BRFSS Physical Activity Variables Used for the *Network for a Healthy California*

CONTENTS

Prepared by Patrick R. Mitchell, 8/28/2009 for the Research and Evaluation Unit

BRFSS Fact Sheet

The Behavioral Risk Factor Survey (BRFS) is a large-scale telephone survey conducted as part of the Behavioral Risk Factor Surveillance System (BRFSS) by state health departments with technical and methodological assistance provided by the Centers for Disease Control (CDC). The surveillance system provides timely estimates of the adult general population's rate of risk related behaviors such as low consumption of fruits and vegetables or not exercising and allows comparisons of these rates between states and U.S. territories. In California, the BRFS is administered by the Survey Research Group of the Cancer Surveillance Section.

BRFSS participants are reached using a random digit dialing technique that calls people at random using computer generated phone numbers. Responses are forwarded to CDC, where the monthly data are put together for each state, returned with standard tabulations, and published at the year's end by each state. In 2007, California had 5,718 respondents.

The BRFS questionnaire is developed jointly by CDC's Behavioral Surveillance Branch and the states. There is a core set of questions administered by all states, but states may add additional questions. In 2007, "Body Mass Index", "Fruit and Vegetable Consumption", and "Physical Activity", were on the core survey. The *Network for a Healthy California* (*Network*) proposed and funded the inclusion of questions on Food Insecurity to better inform our picture of California residents. Data derived from the questionnaire provide health departments, public health officials, and policymakers with necessary behavioral information. When combined with mortality and morbidity statistics, these data enable public health officials to establish policies and priorities and to initiate and assess health promotion strategies.

Summary of Results

Fruits and Vegetables, Overweight/Obesity, Physical Activity, Food Security,

- The rate of adults consuming five or more fruits and vegetables was 30%, an increase from 24% in 1990. About 23% of Black Californians met the 5 or more recommendation compared to 29% of White and 28% of Hispanic Californians.
- 59% of California adults were overweight or obese in 2007, an increase from 40% in 1984. Black respondents (76%) were more likely to be overweight or obese than their White (54%), Asian/Pacific Islander (34%), or Hispanic (68%) counterparts.
- 23% of California adults had no leisure time physical activity. Higher incomes were related to more activity: 14% "no physical activity" for those with more than $50,000/year compared to 35% "no physical activity" if less than $15,000/year.

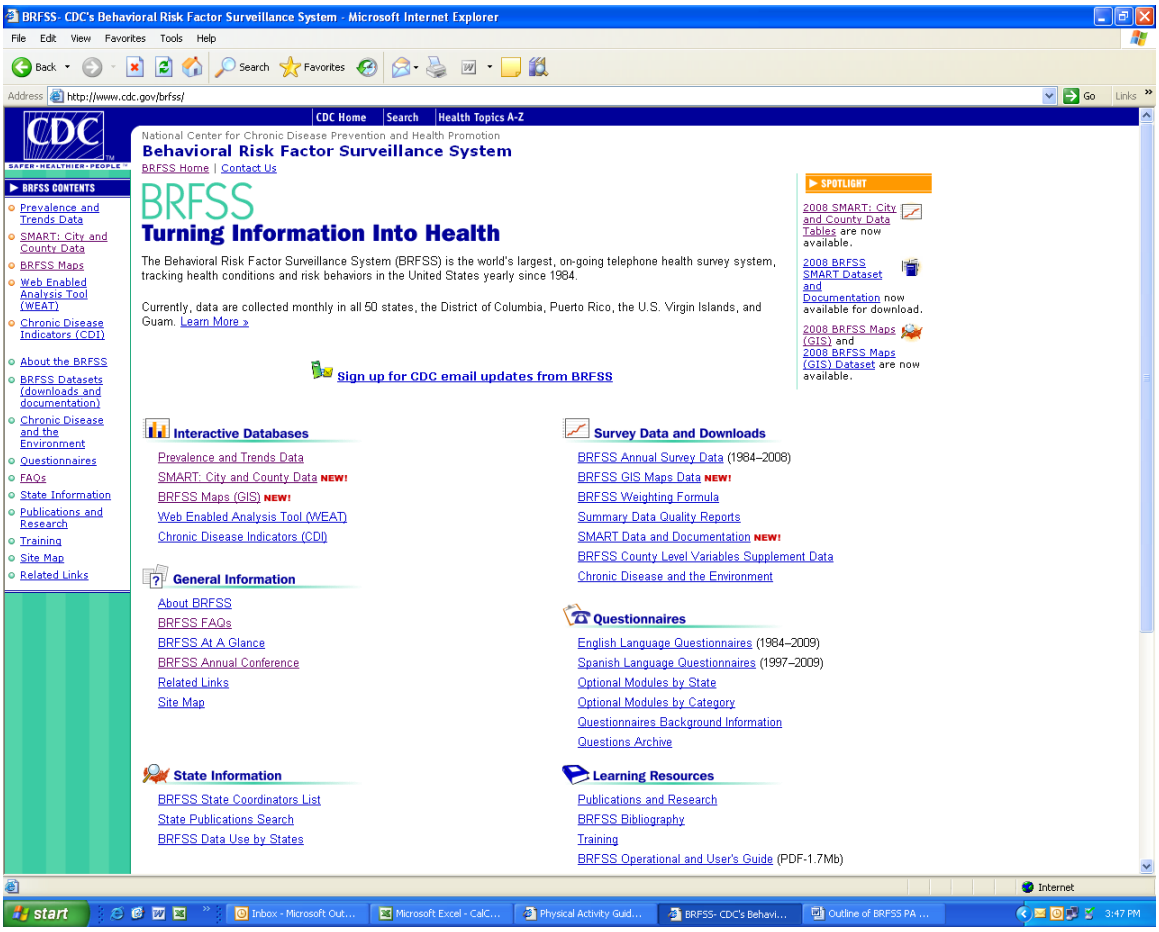
Contact Information:

