



RECENT TRENDS IN ADULT USE OF MARIJUANA

Introduction

In November 2016, California voters passed Proposition 64, a statewide initiative legalizing the cultivation, sale, and use of marijuana[†] for adults ages 21 years and above. An earlier law, the Compassionate Use Act of 1996, had legalized marijuana specifically for medicinal use with the recommendation of a licensed physician. In 2003, the Medical Marijuana Program Act created a voluntary state ID card system to identify medical marijuana users. In 2017, the state legislature integrated the 2016 law allowing adult use of marijuana with the previous medicinal use laws through the Medicinal and Adult-Use Cannabis Regulation and Safety Act (MAUCRSA).¹ In early 2018, adult use and medicinal use marijuana businesses began opening in cities choosing to grant local licenses required by the state as a precondition for state licensure. Under MAUCRSA, patients with a state medical marijuana ID card are exempt from the state marijuana sales tax. Complicating matters is the fact that marijuana use, cultivation, and sale are still illegal under Federal law.

Tracking the health implications of marijuana legalization is challenging given the evidence that marijuana use has some harmful health effects while also having specific medicinal uses. Federal restrictions on marijuana research to better understand the health and therapeutic effects of its

use pose additional challenges to effectively monitoring the population health impacts of marijuana legalization.

There is substantial evidence that marijuana use increases risk of motor vehicle crashes, that marijuana use during pregnancy is associated with lower birthweight births, and that initiating marijuana use during adolescence is a risk factor for the development of cannabis use disorder (CUD), characterized by cravings for and tolerance to cannabis; problems at work, school or home due to cannabis use; and experiencing withdrawal symptoms within days of discontinuing use.^{2,3} It has been estimated that about 30% of current marijuana users have symptoms of CUD.⁴ Also, marijuana use has long been associated with the use of other substances, including alcohol, tobacco, and prescription and illicit narcotics.⁵

There is also evidence that marijuana is effective for the treatment of chronic pain in adults, for the treatment of chemotherapy-induced nausea and vomiting among cancer patients, for reducing symptoms of spasticity in patients with multiple sclerosis,² and for reducing seizures in patients with two rare forms of epilepsy.⁶

To assess recent trends and establish a baseline understanding of marijuana use among adult residents in Los Angeles County prior to the passage of the 2016 law

[†]We use the term marijuana rather than cannabis in most instances in this report, but the two terms are used interchangeably in California legislation.

1. AB-64 Cannabis: Licensure and regulation (2017-2018) https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180AB64

2. National Academies of Sciences, Engineering, and Medicine. 2017. *The Health Effects of Cannabis and Cannabinoids: Current State of Evidence and Recommendations for Research*. Washington, DC: The National Academies Press. <http://nationalacademies.org/hmd/Activities/PublicHealth/MarijuanaHealthEffects.aspx>

3. Volkow ND, Baler RD, Compton WM, and Weiss SRB. Adverse health effects of marijuana use. *N Engl J Med.* 2014; 370:2219-27. <https://www.nejm.org/doi/full/10.1056/NEJMra1402309>

4. Hasin DS, Saha TD, Kerridge BT, Goldstein RB, Chou PS, Zhang H, Jung J, Pickering RP, Ruan WJ, Smith SM, Huang B, Grant BF. Prevalence of marijuana use disorders in the United States between 2001-2002 and 2012-2013. *JAMA Psychiatry.* 2015; 72 (12): 1235-1242. <https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2464591>

5. National Survey on Drug Use and Health: State Estimates of Mental Health and Substance Use. <https://nsduhweb.rti.org/respweb/estimates.html>

legalizing adult use, data were analyzed from the 2005, 2011, and 2015 cycles of the Los Angeles County Health Survey (LACHS). Once available, data from the 2018 survey will be used to assess the early impacts of the law.

