

May 2011

Adolescent Physical Education and Physical Activity in California

Allison L. Diamant, Susan H. Babey and Joelle Wolstein

SUMMARY: In California, more than 1.3 million adolescents (38%) do not participate in physical education (PE) at school, and this rate increases dramatically with age, from just 5% at age 12 to 77% at age 17. In addition, only 19% of teens meet current physical activity recommendations. Participation in PE at school

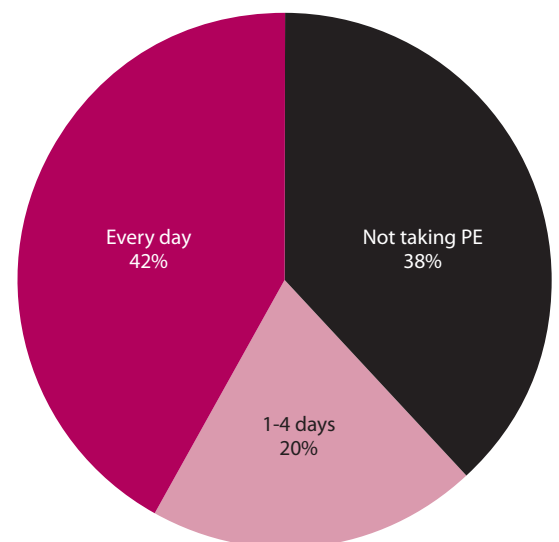
is associated with more overall physical activity. Policies that promote more opportunities for physical activity, including those that help schools meet or exceed current PE requirements, can contribute to greater levels of physical activity for adolescents.

Regular physical activity is an important component in the fight against obesity and chronic health conditions. Lack of physical activity contributes to obesity and to complications and death from chronic conditions such as diabetes, coronary heart disease, hypertension, colon cancer and osteoporosis.¹ Prolonged periods of inactivity also contribute to chronic disease risk and sub-optimal functioning.² In addition, regular physical activity is associated with increased mental alertness and higher academic achievement, as well as lower levels of stress and depression.³

Schools are an important venue for increasing opportunities for physical activity among youth. More than 6 million students are enrolled in California's public schools. Participation in school-based physical education (PE) has been linked to higher overall levels of physical activity, as well as healthier weight status.⁴ However, in many schools, the amount of time allocated to PE has been considerably reduced or even eliminated.⁵ Reductions in PE have occurred at the same time that obesity rates among

Exhibit 1

Weekly Participation in Physical Education at School, Adolescents Ages 12-17, California, 2007

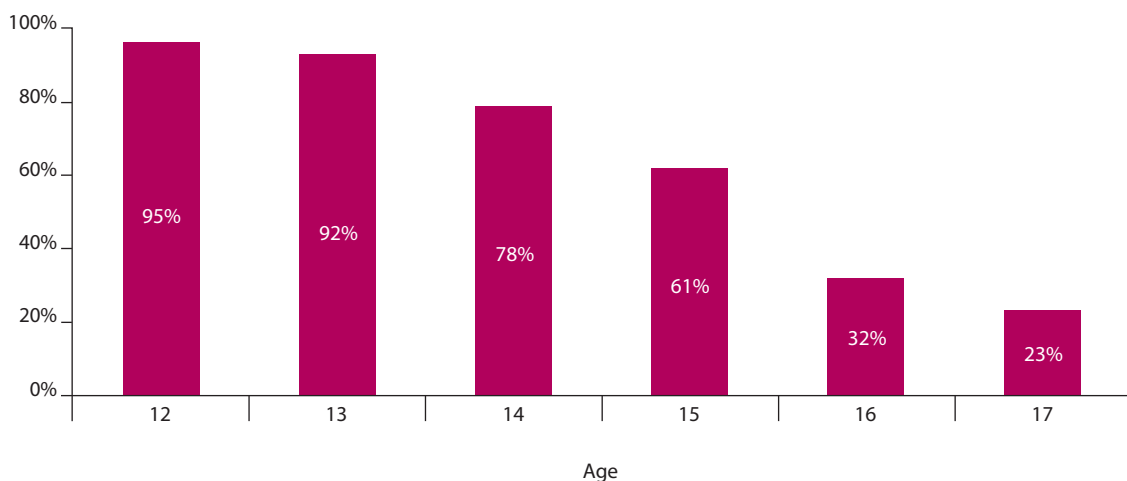


Source: 2007 California Health Interview Survey

“More than 1.3 million adolescents do not participate in physical education.”