Amanda Linares, M.S.
Amanda.Linares@cdph.ca.gov
(916) 449-5412

Patrick R. Mitchell, Dr.PH
Patrick.Mitchell@cdph.ca.gov
(916) 449-5344

CDC BRFSS Website
Data for the nation and all states - Centers for Disease Control

This CDC website provides prevalence and trend data, complete with graphs and subpopulations.



REU special reports available on the *Network* website (PA example)
A Comparison of California Regional Networks Using the 2007 BRFS

A Comparison of California Regional Networks Using the 2007 BRFS

The Behavioral Risk Factor Survey (BRFS) is a large-scale telephone survey conducted as part of the Behavioral Risk Factor Surveillance System (BRFSS) by state health departments with technical and methodological assistance provided by the Centers for Disease Control (CDC). The surveillance system provides timely estimates of the adult general population's rate of risk related behaviors such as low consumption of fruits and vegetables or not exercising.

The *Network for a Health California* is composed of 11 Regional Networks (RNs). In order to provide feedback about the 2007 California BRFS findings to the *Network's* regions, California's 58 counties were aggregated into the 11 corresponding Network areas. In this way, comparative estimates can be made of:

- **Fruit and Vegetable Consumption**
  - Average Fruit and Vegetable Consumption
- **Physical Activity**
  - Percent Averaging 30 Minutes of Exercise 5 Days per Week (150 Min.)
  - Percent Moderate Exercise at Least 5 Days at Least 30 Minutes per Day
  - Percent Vigorous Exercise at Least 3 Days at Least 20 Minutes per Day
  - Percent No Physical Activity
- **Body Mass Index**
  - Average Body Mass Index
  - Percent Overweight or Obese
  - Percent Obese
- **Food Insecurity**
  - Percent Food Insecure

The full list of variables used is presented in the appendix.

States conduct monthly telephone surveillance using a standardized questionnaire to determine the distribution of risk behaviors and health practices among adults. BRFS participants are reached using a random digit dialing technique that calls people at

random using computer generated phone numbers. Responses are forwarded to CDC, where the monthly data are put together for each state, returned with standard tabulations, and published at the year's end by each state.
The BRFS questionnaire is developed jointly by CDC's Behavioral Surveillance Branch and the states. There is a core set of questions administered by all states, but states may add additional questions. In 2007, "Body Mass Index", "Fruit and Vegetable Consumption", and "Physical Activity", were on the core survey. The Cancer Prevention and Nutrition Section (CPNS) proposed and funded the inclusion of questions on Food Insecurity to better inform our picture of California residents. Data derived from the questionnaire provide health departments, public health officials, and policymakers with necessary behavioral information. When combined with mortality and morbidity statistics, these data enable public health officials to establish policies and priorities and to initiate and assess health promotion strategies.