In the 2011 and 2015 LACHS, respondents were asked: "In the past year, have you ***used any form*** of marijuana, even just one time?" In the 2005 LACHS, respondents were asked: "In the past year, have you ***smoked*** marijuana, even just one time?" As a point of reference, recent national and state level data consistently show that approximately two-thirds of past year users ages 18 and older have used marijuana in the past month,⁵ a widely used measure of current use. Additionally, in the 2011 and 2015 LACHS, a follow-up question was asked of those who responded that they had used marijuana in the past year: "Do you have a medical marijuana card or a recommendation from a doctor for medical marijuana?"

Trends in Marijuana Use

- From 2005 to 2011, the percent of adults who reported using marijuana in the past year remained relatively unchanged (8.2% and 8.5%, respectively). However, use increased to 11.6% in 2015 (Table 1).
- Increases from 2011 to 2015 were found among both males and females.
- From 2011 to 2015, increases were seen among all age groups and races/ethnicities, although some of these were not statistically significant[#] differences.
- Also, increases were seen across all Service Planning Areas (SPAs).

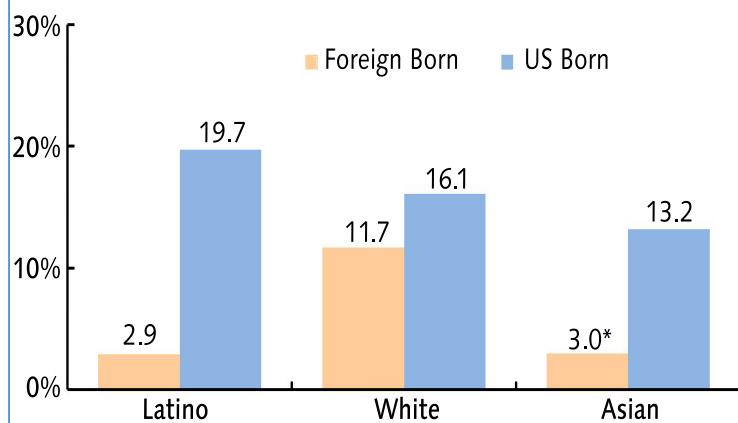
Characteristics of Marijuana Users

- In 2015, 11.6% or approximately 890,000 adults ages 18 years and older reported using any form of marijuana in the past year.
- Marijuana use in the past year was higher among males (15.8%) than females (7.6%).

[#]A difference is considered statistically significant when the 95% confidence intervals (CIs) do not overlap when comparing one group to another.

- Adults ages 18-20 years (27.4%) and 21-29 years (21.9%) reported using marijuana in the past year at higher rates than other age groups, while those ages 65 years and older (4.3%) reported lower use.
- Marijuana use in the past year was lower among Latinos (9.5%) and Asians (5.5%) than among whites (15.2%) and African Americans (20.0%). However, these differences were influenced by country of birth, as 19.7% of US born Latinos and 13.2% of US born Asians reported using marijuana in the past year (Figure 1).
- Marijuana use in the past year was lower among respondents in households with incomes below 100% of the federal poverty level (FPL) (8.2%) compared to those in households at 100%-199% FPL (12.7%), at 200%-299% FPL (10.7%) and at 300% or above the FPL (13.1%). However, these findings were also influenced by country of birth. For example, 19.3% of US born adults in households with incomes below 100% FPL reported using marijuana in the past year, including 15.6% of Latinos, 21.9% of African Americans, and 23.2% of whites (data not shown).

FIGURE 1: Percent of Adults Who Reported Using Marijuana in the Past Year by Race/Ethnicity and Nativity, LACHS 2015



*Data are unstable and should be interpreted with caution.

Note: Data for African Americans, Native Hawaiian and other Pacific Islanders, and American Indian/Alaskan Natives are suppressed due to confidentiality (cell sizes <5).