Exhibit 2

Prevalence of Participation in Physical Education by Age, Adolescents Ages 12-17, California, 2007



Source: 2007 California Health Interview Survey

adolescents have increased. In addition, schools continue to face pressure to further reduce or eliminate PE due to budget concerns and pressure to improve academic scores. Unfortunately, reducing PE time in favor of academic courses may not produce the intended results, because PE can contribute to improvements in academic achievement.⁶

This policy brief examines participation in physical education among California adolescents, as well as level of physical activity. The findings presented rely on data from the 2007 California Health Interview Survey (CHIS 2007).

Many California Teens Do Not Participate in Physical Education

California requires 400 minutes of physical education every 10 days for middle and high school students. Despite these requirements, more than one third (38% of California adolescents, 1.3 million teens in all) report

not participating in PE at school (Exhibit 1). Moreover, the percentage of teens participating in PE drops precipitously with age, from 95% participation at age 12 to just 23% at age 17 (Exhibit 2), in part because many high school students obtain exemptions from PE for the last two years of school. This decline in PE participation with age is consistent with national estimates.⁷ Furthermore, participation in PE is higher among boys than girls (66% vs. 59%, respectively).

Experts recommend daily participation in PE to increase physical activity among youth and promote the development of healthy exercise habits.⁸ Increasing the number of schools that require daily PE is also a Healthy People 2020 goal. Despite this, only 42% of California teens report participating in PE on a daily basis. Furthermore, daily PE participation varies considerably with age, dropping from 62% among 12 year olds to just 15% among 17 year olds.⁹

“The percentage of teens participating in PE drops precipitously with age.”

California Teens Don't Get Enough Physical Activity

The U.S. Department of Health and Human Services recommends at least 60 minutes of daily physical activity for children and teens.¹⁰ In California less than one-fifth of adolescents (19%) are physically active for at least 60 minutes every day (Exhibit 3). Although rates are low for both boys and girls, 25% of boys meet current physical activity recommendations compared to just 13% of girls.

These findings are consistent with national data. In 2009, 18% of high school students nationally had participated in at least 60 minutes of physical activity on each of the past seven days, with 24% of boys and 11% of girls attaining this level of physical activity.¹¹

Participation in Physical Education at School Linked to More Overall Physical Activity

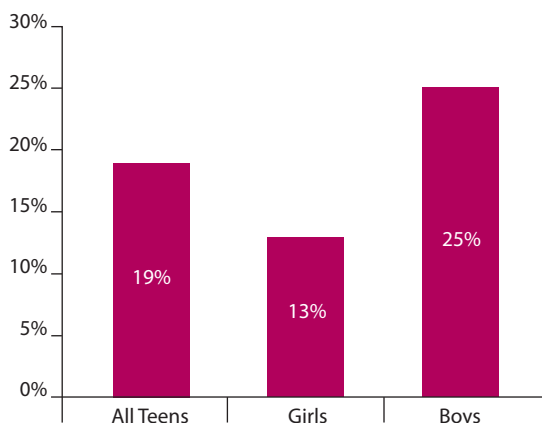
School-based PE is an effective method for increasing physical activity and improving physical fitness among youth.¹² For California adolescents, participating in physical education is associated with an additional 18 minutes of physical activity each week, adjusting for age, gender, race and income.¹³ These results suggest that participating in PE can contribute to increased levels of overall physical activity for California teens.

Physical Education and Physical Activity Vary from County to County

There is substantial geographic variation in participation in PE and amount of physical activity among California adolescents. The average number of days that adolescents participate in PE each week varies considerably

Percent Meeting National Recommendations for Physical Activity Overall and by Gender, Adolescents Ages 12-17, California, 2007

Exhibit 3



Source: 2007 California Health Interview Survey

from county to county, ranging from 1.8 days in Santa Cruz County to 3.8 days in Madera County (Exhibit 4). The average number of days that teens engage in at least 60 minutes of physical activity per week ranges from 3.1 days in San Mateo County to 4.7 days in Lake County. This regional variation is likely due to a number of factors including economic and local school district policy differences, as well as variation in resource allocation, walkability, urbanicity and the availability of safe places to engage in physical activity.