The graphics in this presentation display point estimates (indicated by the data value) surrounded by 95% confidence intervals (indicated by the width of the bars) to give a visual reference for seeing possible significant differences when comparing regions. When only small samples of adults have been taken from a region for the survey, there is less confidence in the 'true' value in the population and this will be reflected in wider bars that bracket the estimated value. Using a 95% confidence interval there is a 5% chance that the true value could be outside the width of the bars. Confidence intervals that do not overlap other regions can be considered significantly different. To emphasize rankings within the state, the displays by regions are sorted. An additional comparison with the state is included as a whole. The region with the best positive behavior has been placed on the top and the least achieving the behavior is at the bottom. For most questions, the highest percentage is the most desirable answer. The opposite is true for "No Physical Activity" and "Food Insecurity".

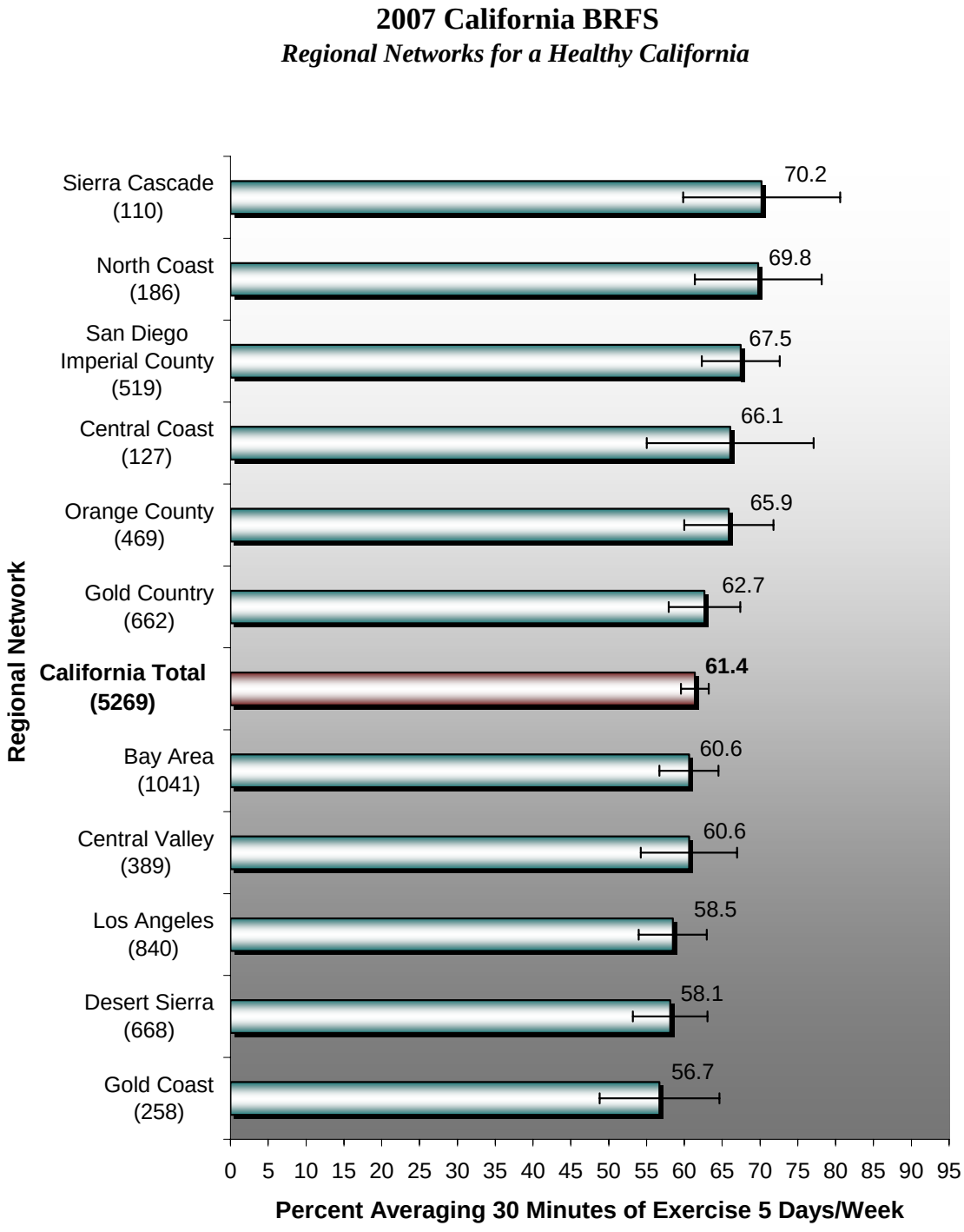
As a limitation, the existing sample weights do not take into account differences in age, sex, and ethnic composition at the regional level since the sample was designed to represent the state as a whole. To the extent that the individual characteristics in regions differ from the overall state averages there will be deviations from the true means and rates. These estimates should, however, provide an adequate guide for simple visual comparisons between regions. Since the BRFS sample size was not specifically designed to be large enough to detect the differences between Regional Networks, in these data usually only the extremes of the eleven regions will have 'statistically significant' differences.