**TABLE 1: Percent of Adults Who Reported Using Marijuana in the Past Year,
LACHS 2005-2015**

	2015		2011		2005	
	Percent	95% CI	Percent	95% CI	Percent	95% CI
LOS ANGELES COUNTY	11.6%	10.5 – 12.6	8.5%	7.6 – 9.4	8.2%	7.4 – 9.1
GENDER						
Male	15.8%	14.0 – 17.5	12.3%	10.7 – 13.9	11.7%	10.3 – 13.1
Female	7.6%	6.5 – 8.6	4.9%	4.1 – 5.8	5.0%	4.0 – 5.9
AGE GROUP						
18-20	27.4%	20.7 – 34.1	18.9%	13.2 – 24.6	21.5%	15.1 – 27.9
21-29	21.9%	18.4 – 25.5	14.7%	11.5 – 17.8	14.7%	11.9 – 17.6
30-39	10.2%	8.0 – 12.5	9.4%	7.3 – 11.5	8.2%	6.5 – 10.0
40-64	8.1%	7.0 – 9.3	5.9%	5.0 – 6.9	6.2%	5.3 – 7.2
65+	4.3%	3.2 – 5.4	2.6%	1.5 – 3.7	1.1%*	0.3 – 1.9
RACE/ETHNICITY[◊]						
Latino	9.5%	8.0 – 11.0	6.9%	5.6 – 8.3	5.4%	4.4 – 6.4
White	15.2%	13.3 – 17.1	11.6%	10.0 – 13.3	11.5%	9.9 – 13.2
African American	20.0%	16.3 – 23.8	12.7%	9.1 – 16.2	14.1%	10.6 – 17.7
Asian	5.5%	3.2 – 7.8	4.4%*	2.4 – 6.3	4.1%*	2.0 – 6.2
EDUCATION						
Less than high school	5.0%	3.4 – 6.6	4.2%	2.7 – 5.6	5.3%	3.7 – 7.0
High school	15.8%	13.1 – 18.5	10.9%	8.4 – 13.4	8.9%	7.0 – 10.7
Some college or trade school	16.0%	13.7 – 18.3	9.8%	8.1 – 11.6	10.6%	8.7 – 12.6
College or post graduate degree	9.2%	8.0 – 10.5	9.1%	7.6 – 10.6	7.9%	6.5 – 9.2
FEDERAL POVERTY LEVEL						
0-99% FPL	8.2%	6.5 – 9.8	7.2%	5.1 – 9.2	6.9%	5.2 – 8.7
100%-199% FPL	12.7%	10.6 – 14.8	7.3%	5.5 – 9.1	6.9%	5.2 – 8.7
200%-299% FPL	10.7%	7.8 – 13.7	8.6%	6.1 – 11.0	9.0%	6.8 – 11.3
300% or above FPL	13.1%	11.3 – 14.8	10.0%	8.6 – 11.4	9.4%	8.1 – 10.7
SERVICE PLANNING AREA						
Antelope Valley	14.2%	9.4 – 19.1	7.8%	4.4 – 11.3	8.0%	5.8 – 10.2
San Fernando	11.1%	8.9 – 13.2	9.5%	7.4 – 11.6	10.4%	8.1 – 12.6
San Gabriel	7.7%	5.6 – 9.8	4.8%	3.4 – 6.2	4.5%	3.1 – 5.9
Metro	15.1%	11.7 – 18.5	11.1%	8.3 – 14.0	12.9%	10.0 – 15.8
West	15.2%	11.3 – 19.2	10.2%	7.0 – 13.3	8.6%	5.5 – 11.6
South	11.9%	8.9 – 14.9	6.9%*	3.7 – 10.0	7.5%	5.2 – 9.9
East	9.8%	7.0 – 12.7	7.1%	4.7 – 9.4	5.5%	3.6 – 7.3
South Bay	13.0%	10.1 – 15.8	10.9%	8.3 – 13.6	8.5%	6.3 – 10.7

*Data are unstable and should be interpreted with caution.

[◊]Data for Native Hawaiian and other Pacific Islanders and American Indian/Alaskan Natives are suppressed due to confidentiality (cell sizes <5).