“In California, less than one-fifth of teens meet national physical activity recommendations.”

“Participating in PE is associated with an additional 18 minutes of physical activity” each week.

Exhibit 4

Average Number of Days of Physical Education and Days Physically Active Per Week, Adolescents Ages 12-17, California, 2007

	Days of Physical Education		Days Physically Active	
	Days	95% CI	Days	95% CI
Northern and Sierra Counties	3.0	(2.7 - 3.3)	3.8	(3.5 - 4.1)
Butte	3.1	(2.1 - 4.1)	4.1	(3.3 - 4.9)
Shasta	3.4	(2.7 - 4.1)	3.3	(2.4 - 4.1)
Humboldt	3.2	(2.4 - 4.0)	3.8	(2.9 - 4.6)
Del Norte, Siskiyou, Lassen, Trinity, Modoc, Plumas, Sierra	2.4	(1.5 - 3.3)	4.2	(3.1 - 5.3)
Mendocino	2.9	(2.0 - 3.9)	3.8	(2.7 - 4.3)
Lake	3.4	(2.6 - 4.3)	4.7	(4.0 - 5.4)
Tehama, Glenn, Colusa	3.1	(2.1 - 4.2)	3.9	(2.8 - 5.0)
Sutter	3.4	(2.6 - 4.2)	3.8	(3.0 - 4.5)
Yuba	3.2	(2.2 - 4.2)	4.0	(3.2 - 4.9)
Nevada	2.6	(1.6 - 3.5)	4.2	(3.2 - 5.2)
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono, Alpine	2.5	(1.4 - 3.6)	3.3	(2.2 - 4.4)
Greater Bay Area	2.6	(2.3 - 2.8)	3.6	(3.3 - 3.8)
Santa Clara	2.6	(2.0 - 3.2)	4.0	(3.4 - 4.5)
Alameda	2.1	(1.5 - 2.7)	3.2	(2.7 - 3.8)
Contra Costa	3.2	(2.6 - 3.8)	3.7	(3.1 - 4.4)
San Francisco	2.9	(1.5 - 4.2)	3.4	(2.0 - 4.7)
San Mateo	2.1	(1.4 - 2.8)	3.1	(2.4 - 3.8)
Sonoma	2.6	(1.8 - 3.5)	3.5	(2.5 - 4.4)
Solano	3.0	(2.2 - 3.8)	3.7	(3.1 - 4.4)
Marin	2.4	(1.6 - 3.2)	3.9	(3.0 - 4.7)
Napa	2.9	(2.1 - 3.7)	3.7	(3.0 - 4.4)
Sacramento Area	2.7	(2.3 - 3.2)	3.7	(3.2 - 4.2)
Sacramento	2.6	(2.0 - 3.2)	3.5	(2.9 - 4.1)
Placer	3.5	(2.8 - 4.1)	4.2	(3.4 - 5.0)
Yolo	2.9	(2.0 - 3.7)	4.1	(3.2 - 4.9)
El Dorado	2.4	(1.8 - 3.1)	3.8	(3.2 - 4.5)
San Joaquin Valley	3.1	(2.9 - 3.4)	3.7	(3.4 - 3.9)
Fresno	3.1	(2.6 - 3.7)	3.6	(3.0 - 4.3)
Kern	3.4	(2.7 - 4.0)	3.7	(3.1 - 4.4)
San Joaquin	2.7	(1.8 - 3.6)	3.6	(2.9 - 4.4)
Stanislaus	3.6	(2.9 - 4.3)	3.4	(2.7 - 4.2)
Tulare	2.7	(1.9 - 3.5)	4.0	(3.2 - 4.8)
Merced	3.1	(2.3 - 4.0)	3.2	(2.6 - 3.8)
Kings	2.9	(2.1 - 3.6)	4.1	(3.2 - 5.0)
Madera	3.8	(3.1 - 4.5)	3.6	(2.8 - 4.3)
Central Coast	2.4	(2.0 - 2.8)	3.7	(3.3 - 4.1)
Ventura	2.2	(1.6 - 2.8)	3.6	(2.9 - 4.3)
Santa Barbara	1.9	(1.2 - 2.7)	4.0	(3.2 - 4.9)
Santa Cruz	1.8	(1.1 - 2.6)	4.2	(3.0 - 5.4)
San Luis Obispo	2.3	(1.6 - 3.1)	4.0	(3.2 - 4.9)
Monterey	3.6	(2.5 - 4.6)	3.2	(2.4 - 4.0)
San Benito	2.4	(1.7 - 3.1)	3.9	(3.1 - 4.6)
Los Angeles	2.7	(2.5 - 2.9)	3.6	(3.3 - 3.8)
Los Angeles	2.7	(2.5 - 2.9)	3.6	(3.3 - 3.8)
Other Southern California	2.7	(2.5 - 2.9)	3.7	(3.5 - 3.9)
Orange	2.3	(1.9 - 2.8)	3.8	(3.4 - 4.2)
San Diego	2.7	(2.4 - 2.9)	3.5	(3.2 - 3.8)
San Bernardino	3.3	(2.9 - 3.8)	3.6	(3.2 - 4.1)
Riverside	2.4	(1.9 - 2.9)	3.8	(3.3 - 4.2)
Imperial	3.3	(2.7 - 4.0)	3.7	(2.9 - 4.5)
California	2.7	(2.6 - 2.8)	3.6	(3.5 - 3.7)