The 2007 total BRFS sample size was 5,718. The size of the unweighted samples for each region appears in parentheses and for the fruit and vegetable questions ranged from a high of 997 in the Bay Area to a low of 108 in the Sierra Cascades. Missing values on questions alter the sample size. Smaller sample sizes generally result in wider confidence intervals.

Additional charts have been provided that divide each region by 200% of the Federal Poverty Level (FPL). The FPL is determined by both household income and family size.

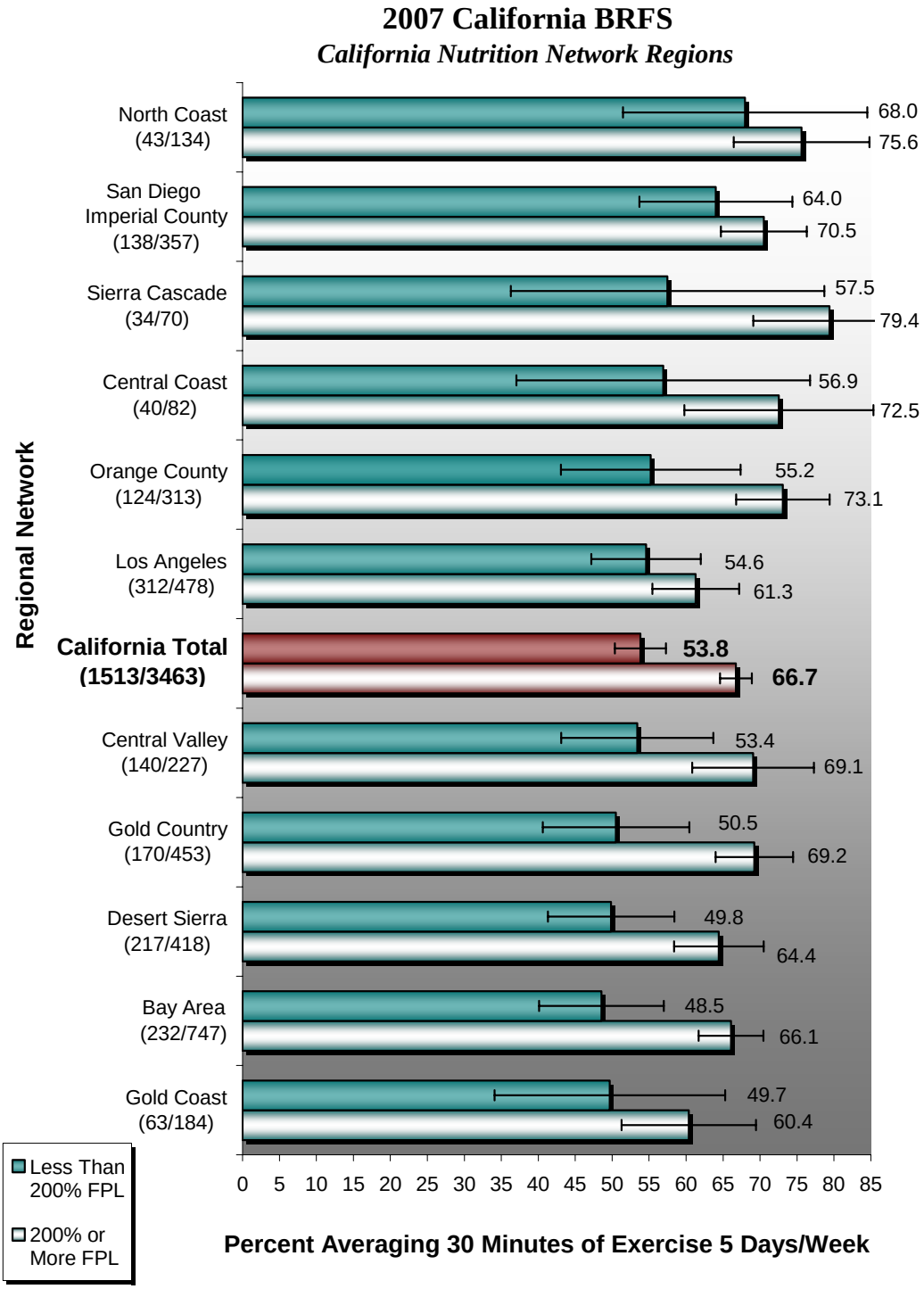
In 2007, a family of two was twice the FPL with an income of $27,380/yr, a family of three was twice the FPL with an income of $34,340/yr, and a family of four was twice the FPL with an income of $41,300/yr.