- A lower percent of respondents with less than a high school degree (5.0%) or with a college or post graduate degree (9.2%) reported using marijuana in the past year than respondents who were high school graduates (15.8%) or had completed some college or trade school (16.0%).
- The differences in marijuana use by education level were also influenced by country of birth. For example, among US born adults with less than a high school degree, 16.7% reported using marijuana in the past year, including 14.3% of Latinos, 19.8%* of African Americans, and 20.5%* of whites. Those born outside the US reported much lower marijuana use across all education levels (2.1%* among those with less than a high school degree, 6.2% among those who were high school graduates, 6.3% among those who had completed some college or trade school, and 4.3% among those with a college or post graduate degree (data not shown).

TABLE 2: Among Adults Who Reported Using Marijuana in the Past Year, Percent Who Reported Having a Medical Marijuana ID Card or a Doctor's Recommendation, LACHS 2011 & 2015

	2015		2011	
	Percent	95% CI	Percent	95% CI
LOS ANGELES COUNTY	32.6%	28.3 – 36.9	20.7%	16.3 – 25.0
GENDER				
Male	34.2%	28.7 – 39.8	18.3%	13.2 – 23.4
Female	29.4%	23.0 – 35.9	26.1%	18.2 – 34.0
AGE GROUP				
18-20	23.9%	12.0 – 35.7	11.1%*	2.1 – 20.1
21-29	26.2%	18.7 – 33.7	15.4%*	7.8 – 23.1
30-39	37.2%	26.5 – 47.9	29.5%	18.4 – 40.6
40-64	39.2%	32.0 – 46.4	25.4%	18.2 – 32.7
65+	45.2%	32.8 – 57.7	15.8%*	1.2 – 30.4

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- Marijuana use in the past year among adults varied by SPA with the lowest percent in the San Gabriel SPA (7.7%) and the highest percent in the Metro (15.1%) and West (15.2%) SPAs.

Medical Marijuana ID Card or Doctor's Recommendation

- Among adults who reported using marijuana in the past year, the percent who also reported having a medical marijuana ID card or doctor's recommendation for its use increased from 20.7% in 2011 to 32.6% in 2015 (Table 2).
- This increase was higher among males (from 18.3% to 34.2%) than among females (from 26.1% to 29.4%).
- The increase was also larger among adults 65 years and older than among adults in younger age groups.
- In 2015, among adults who reported using marijuana in the past year, the percent that also had a medical marijuana ID card or doctor's recommendation increased with age, from 23.9% among those ages 18-20 years to 45.2% among those ages 65 years and older.

Marijuana and Other Substance Use

- In 2015, adults who reported using marijuana in the past year were more likely to currently smoke cigarettes (25.1%) and to have used an e-cigarette in the past month (10.1%) compared to those who did not use marijuana in the past year (11.7% and 2.5%, respectively) (Figure 2).
- Additionally, comparing those who reported using marijuana in the past year to those who did not, the former were more likely to have reported binge drinking in the past month (38.7% vs. 12.9%) and to have reported misusing prescription drugs in the past year (14.8% vs. 4.3%).

FIGURE 2: Percent of Adults Who Currently Smoke Cigarettes, Used an E-Cigarette or Binge Drank in the Past Month, or Misused Prescription (Rx) Drugs in the Past Year, by Whether or Not Reported Using Marijuana in the Past Year, LACHS 2015