Note: *Days of Physical Education* refers to the average number of days per week that teens have PE. *Days Physically Active* refers to the average number of days per week that teens engaged in at least 60 minutes of physical activity.

Source: 2007 California Health Interview Survey

Conclusions and Policy Recommendations

More than one-third of California adolescents do not participate in PE. In addition, more than 80% fail to meet current recommendations for physical activity. Participating in PE is associated with engaging in more physical activity among California adolescents, even when adjusting for age, gender, race and income. Policies that increase the quantity and quality of PE classes at school could contribute to greater levels of physical activity for adolescents, which could be effective in improving a number of health outcomes.

Given the current state of the economy and California's budget crisis, feasible policy recommendations include those applicable to existing school PE programs. Therefore, policymakers are urged to consider the following strategies as economic conditions permit:

- **Prioritize maintaining existing PE classes.** Requiring PE in schools is one of the CDC's recommended community strategies to prevent obesity. Many schools face pressure to reduce or eliminate PE class time because of financial concerns and an emphasis on academic test scores. However, research suggests that increased time spent in PE classes and other active pursuits does not negatively impact academic performance and may be linked to improved academic performance.¹⁴
- **Increase participation in existing PE classes.** Limiting exemptions to PE can increase participation in existing PE classes. In California, students can obtain exemptions from PE class for a variety of reasons including driver's education and cultural practices. It is also possible for students to be exempted from PE for two years during grades 10 to 12.¹⁵ In an attempt to control which students receive this exemption, California recently implemented legislation that requires students to pass five of the six standards of the California physical fitness test (an important program that allows the state to measure and track obesity and fitness trends) in order to be eligible for a two-year exemption from PE. However, physical activity is an important component for maintaining weight and health status and all students should be encouraged to participate. In addition, many schools do not meet the current statewide PE requirements. Enforcing these requirements, particularly among students in higher grades, can also expand PE participation and thereby increase physical activity.
- **Increase amount of time spent being physically active during PE class.** Experts recommend that at least 50% of PE class time be spent in moderate to vigorous physical activity. However, less than 20% of time in PE is spent being physically active in many California middle and high schools.¹⁶ The following strategies can help increase physical activity during PE: 1) plan physical activities that are appealing to students; 2) ensure reasonable class size—larger class size is associated with less time spent being physically active; 3) promote teacher training—well-trained teachers produce more time spent in moderate-to-vigorous physical activity during class time; (4) consider innovative activities that do not rely on expensive resource allocation.
- **Incorporate short physical activity breaks into regular classroom time.** Research suggests that short physical activity breaks (as short as 5-10 minutes) not only increase physical activity levels and protect against overweight, but are associated with improvements in cognitive skills, concentration and academic achievement.¹⁷

“Policies should support increasing the quantity and quality of PE classes.”