Percent Averaging 30 Minutes of Exercise 5 Days per Week*



*Represents greater than or equal to 150 minutes of moderate or vigorous exercise per week.

Percent Averaging 30 Minutes of Exercise 5 Days per Week*



*Represents greater than or equal to 150 minutes of moderate or vigorous exercise per week.

2010 California BRFS Proposal

Relevance of Question Topic and Literature Review:

The *Network for a Healthy California* (*Network*) of the California Department of Public Health would like to propose additional questions to the Exercise Module of the 2010 California BRFS. The Mission of the *Network* is to create innovative partnerships that empower low-income Californians to increase fruit and vegetable consumption, physical activity and food security with the goal of preventing obesity and other diet-related chronic diseases, and monitoring the physical activity of Californians is an integral component towards accomplishing this mission. The current question in the core Exercise Module is meant to ascertain whether the respondent participated in any physical activity in the past month. The proposed questions aim to ascertain the amount of minutes and days the respondent participates in moderate or vigorous physical activity. This information will be very useful in tracking whether Californians are meeting the United States Department of Agriculture's recommendations for physical activity. The data will be used to guide the development and enhancement of the *Network.*

Physical inactivity and poor diet contribute to overweight and obesity found in nearly 60% of California adults[1]. Substantial health care costs are associated with these poor lifestyle choices. In California, physical inactivity, obesity, and overweight cost an estimated $21.7 billion in direct and indirect health care costs in year 2000 dollars.[2]

Being physically active plays a critical role in maintaining the health and well-being of people in every stage of life.[3] Exercise helps control blood lipid abnormalities, diabetes, and obesity.[4] Cardiorespiratory endurance, flexibility, muscular strength, and bone mass density can be improved by being physically active. Also, regular physical activity enhances immune function and reduces the risk of death from all causes.[5]

