

Data in Motion: Measuring Physical Activity Using Population-Based Data

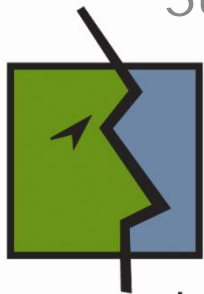
Danielle Ewing, MPH

Suzanne Ryan-Ibarra, MPH, MS

Marta Induni, PhD

Survey Research Group, Public Health Institute

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survey research group



Agenda

- General Description of CA BRFSS
- History of CA BRFSS Physical Activity Questions
- Interactive Physical Activity Data Collection
- Physical Activity Break
- SAS Code for Physical Activity Questions
- Create Variables for Meeting/Not Meeting Physical Activity Guidelines
- Data Collection Results and Prevalence of Physical Activity Nationally and in CA
- Questions



California Behavioral Risk Factor Surveillance System (BRFSS)

- Part of the national BRFSS, which is the largest continuously conducted telephone health survey in the world
- Enables tracking of behaviors related to chronic diseases, injuries and death
- Coordinated by the Centers for Disease Control and Prevention, and the California Department of Public Health



How are the BRFSS data used?

- Identify differences in health behaviors and outcomes
- Measure trends
- Design and monitor public health and healthcare programs and services
- Formulate policy and propose legislation for health initiatives
- Measure progress toward achieving state and national health objectives

History of CA BRFSS Physical Activity Questions

- Physical activity data has been collected since 1984.
- Not all questions were asked each year
- In CA, state-added questions on physical activity were included, in addition to national modules, in some years.



History of CA BRFSS Physical Activity Questions (continued)

- 1984-2000, 2011-2013
 - During the past MONTH, did you participate in any PHYSICAL ACTIVITIES or EXERCISES such as running, calisthenics, golf, gardening or walking for exercise?
 - What type of physical activity or exercise?
 - How many minutes or hours?
 - How many times per week or per month?
- 1984-2000
 - How far did you usually jog, run, swim, or walk?



History of CA BRFSS Physical Activity Questions (continued)

- 2001-2010
 - In a usual week, do you do moderate activities for at least 10 minutes at a time?
 - In a usual week, do you do vigorous activities for at least 10 minutes at a time?
 - How many days per week and for how long?
- 2011-2013
 - How many times per week or per month did you do physical activities or exercises to strengthen your muscles?



History of CA BRFSS Physical Activity Questions

- In 2011, physical activity variables were calculated using activity Metabolic Equivalent Task (MET) values, which are physiological measures of the amount of energy the body uses during physical activity.
- MET values are calculated by age, gender, physical activity status and type of physical activity.



Web-based Data Collection

- Allows data collection at community-based sites where other methods (random-digit-dial, online via email invitation) wouldn't be as useful
- Can collect data using Smartphones, tablets, computers, or other web-enabled device
- Programmed surveys assure that skip patterns are followed
- Platform allows programming of multiple languages in same survey
- Technology motivates some to participate in the survey



Web-based Data Collection – Technology

- Secure transmission of data collected (HTTPS)
- Session ID variable protects survey participants from seeing other participants' data
- All data is locally stored on in-house SRG servers, with physical and electronic safeguards
- Surveys can be controlled (closed) or open (like the one you'll do today)
- Option to complete a survey later



Data Collection Activity

- To access the survey, you can use this secure URL:
<https://s.phy.org>
- Or this shortcut, which redirects to the secure URL:
s.phy.org
- Survey is completely anonymous



Physical Activity Break: Instant Recess



Calculated Variables from Physical Activity Questions

- Physical activity questions are used to create numerous calculated (aka constructed) variables.
- SAS code created by the Centers for Disease Control and Prevention has been adapted to use CA BRFSS data.¹

¹http://www.cdc.gov/brfss/data_documentation/statistic_brief.htm



Coding for Physical Activity Questions

The coding is done in this order:

1. Calculate **Metabolic Equivalent Task** (MET) values
2. Create variable for minutes and total **vigorous and/or moderate activity per week**
3. Assign physical activity level (**highly active > inactive**)
4. Calculate **frequency and total physical activity per week**
5. Create variable to indicate if meets **150+ mins** (or vigorous equivalent) of **physical activity recommendation**
6. Create a variable to indicate if meets **2 or more muscle strengthening exercises per week**.
7. Create variable to indicate if meets **physical activity aerobic and strengthening recommendation**