Data Source and Methods

All statements in this report that compare rates for one group with another group reflect statistically significant differences ($p < 0.05$) unless otherwise noted. The findings in this brief are based on data from the 2007 California Health Interview Survey (CHIS 2007). CHIS 2007 completed interviews with over 50,000 households including more than 3,600 adolescents, drawn from every county in the state. Interviews were conducted in English, Spanish, Chinese (both Mandarin and Cantonese), Vietnamese and Korean. A validated self-report question was used to assess the number of days adolescents were physically active for 60 minutes or more. In addition, adolescents reported whether they were taking PE at school and the name of the school attended. School name was used to link CHIS data with publicly available data on school characteristics from the California Department of Education. Regression analyses were used to examine the association of PE participation with physical activity. Analyses were adjusted for the following individual, family and school characteristics: age, race/ethnicity (white, Latino, Asian, African American and American Indian), household income (above or below 200% of the federal poverty level), percent of students participating in the free/reduced price meal program and the racial composition of the school.

The California Health Interview Survey is a collaboration of the UCLA Center for Health Policy Research, the California Department of Public Health, the California Department of Health Care Services and the Public Health Institute. Funding for the CHIS 2007 statewide survey was provided by the California Department of Public Health, the California Department of Health Care Services, The California Endowment, the National Cancer Institute, First 5 California, the California Office of the Patient Advocate, the California Department of Mental Health and Kaiser Permanente. For local funders and other information on CHIS, visit www.chis.ucla.edu.

Author Information

Allison L. Diamant, MD, MSHS, is a faculty associate at the UCLA Center for Health Policy Research and an associate professor in the Division of General Internal Medicine and Health Services Research at the David Geffen School of Medicine at UCLA. Susan H. Babey, PhD, is a senior research scientist at the UCLA Center for Health Policy Research. Joelle Wolstein, MPP, is a graduate student researcher at the UCLA Center for Health Policy Research and doctoral student in the UCLA School of Public Health, Department of Health Services.

Acknowledgements

The authors wish to thank Malia Jones, MPH, Leanne Streja, MS, Melanie Levy, Lijie Di, Hongjian Yu, PhD, Gwen Driscoll and Celeste Maglan for their assistance. The authors would also like to thank the following individuals for their helpful comments: Lisa Cirill, MS, PAPHS, Acting Chief, California Active Communities, California Department of Public Health; Joanne Gooley, MA, RD, Physical Activity Specialist, California Project LEAN, California Department of Public Health; Paul Simon, MD, MPH, Director, Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health; Antronette Yancey, MD, MPH, Professor, UCLA School of Public Health and Co-Director, UCLA Kaiser Permanente Center for Health Equity.

Suggested Citation

Diamant AL, Babey SH and Wolstein J. *Adolescent Physical Education and Physical Activity in California*. Los Angeles, CA: UCLA Center for Health Policy Research, 2011.