---

[1] Reed, D. F., & Karpilow, K. A. (2004). *Understanding nutrition: A primer on programs and policies in California*. Berkeley, CA: California Center for Research on Women and Families, Public Health Institute. Available on the CCRWF website, www.ccrwf.org.
[2] Chenoweth, D. (2005). *The economic cost of physical inactivity, obesity, and overweight in California adults during the year 2000: a technical analysis.* Sacramento, CA: California Department of Health Services, Cancer Prevention and Nutrition Section and Epidemiology and Health Promotion Section.
[3] U. S. Department of Health and Human Services. (2002). Physical activity fundamental to preventing disease. U. S. Department of Health and Human Services, Office of the Assistant Secretary of Planning and Evaluation. (Retrieves 7/14/05), http://aspe.hhs.gov/health/reports/physicalactivity/physicalactivity.pdf
[4] Hgberg JM, Exercise, fitness and hypertension. In: Bouchard C, Shepard RJ, Stephen T, Suuton JR, McPherson B, eds. Exercise, Fitness and Health. Champaign, Ill: Human Kinetics Publishers, 455-4655
[5] U.S. Department of Health and Human Services, National Center for Chronic Disease Prevention and Health Promotion (1996). *Physical activity and health: A report of the Surgeon General.* Atlanta, GA:

Physical activity also plays an important role in psychological functioning and mental health. Research has shown that increasing activity levels can reduce symptoms of depression. [6, 7] In older adults, regular physical activity may help to reduce the risk of cognitive decline.[3]

Physical inactivity along with poor diet is recognized as the second actual preventable cause of death in the United States, following only tobacco use.[8] Obesity and debilitating chronic diseases such as osteoporosis, arthritis, and gastrointestinal disorders can be reduced through physical activity, better nutrition, and weight loss.[2] Regular physical activity and a nutritious diet are major strategies for preventing many types of chronic disease, notably heart disease, cancer, and diabetes. Physical activity can reduce the risk for coronary artery disease and help prevent high blood pressure.

Questions:

Instructions: These next questions are about the exercise, recreation, or physical activities OTHER THAN your REGULAR JOB duties.

1. When you are at work, which of the following best describes what you do? Would you say: **Please Read**

If respondent has multiple jobs, include all jobs	1. Mostly sitting or standing 2. Mostly walking 3. Mostly heavy labor or physically demanding work 4. NOT WORKING (do not read)
Don't read these responses	7. DON'T KNOW/NOT SURE 9. REFUSED

If EMPLOY2 EQ 1 or 2, continue, else go to Q2

We are interested in 2 types of physical activity: vigorous and moderate. Vigorous activities cause large increases in breathing or heart rate while moderate activities cause small increase in breathing or heart rate.

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (Retrieved 5/24/05), http://www.cdc.gov/nccdphp/sgr/pdf/prerep.pdf.

[6] Camacho TC, Roberts RE, Lazarus NB, Kaplan GA, Cohen RD. (1991). Physical activity and depression: evidence from the Alameda County Study. *Am J Epidemiol,* 134, 220-231.

[7] Martinsen EW, Medhus A, Sandvik L. (1985). Effects of aerobic exercise on depression: a controlled study. *Br Med J (Clin Res Ed),*;291:109.

[8] Mokdad AH, Marks JS, Stroup DF, and Gerberding JL. Actual causes of death in the United States. *JAMA*, 291 (10), 1238-45.

2. Now, thinking about the moderate physical activity you do. In a usual week, do you do moderate activities for at least 10 minutes at a time such as running, aerobics, heavy yard work, or anything else that causes large increases in breathing or heart rate?

1. Yes
2. No **Go to Q5**

7. Don't know / Not sure **Go to Q5**
9. Refused **Go to Q5**

3. How many days per week do you do these moderate activities for at least 10 minutes at a time?

___ ___ Days per week
7 7 Don't know/Not sure
9 9 Refused

4. On days when you do moderate activities for at least 10 minutes at a time, how much total time per day do you spend doing these activities?

__:__ __ Hours and minutes per day
7 7 Don't know/Not sure
9 9 Refused

5. Now, think about the vigorous physical activity you do. In a usual week, do you do vigorous activities for at least 10 minutes at a time such as running, aerobics, heavy yard work, or anything else that causes large increases in breathing or heart rate?

1. Yes
2. No **Go to Q7**

7. Don't know / Not sure **Go toQ7**
9. Refused **Go to Q7**

6. How many days per week do you do these vigorous activities for at least 10 minutes at a time?

__ __ Per week
7 7 Don't know/Not sure
9 9 Refused

7. On days when you do vigorous activities for at least 10 minutes at a time, how much total time per day do you spend doing these activities?