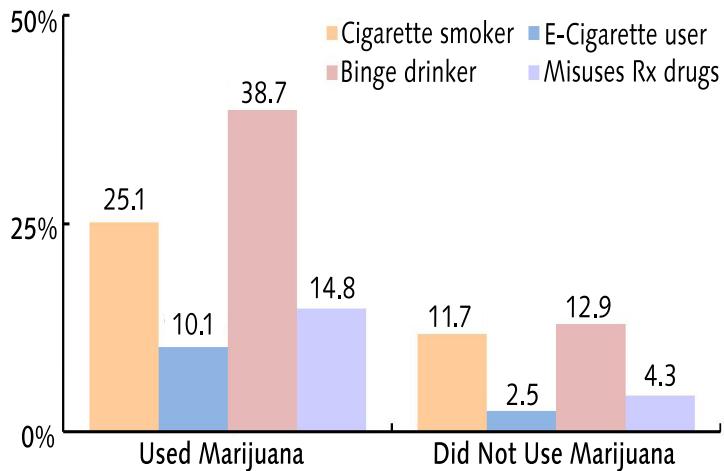
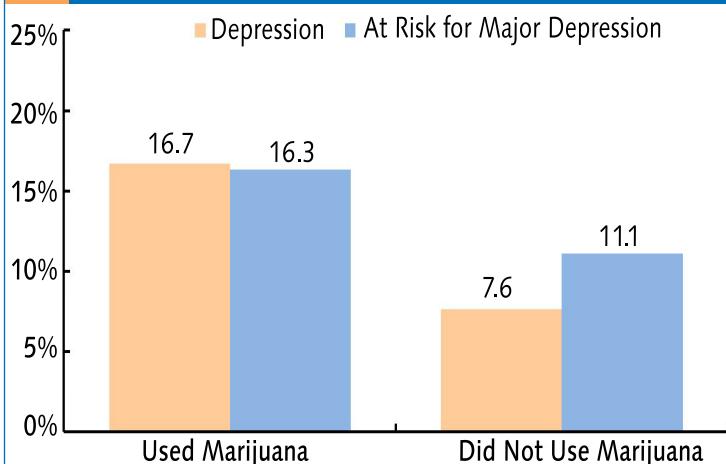


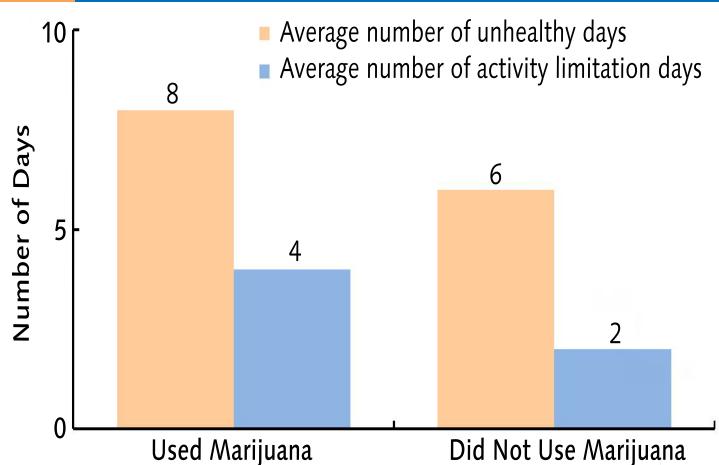
FIGURE 3: Percent of Adults Who Have Depression or Are at Risk for Major Depression, by Whether or Not Reported Using Marijuana in the Past Year, LACHS 2015



Marijuana and Health

- Adults who reported using marijuana in the past year were more likely to report having depression (16.7%) and being at risk for major depression (16.3%) compared to those who did not use marijuana in the past year (7.6% and 11.1%, respectively) (Figure 3).
- Health-related quality of life was also associated with marijuana use as those who reported using marijuana in the past year also reported a higher average number of unhealthy days (8) and activity limitation days (4) in the past month compared to those who reported not using marijuana in the past year (6 days and 2 days, respectively) (Figure 4).
- No significant differences were found between those with and without a medical marijuana ID card or doctor's recommendation on any of these health conditions or health-related quality of life indicators.