Physical Activity SAS Code: Create MET Values

- MET values are assigned based on the intensity of the activities mentioned during the survey.
- This example of the SAS code shows activities being converted to METs.
 - IF EXTRACT01 IN (34,60,67,69) THEN METVAL1_=0;
 - Pilates (34), Tai Chi (60), Weight Lifting (67), Yoga (69) = Zero METs
 - These are not considered Aerobic Activities
 - IF EXTRACT01 IN (23,29,30,38,62) THEN METVAL1_=8;
 - Hockey (23), Lacrosse (29), Mountain Climbing (30), Rock Climbing (38), Touch Football (62) = 8 METs



Physical Activity SAS Code: Moderate or Vigorous

- Age-Gender Maximum Oxygen Consumption And Functional Capacity.
 - The maximum amount of oxygen the body can use during a specified period of usually intense exercise that depends on body weight and the strength of the lung
- Relative Intensity: Vigorous, Moderate, Light/Not Aerobic
 - Vigorous Activity = > 6 METS
 - Moderate Activity = Approx. 3-6 METS*
 - Light/Not Aerobic = Approx. < 3 METS



Physical Activity SAS Code: Moderate or Vigorous (continued)

- What do you think is the intensity level for each of these activities?
 - **Skating-Ice or Roller?**
 - 7.0 METS → Vigorous Activity
 - **Snorkeling?**
 - 5.0 METS → Moderate Activity
 - **Weight Lifting?**
 - 3.5 METS → Light/Not Aerobic Activity
 - **Handball?**
 - 12.0 METS → Vigorous Activity
 - **Mowing Lawn?**
 - 5.5 METS → Moderate Activity



Physical Activity SAS Code: Total Mins. Per Week Aerobic Activity

- Total minutes of aerobic physical activity per week is calculated using:
 - Duration (minutes) of activity(s)
 - Frequency of activity(s) per week
- Minutes of vigorous activity per week using the activities MET value calculated
- Weekly frequency of strength training exercise calculated



Physical Activity SAS Code: Levels of Activity

- Highly active, active, insufficiently active, inactive are determined by:
 - Any physical activity
 - Minutes of physical activity per week
 - Minutes of vigorous activity per week
 - Highly Active = More than 300 minutes per week or 150 minutes of vigorous per week
 - Active = Less than 300 minutes but more than 150 minutes per week
 - Insufficiently Active = Less than 150 minutes per week but more than 1 minute per week
 - Inactive = Less than 1 minute per week



Physical Activity SAS Code: Meeting Aerobic Recommendations

- CDC recommends¹ that adults engage in:
 - 150 minutes of moderate aerobic activity every week and 2 days of muscle strengthening OR
 - 75 minutes of vigorous aerobic activity every week and 2 days of muscle strengthening OR
 - Combination of both moderate or vigorous aerobic activity every week and 2 days of muscle strengthening



Physical Activity SAS Code: Guidelines

- Aerobic guidelines:
 - Total minutes of activity per ≥ 150
- Strength guidelines:
 - Total days of muscle strengthening ≥ 2
- Meeting both guidelines:
 - Met aerobic and strength guidelines
 - Met aerobic but not strength
 - Met aerobic guidelines only
 - Did not meet aerobic but met strength
 - Did not meet any guidelines