__:__ __ Hours and minutes per day
7 7 7 Don't know/Not sure
9 9 9 Refused

8. Some people do moderate and vigorous exercise on the same day. All together, during the week, how many days do you do moderate or vigorous activity, or a combination of both for at least 30 minutes?

___ ___ Days per week
7 7 Don't know/Not sure
9 9 Refused

Rationale for the Questions/Validity:

Being physically active is notably a key strategy in maintaining good health throughout every life stage. The 2008 Physical Activity Guidelines for Americans recommend that for substantial health benefits, adults should participate in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic activity a week, or some combination of this.[9] Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week. The proposed questions for the Exercise Module of the 2010 BRFSS will help to track Californian adults' progress towards meeting these recommendations.

These questions have been either core or optional questions on the California BRFSS most years since 1984 and have served as reliable measures of physical activity in California adults. These questions allow us to assess, not only if adults are being physically active, but the type of physical activity and the frequency. Having multiple years of data allows our program to track trends in both the percent of Californians engaging in any physical activity.

[9] U.S. Department of Health and Human Services. (2008). *2008 Physical Activity Guidelines for Americans.* OHPHP Publication No. U0036. Retrieved June 9, 2009, from http://www.health.gov/paguidelines/pdf/paguide.pdf

In adding these questions to the 2010 CA BRFS questionnaire, tracking of this and future physical activity trends can continue. Continued tracking of this data will contribute one method for programs like the *Network* to determine the impact or effectiveness of their campaigns as well as monitor statewide progress toward Healthy People 2010 objectives increasing physical activity. These BRFS physical activity results can also be compared with the results from other statewide surveys such as the California Dietary Practices Survey (CDPS) and the California Health Interview Survey (CHIS) which use different question modules to ascertain information about physical activity, beliefs, and attitudes in California.

Analysis Strategy:

In 2010, analysis of the data will occur in the same fashion as was done in previous years for the CA BRFS to determine the percentage of respondents who reported participation in the recommended amount of physical activity and those who did not. These data will be compared with related data collected by the CDPS and CHIS surveys. Data will be analyzed for the population as a whole and for gender, race/ethnicity, income, and educational subgroups to identify disparities

Funding:

The funding allotted for these questions (approximately $4,200 per question) will be provided by the United States Department of Agriculture.

Question Specific Instructions

Instructions: These next questions are about the exercise, recreation, or physical activities OTHER THAN your REGULAR JOB duties.

Q1. This question is asked of those respondents who are employed. The intent is to determine if the respondent is active when he/she is at work. This refers to the job/jobs they CURRENTLY have. If the respondent has more than one job, they should include activity at all jobs combined.

Q2. This question is asked of everyone who engaged in physical activity in the past month. The question is about moderate activities in a usual week. This is not the most recent week, but those activities in an average week. This must be for at least 10 minutes at a time.

Q3. This question is asked of those who get moderate exercise in a usual week. The question is about the number of days of moderate activities in a usual week. This is not the most recent week, but those activities in an average week. This must be for at least 10 minutes at a time.

Q4. This question is asked of those who get moderate exercise in a usual week. The question is about the total time per day spent doing moderate activities. This is those activities in a average week. This must be for a least 10 minutes at a time.

Q5. This question is asked of everyone who engaged in physical activity in the past month. The question is about vigorous activities in a usual week. This is not the most recent week, but those activities in an average week. This must be for at least 10 minutes at a time.

Q6. This question is asked of those who get vigorous exercise in a usual week. The question is about the number of days of vigorous activities in a usual week. This is not the most recent week, but those activities in an average week. This must be for at least 10 minutes at a time.

Q7. This question is asked of those who get vigorous exercise in a usual week. The question is about the total time per day spent doing vigorous activities. This is those activities in an average week. This must be for at least 10 minutes at a time.

Q8. This question is asked of those who get moderate or vigorous exercise in a usual week. The question is about the number of days of moderate or vigorous activities in a usual week. This question will allow for validation of the total number of days the respondent is moderately or vigorously active.

