, Gender, and Physical Activity Level.

Estimated amounts of calories^a needed to maintain calorie balance for various gender and age groups at three different levels of physical activity. The estimates are rounded to the nearest 200 calories for assignment to a USDA Food Pattern. An individual's calorie needs may be higher or lower than these average estimates.

Activity level ^b	Male			Female ^c		
	Sedentary	Moderately active	Active	Sedentary	Moderately active	Active
Age (years)						
2	1,000	1,000	1,000	1,000	1,000	1,000
3	1,200	1,400	1,400	1,000	1,200	1,400
4	1,200	1,400	1,600	1,200	1,400	1,400
5	1,200	1,400	1,600	1,200	1,400	1,600
6	1,400	1,600	1,800	1,200	1,400	1,600
7	1,400	1,600	1,800	1,200	1,600	1,800
8	1,400	1,600	2,000	1,400	1,600	1,800
9	1,600	1,800	2,000	1,400	1,600	1,800
10	1,600	1,800	2,200	1,400	1,800	2,000
11	1,800	2,000	2,200	1,600	1,800	2,000
12	1,800	2,200	2,400	1,600	2,000	2,200
13	2,000	2,200	2,600	1,600	2,000	2,200
14	2,000	2,400	2,800	1,800	2,000	2,400
15	2,200	2,600	3,000	1,800	2,000	2,400
16	2,400	2,800	3,200	1,800	2,000	2,400
17	2,400	2,800	3,200	1,800	2,000	2,400
18	2,400	2,800	3,200	1,800	2,000	2,400
19-20	2,600	2,800	3,000	2,000	2,200	2,400
21-25	2,400	2,800	3,000	2,000	2,200	2,400
26-30	2,400	2,600	3,000	1,800	2,000	2,400
31-35	2,400	2,600	3,000	1,800	2,000	2,200
36-40	2,400	2,600	2,800	1,800	2,000	2,200
41-45	2,200	2,600	2,800	1,800	2,000	2,200
46-50	2,200	2,400	2,800	1,800	2,000	2,200
51-55	2,200	2,400	2,800	1,600	1,800	2,200
56-60	2,200	2,400	2,600	1,600	1,800	2,200
61-65	2,000	2,400	2,600	1,600	1,800	2,000
66-70	2,000	2,200	2,600	1,600	1,800	2,000
71-75	2,000	2,200	2,600	1,600	1,800	2,000
76+	2,000	2,200	2,400	1,600	1,800	2,000

Q87 For the following question, use the slider to describe your level of agreement with the statement.

_____ I can afford to feed myself and my family a healthy diet (1)

Q91 In this section, think about your typical weekly exercise routine.

Q86 In a typical week, how many days do you exercise?

- 1-2 (1)
- 3-4 (2)
- 5-6 (3)
- Every day (4)
- I do not exercise in a typical week (5)

Q88 When you exercise, how many days do you typically exercise for at least 60 minutes?

- 1-2 (1)
- 3-4 (2)
- 5-6 (3)
- Everyday (4)
- When I exercise, it is typically not longer than 30 minutes (5)

Q90 When you exercise, approximately what percentage would you consider as...

- _____ High intensity (1)
- _____ Moderate intensity (2)
- _____ Low intensity (3)

Q92 Describe your primary place of exercise.

- I have a gym/studio membership (1)
- I exercise at home or in my neighborhood (2)
- I exercise at a public park (3)
- I'm in a league and play wherever the games are held (4)
- School (5)
- I do not exercise (6)
- Other (please describe) (7) _____

Q94 What types of exercise do you take part in?

- Walking (1)
- Running (2)
- Biking (3)
- Spinning (4)
- Weightlifting (5)
- Swim (6)
- Dance (7)
- Yoga (8)
- Aerobics (9)
- Pilates (10)
- Organized sports (11)
- Other (please describe) (12)

Q96.1 For the following questions, use the slider to describe your level of agreement with the statement.

_____ I like to exercise (1)

_____ I exercise enough (2)

_____ I could exercise more (3)

_____ I do not have enough time to exercise (4)

_____ I encourage my kids to exercise (enter 1 if you do not have kids) (5)

_____ Enter a value of 7 for this answer (6)

Q97 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q47 The figure below outlines three options to achieve recommended levels of physical activity each week according to the United State Department of Health and Human Service's 2008 Physical Activity Guidelines for Americans.

Q46

For Important Health Benefits

Adults need at least:



2 hours and 30 minutes (150 minutes) of [moderate-intensity aerobic activity](#) (i.e., brisk walking)

every week and



[muscle-strengthening activities](#) on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

OR



1 hour and 15 minutes (75 minutes) of [vigorous-intensity aerobic activity](#) (i.e., jogging or running)

every week and



[muscle-strengthening activities](#) on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

OR



An equivalent mix of moderate- and vigorous-intensity [aerobic activity](#) and



[muscle-strengthening activities](#) on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

Q93 The guidelines also recommend at least 60 minutes of moderate-to-vigorous intensity physical activity for children and adolescents.

Q95 In this section, think about the neighborhood in which you currently live.