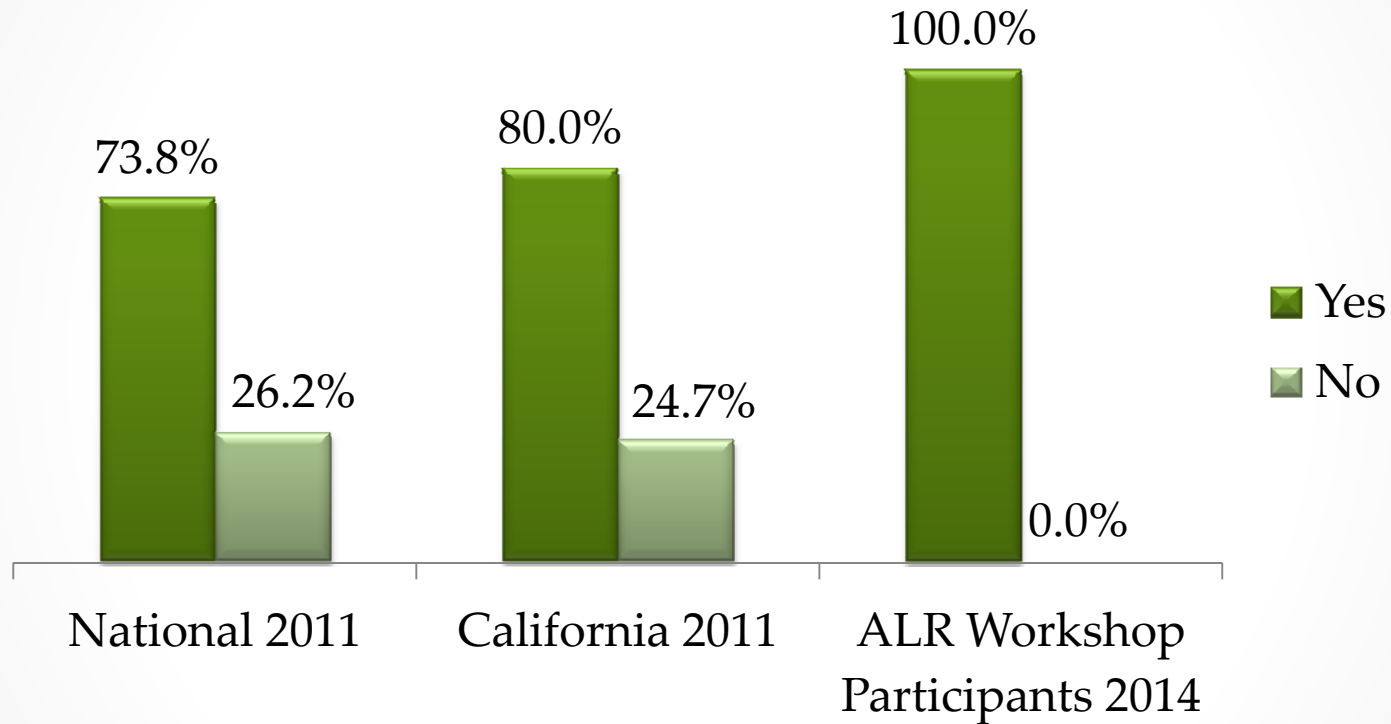


Data Collection Results:

- 100% Participated in Physical Activity during the last month
- Level of Activity
 - 16.7% highly active
 - 25% active
 - 16.7% insufficiently active
 - 41.7% inactive
- 58.3% Met Aerobic Recommendations
- 66.7% Met Muscle Strengthening Recommendations
- 25% Met Both Guidelines



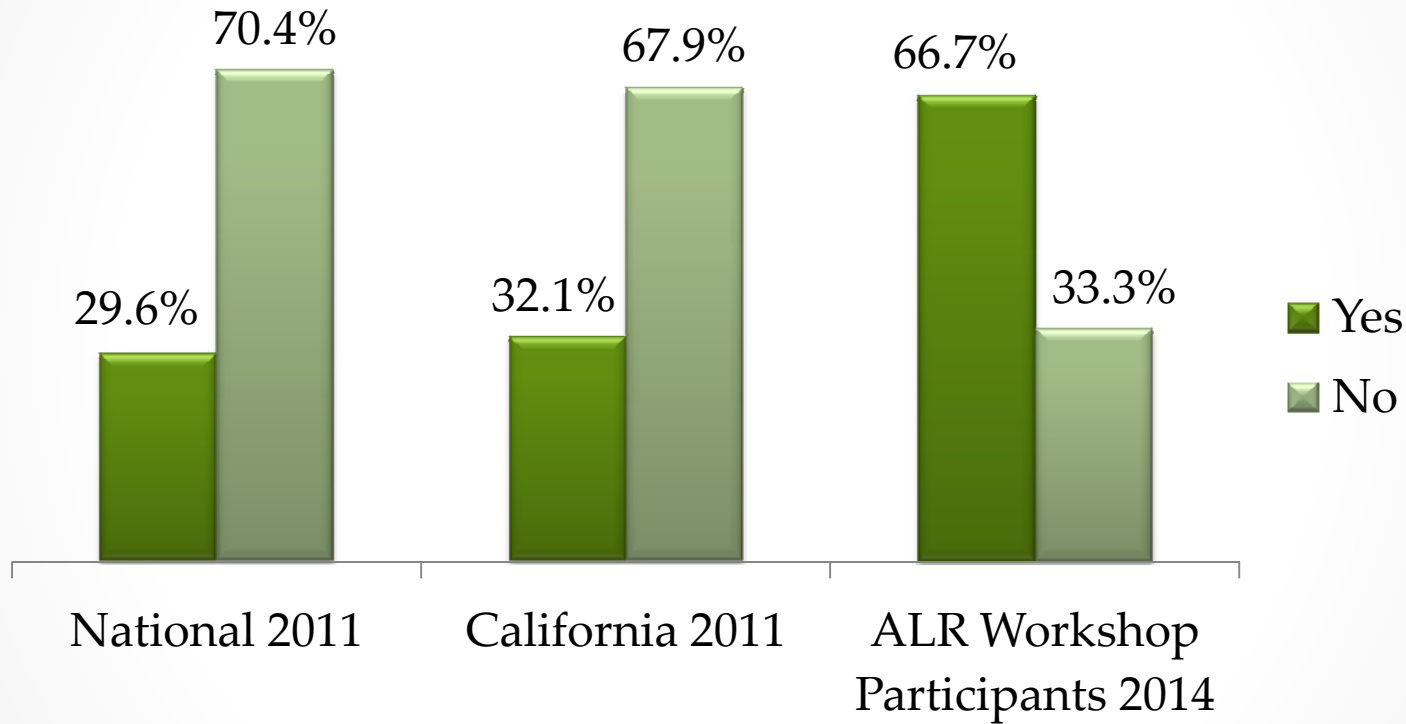
Prevalence of Physical Activity: Participated in Physical Activity During the Past Month