3) Physical Activity Variable Narrative

Pre-2008 Measures

In August and September of 2007 we had a series of meetings with the California Department of Public Health Survey Research Group (SRG) including Marta Induni, Joan Epstein, and Sharon Sugerman to re-examine the BRFSS physical activity variables obtained from the California-specific datasets available through the SRG. We had proposed new questions to validate the relationships between moderate and vigorous combinations of days in the 2008 and 2009 surveys. The way the questions were asked, we did not know if the moderate and vigorous activity days could have occurred on the same day. In order to examine the effect of allowing the respondent to conceptualize the cumulative moderate and vigorous activity days as a single unit, we proposed a question for 2009 that would more simply return a report of the total days meeting at least 30 minutes of any combination of moderate and vigorous activity. We hope to compare these differing methods of monitoring activity.

During those meetings we identified and corrected errors in the SAS programming of the Percent averaging 30 minutes, 5+ and 6+ days a week, and added questions to the 2008 and 2009 survey to help untangle the contributions of moderate and vigorous activity over the week.

Percent averaging 30 minutes, 5+ and 6+ days a week

```
_RF5AVG  1 = AVERAGED 30 MIN 5 DAYS/WK
         0 = DID NOT
         9 = UNKNOWN OR REFUSED

_RF6AVG  1 = AVERAGED 30 MIN 6 DAYS/WK
         0 = DID NOT
         9 = UNKNOWN OR REFUSED */
```

Both of these measures first added moderate and vigorous time together (MODTIME + VIGTIME) and then tested for 150+ minutes for the 5 day criterion (5 days times 30 minutes =150 minutes), and 180+ minutes for the 6 day criterion (6 days times 30 minutes=180 minutes). The actual number of reported days at the activity (MODDAY and VIGDAY) was not used.

Percent moderate 30 minutes, 5+ days a week

```
   "At Risk" Defined as moderate physical activity 5+ times/week,
   30+ minutes/session, regardless of intensity
   (Year 2010 Objective 22.2)


_RFMOD: 1 = MODERATE EXERCISE AT LEAST 5 DAYS AT LEAST 30 MINUTES A DAY
         0 = DID NOT
         9 = UNKNOWN OR REFUSED
```

This measure did specifically test for each criterion separately (e.g. 30+ minutes (MODTIME) AND 5+ days (MODDAY))

Percent vigorous 20 minutes, 3+ days a week

```
   "At Risk" Defined as VIGOROUS physical activity 3+ times/week,
   20+ minutes/session, regardless of intensity
   (Year 2010 Objective 22.3)

_RFVIG: 1 = VIGOROUS EXERCISE AT LEAST 3 DAYS AT LEAST 20 MINUTES A DAY
         0 = DID NOT
         9 = UNKNOWN OR REFUSED
```

This measure did specifically test for each criterion separately (e.g. 20+ minutes (VIGTIME) AND 3+ days (VIGDAY))

Percent Met BOTH Moderate and Vigorous (_RFBOTH)

```
_RFBOTH  1 = MET BOTH REQUIREMENTS
         0 = DID NOT
         9 = UNKNOWN OR REFUSED
```

This is the most conservative (the hardest to achieve), since it is the logical AND of both conditions having to be met. The vigorous criterion is 20+ minutes however, not the 30+ of both.

Percent Met EITHER Moderate OR Vigorous (_RFMORV)

```
_RFMORV  1 = 30 EITHER REQUIREMENT
         0 = DID NOT
         9 = UNKNOWN OR REFUSED
```

This is less conservative, since it is the logical OR of either condition being met. This doesn't represent **30** minutes of either as the label suggests, but rather is (**30** minutes for 5 days MOD) OR (**20** minutes for 3 days VIG). This measure would miss those who didn't have enough minutes to meet their individual vigorous or moderate requirements although cumulatively they may have qualified.

Percent No PA (a CDC CORE question).

```
 _RFLEIS 1 = PHYSICAL ACTIVITY AT ALL
         0 = DID NOT
         9 = UNKNOWN OR REFUSED

   "At Risk" Defined as ANY ACTIVITY
   YES TO EXERANY1 (it was EXERANY2 in 2001), "During the past month,
other than your regular job, did you participate in any physical
activities or exercises such as running, calisthenics, golf, gardening,
or walking for exercise?"
            1     Yes
            2     No
            7     Don't know / Not sure
            9     Refused
```

_RFLEIS is used to calculate NOPA (subtracted from 1).