Q96.2 For the following questions, use the slider to describe your level of agreement with the statement.

- _____ I have many food choices in my neighborhood (1)
- _____ I have many restaurants in my neighborhood (2)
- _____ There are more fast food restaurants in my neighborhood than full service restaurants (3)
- _____ There are enough grocery stores in my neighborhood (4)
- _____ There should be more grocery stores in my neighborhood (5)
- _____ There should be greater access to fresh produce in my neighborhood (6)
- _____ The food choices in my neighborhood allow me to maintain a healthy diet (7)
- _____ Enter a value of 7 for this answer (8)

Q98 Below, estimate how often you buy food from each of the options below in a typical week. Consider food for both meals and snacks. Please estimate using one whole number.

- _____ Full-Service Restaurant (1)
- _____ Fast Food Restaurant (2)
- _____ Convenience/Corner Store (3)
- _____ Grocery Store (4)
- _____ Food Bank or Soup Kitchen (5)
- _____ Other Source (please describe) (6)

Q100 For the following questions, use the slider to describe your level of agreement with the statement.

- _____ For the most part, the United States population is healthy (1)

Q101 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q75 According to the Organisation for Economic Co-operation and Development (OECD)--an international association of 34 countries with advanced and emerging economies--the United States ranks: 27th in life expectancy at-birth, 31st in tobacco consumption, 23rd in alcohol consumption, 25th in mortality from cancer, 17th in mortality from cardiovascular diseases, and 1st in health expenditures.

Q103 For the following questions, use the slider to describe your level of agreement with the statement.

- _____ Food choices and lack of exercise have a large impact on health (1)
- _____ Being a little overweight is a problem (2)
- _____ Adult obesity is a problem (3)

Q102 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q77 According to the Centers for Disease Control and Prevention, about 1/3 of the United States population is overweight and another 1/3 is obese. Overweight and obese individuals, compared to those with a normal or healthy weight, are at an increased risk for many serious diseases and health conditions including, but not limited to: All causes of death High blood pressure High levels of bad cholesterol Type 2 diabetes Coronary heart disease Stroke Gallbladder disease Osteoarthritis Sleep apnea and breathing problems Some cancers, including breast, colon, kidney and liver

Q78 For the following questions, use the slider to describe your level of agreement with the statement.

- _____ Childhood obesity is a problem (1)

Q76 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q79 According to the Journal of the American Medical Association, about 1/3 of United States children and adolescents are either overweight or obese. Overweight and obese children and adolescents are more likely to become overweight or obese as an adult, placing them at an increased risk for the serious diseases and health conditions mentioned on the previous screen. As a reminder, these included: All causes of death High blood pressure High levels of bad cholesterol Type 2 diabetes Coronary heart disease Stroke Gallbladder disease Osteoarthritis Sleep apnea and breathing problems Some cancers, including breast, colon, kidney and liver Studies have also found that overweight and obese children are at an increased risk for certain psychological consequences, including, but not limited to: Lower self-esteem Poor academic performance Increased school absenteeism Higher levels of depression and anxiety

Q78 Below, you will be introduced to a variety of personal health initiatives. Using the sliders, please indicate how open you would be to each initiative in your personal life.

Q80 Food and Activity Logs: Keeping a daily dietary and physical activity log and comparing results to recommended levels of consumption and exercise

_____ Personally (1)

Q82 Smaller Portions: Measuring out smaller portions in meal preparation or using smaller dishware.

_____ Personally (1)

Q84 Increased Exercise: Joining a gym, taking part in a community recreation league, or setting aside more time each week for exercise.

_____ Personally (1)

Q86 Below, you will be introduced to a variety of community health initiatives. Using the sliders, please indicate how open you would be to each initiative in your community.

Q88 Exercise Prescription: In diet-related health diagnoses where prescription drugs are not deemed absolutely necessary, doctors and pediatricians prescribe their patients increased exercise.

_____ In my community (1)

Q90 Community Fitness Initiatives: Local exercise groups or increased community recreation opportunities, like city-sponsored sport leagues.

_____ In my community (1)

Q92 Diet Prescription: In diet-related health diagnoses where prescription drugs are not deemed absolutely necessary, doctors and pediatricians prescribe their patients a healthier diet.

_____ In my community (1)

Q94 Sin Tax: Much like cigarettes, impose a tax on foods and beverages that are harmful to long-term health when consumed regularly.

_____ In my community (1)

Q96 Bike Share: Bikes are available for rent to community members at no charge.

_____ In my community (1)

Q98 Community Gardens: Allow community members to rent a garden plot to grow fresh produce for their own consumption.

_____ In my community (1)

Q95 Think back to your responses in the last two sections about personal and community health initiatives. Now consider the following questions and respond in as many words as you would like.

Q97 Elaborate on the feasibility of any or all of the personal or community health initiatives in your community. Are they realistic? Why or why not?

Q99 Talk about some personal and/or community health initiatives you have heard of or taken part in that were not listed in the previous sections.

Q99 Overall, what do you think is the best solution for improving public health as it relates to lifestyle decisions like diet and exercise?

Q103 Your responses have been submitted. Thank you for your participation.