Endnotes

- 1 U.S. Department of Health and Human Services. Physical activity guidelines advisory committee report. Washington, DC: U.S. Department of Health and Human Services, 2008.
- 2 Mark AE, Janssen I. Influence of Bouts of Physical Activity on Overweight in Youth. *American Journal of Preventive Medicine*. 2009 May;36(5):416-21. Healy GN, Matthews CE, Dunstan DW, Winkler EA, Owen N. Sedentary Time and Cardio-Metabolic Biomarkers in U.S. Adults: NHANES 2003-06. *European Heart Journal*. 2011 Mar;32(5):590-7. Epub 2011 Jan 11.
- 3 Centers for Disease Control and Prevention. The Association between School-Based Physical Activity, Including Physical Education and Academic Performance. Atlanta, GA: U.S. Department of Health and Human Services; 2010.
- 4 Stone EJ, McKenzie TL, Welk GJ, Booth ML. Effects of Physical Activity Interventions in Youth. Review and Synthesis. *American Journal of Preventive Medicine* 1998;15(4):298-315. Madsen KA, Gosliner W, Woodward-Lopez G, Crawford PB. Physical Activity Opportunities Associated with Fitness and Weight Status among Adolescents in Low-Income Communities. *Archives of Pediatrics & Adolescent Medicine*. 2009;163(11):1014-1021.
- 5 Lowry R, Wechsler H, Kann L, Collins JL. Recent Trends in Participation in Physical Education among U.S. High School Students. *Journal of School Health*. 2001 Apr;71(4):145-52.
- 6 Centers for Disease Control and Prevention. The Association between School-Based Physical Activity, Including Physical Education and Academic Performance. Atlanta, GA: U.S. Department of Health and Human Services; 2010.
- 7 Johnston LD, Delva J, O'Malley PM. Sports Participation and Physical Education in American Secondary Schools: Current Levels and Racial/Ethnic and Socioeconomic Disparities. *American Journal of Preventive Medicine* 2007;33(4 Suppl):S195-208.
- 8 U.S. Department of Health and Human Services. Healthy People 2020. Available at: <http://www.healthypeople.gov/2020>. Accessed April 20, 2011.
- 9 Nationally, participation in daily PE drops from 47% among 9th graders (14-year-olds) to 22% among 12th graders (17-year-olds). National Center for Chronic Disease Prevention and Health Promotion, Division for Adolescent and School Health. In California, 52% of 14-year-olds and 15% of 17-year-olds reported daily participation in PE.
- 10 U.S. Department of Health and Human Services. 2008 Physical Activity Guidelines for Americans. Washington, DC: U.S. Department of Health and Human Services, 2008.
- 11 Centers for Disease Control and Prevention (CDC). Youth Risk Behavior Surveillance—United States, 2009. *MMWR* 2010;59(SS-5):1–142.
- 12 Institute of Medicine. Progress in Preventing Childhood Obesity: How Do We Measure Up? Washington DC: National Academies of Science, 2006.
- 13 This estimate is based on a regression model adjusting for age, gender, race and income. Teens taking PE have 0.30 more days with at least 60 minutes of physical activity than those not taking PE ($p < 0.05$). If we conservatively assume that teens were only getting 60 minutes of physical activity for each day that they reported getting at least 60 minutes of physical activity, then the model results suggest that teens taking PE get 18 more minutes per week of physical activity than those not taking PE.
- 14 Centers for Disease Control and Prevention. The Association between School-Based Physical Activity, Including Physical Education and Academic Performance. Atlanta, GA: U.S. Department of Health and Human Services; 2010
- 15 National Association for Sport and Physical Education and the American Heart Association. 2010 Shape of the Nation Report: Status of Physical Education in the USA. Reston, VA: National Association for Sport and Physical Education, 2010.
- 16 UCLA Center to Eliminate Health Disparities and Samuels & Associates. *Failing Fitness: Physical Activity and Physical Education in Schools*. Los Angeles, CA, 2007.
- 17 Centers for Disease Control and Prevention. The Association between School-Based Physical Activity, Including Physical Education and Academic Performance. Atlanta, GA: U.S. Department of Health and Human Services; 2010. Mark AE, Janssen I. Influence of Bouts of Physical Activity on Overweight in Youth. *American Journal of Preventive Medicine*. 2009 May;36(5):416-21. Donnelly JE, Greene JL, Gibson CA, Smith BK, Washburn RA, Sullivan DK, DuBose K, Mayo MS, Schmelzle KH, Ryan JJ, Jacobsen DJ, Williams SL. Physical Activity Across the Curriculum (PAAC): a randomized controlled trial to promote physical activity and diminish overweight and obesity in elementary school children. *Preventive Medicine*. 2009 Oct;49(4):336-41. Epub 2009 Aug 6. Barr-Anderson DJ, AuYoung M, Whitt-Glover MC, Glenn BA, Yancey AK. Integration of Short Bouts of Physical Activity into Organizational Routine: A Systematic Review of the Literature. *American Journal of Preventive Medicine*. 2011 Jan;40(1):76-93.



This publication contains data from the California Health Interview Survey (CHIS), the nation's largest state health survey. Conducted by the UCLA Center for Health Policy Research, CHIS data give a detailed picture of the health and health care needs of California's large and diverse population. Learn more at: www.chis.ucla.edu

10960 Wilshire Blvd., Suite 1550
Los Angeles, California 90024

First Class
Mail
U.S. Postage
PAID
UCLA



The UCLA Center
for Health Policy Research
is affiliated with the
UCLA School of Public Health
and the UCLA School of Public Affairs.

The views expressed in this policy brief
are those of the authors and do not
necessarily represent the UCLA Center for
Health Policy Research, the Regents of the
University of California, or collaborating
organizations or funders.

PB2011-5

Copyright © 2011 by the Regents of the
University of California. All Rights Reserved.

Editor-in-Chief: E. Richard Brown, PhD

Phone: 310-794-0909
Fax: 310-794-2686
Email: chpr@ucla.edu
www.healthpolicy.ucla.edu



Read this publication online