Workshop participants have a higher prevalence of physical activity participation than California and the Nation as a whole.



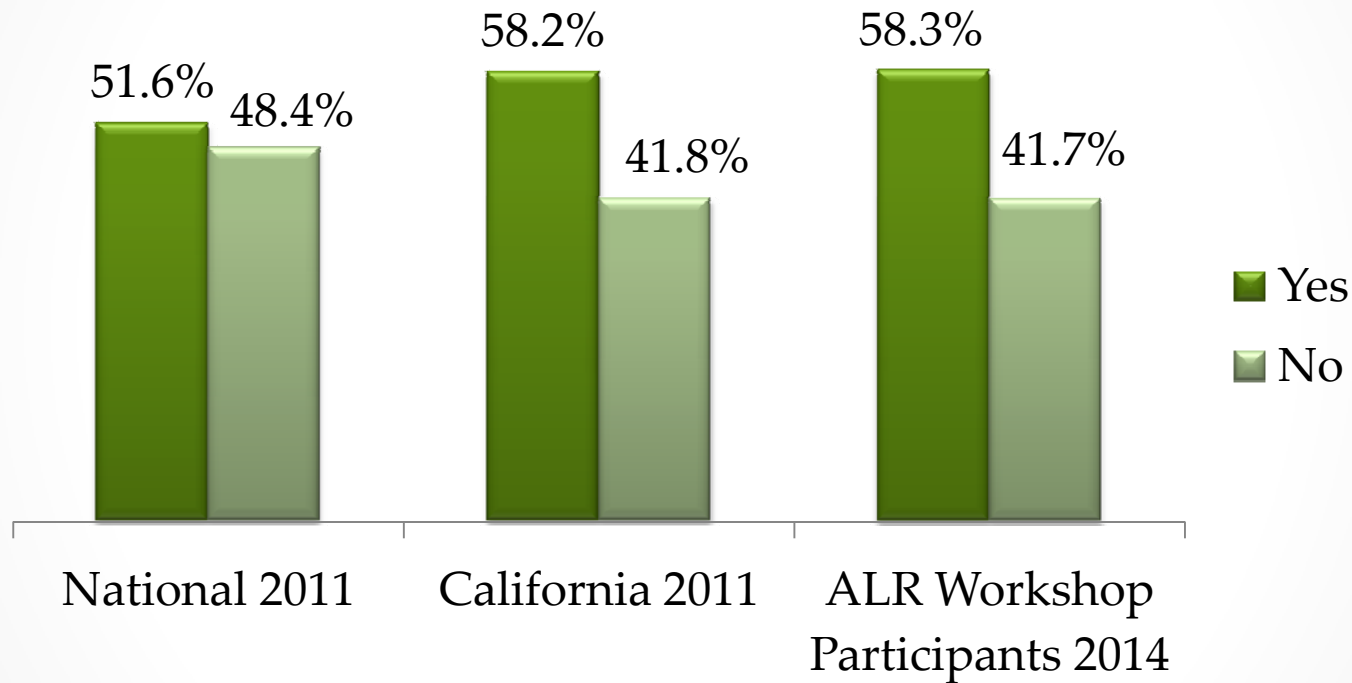
Prevalence of Physical Activity: Participated in Muscle Strengthening Exercises More Than Twice a Week



Workshop participants have a higher prevalence of participation in muscle strengthening exercises than California and the Nation as a whole.

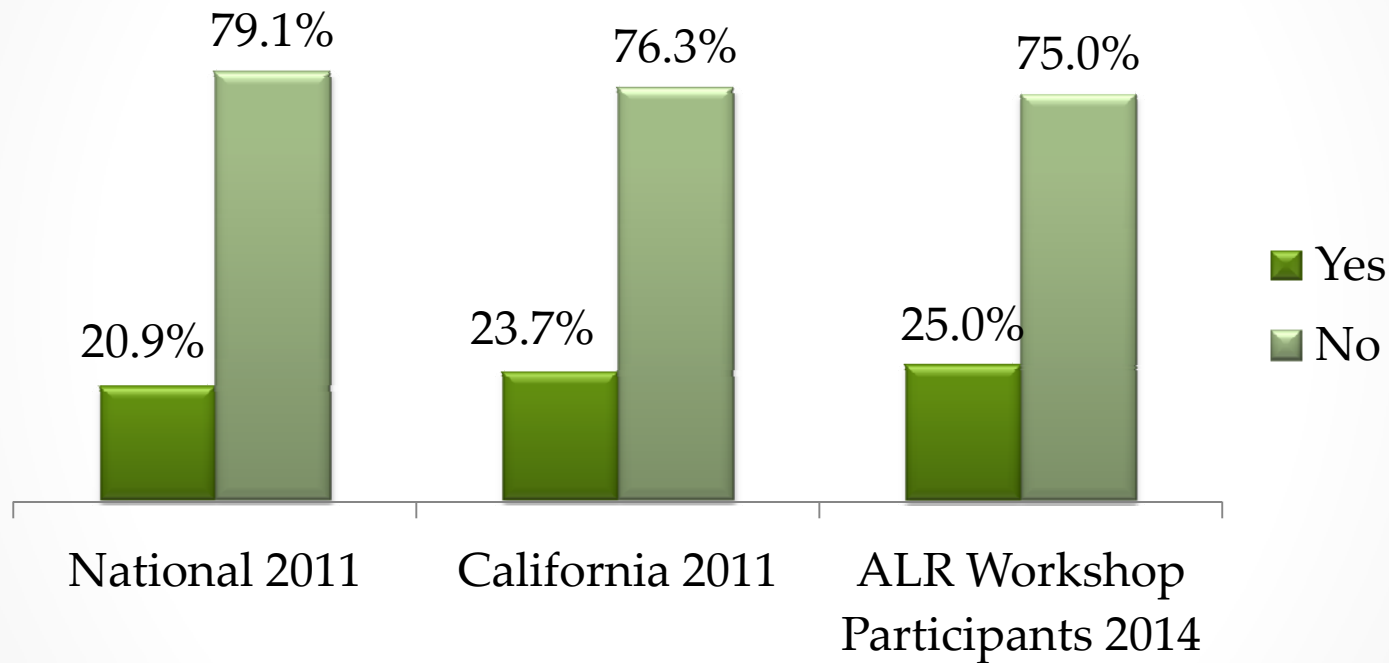


Prevalence of Physical Activity: Meet 150 Mins or More Aerobic Physical Activity Per Week Recommendation



Workshop participants have a higher prevalence of meeting the aerobic recommendation than California and the Nation as a whole.

Prevalence of Physical Activity: Met Both Aerobic and Muscle Strengthening Exercise Guidelines



Workshop participants have a higher prevalence of meeting both the aerobic and muscle strengthening recommendation than California and the Nation as a whole.



Summary

- Possible to collect data via web-enabled devices in a community based setting, such as this workshop
- Described SAS code to create constructed variable that measure whether a population is meeting CDC's physical activity guidelines
- Compared your physical activity habits to the nation and California



Questions?



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Thank you!

Danielle Ewing, MPH
1825 Bell Street, Suite 102
Sacramento, CA 95825
916.282.1847
dewing@s-r-g.org

Suzanne Ryan-Ibarra, MPH, MS
1825 Bell Street, Suite 102
Sacramento, CA 95825
916.779.0115
sryan@s-r-g.org



survey research group

www.s-r-g.org

www.phi.org