FIGURE 4: Average Number of Days in the Past Month that Adults Reported Unhealthy Days and Activity Limitation Days, by Whether or Not Reported Using Marijuana in the Past Year, LACHS 2015



Discussion

These findings indicate a recent increase in use of marijuana among adults in Los Angeles County, consistent with state and national trends. Of concern is the fact that use was highest among young adults 18 to 20 years of age. In addition, according to the 2014-2015 California Healthy Kids Survey data from public schools across Los Angeles County, 4.5% of 7th graders, 12.1% of 9th graders, and 18.3% of 11th graders had used marijuana in the past month.⁶ Not only does current California law prohibit the non-medicinal use of marijuana among persons under age 21, but those who start using marijuana during adolescence are more likely to develop CUD when they become adults.²

The extremely low use of marijuana among those not born in the US is encouraging and suggests that cultural norms may have a protective effect in immigrant communities. However, we cannot exclude the possibility that lower use may reflect fear of federal immigration enforcement activities, or that this fear may have contributed to underreporting of marijuana use among respondents born outside the US. Further research is needed to gain a better understanding of the factors contributing to the lower reported use among immigrants and to inform cannabis prevention programs targeting the children of immigrants.⁷

Among US born adults, marijuana use was high among those living below the FPL, a finding that was observed among Latinos, African Americans, and whites. This is of particular concern since marijuana businesses are more likely to locate in low income communities where residents already suffer from a disproportionate burden of illness and disability.⁸

The fact that marijuana use was associated with higher rates of binge drinking, cigarette smoking, and prescription drug misuse points to the importance

of monitoring marijuana use in relation to the use of other substances. An important unanswered question is whether marijuana legalization will increase or decrease the misuse of alcohol and other substances,⁹ highlighting the need for continued monitoring of trends in the misuse of alcohol and other substances post legalization of marijuana.

Use of marijuana with a medical marijuana ID card or a doctor's recommendation has recently increased. While these cross-sectional data do not allow for a determination of the cause and effect relationship between marijuana use and health indicators, marijuana use was associated with an increased prevalence of reported depression and a greater average number of reported unhealthy and activity limitation days in the past month regardless of whether users had a medical marijuana ID card or a doctor's recommendation. However, now that adult marijuana use is legal without a doctor's recommendation, and a medical marijuana ID card simply entitles users to an exemption from the state marijuana sales tax, it will be important to monitor future trends in both medicinal and non-medicinal marijuana use and their relationships with health conditions.

This report on recent trends in adult use of marijuana in Los Angeles County will serve as an important baseline as the Department of Public Health and others assess the health implications of marijuana legalization in the coming years. The 2018 LACHS includes a larger set of questions related to marijuana use frequency (including past month use and number of days in past month), types of marijuana products used (e.g., edibles, vaping), use for treatment of a medical condition, use at the same time as other substances, use in relation to driving, use at home, and second-hand marijuana smoke exposure. Results are anticipated in 2019.

6. WestEd (2015). California Healthy Kids Survey 2014-2015 [Data File]. Available from <http://chks.wested.org>

7. Zapolski TCB, Fisher S, Banks DE, Hensel DJ, Barnes-Najor J. Examining the protective effect of ethnic identity on drug attitudes and use among a diverse youth population. *J Youth Adolesc.* 2017; 46(8):1702-171. <https://link.springer.com/article/10.1007%2Fs10964-016-0605-0>

8. Thomas C, Freisthler B. Examining locations of medical marijuana dispensaries in Los Angeles. *Drug Alcohol Rev.* 2016; 35 (3): 334-337. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4814366/>

9. Wen H, Hockenberry JM, Cummings JR. The effect of medical marijuana laws on adolescent and adult use of marijuana, alcohol, and other substances. *J Health Econ.* 2016; 42: 64-80. <https://www.sciencedirect.com/science/article/abs/pii/S0167629615000351>

Key Public Health Actions to Minimize Adverse Health Impacts of Marijuana Legalization

1. Provide community education and prevention messaging, particularly to youth, pregnant women, and other priority populations at increased risk of adverse health effects.
2. Conduct inspections and enforce regulations to ensure safe marijuana cultivation, distribution, and retail activities.
3. Conduct health impact assessments and provide other evidence-based information to inform policy decisions related to marijuana regulation and taxation. (For more information about health impact assessments, visit the Center for Health Impact Evaluation at <http://publichealth.lacounty.gov/pa/>.)
4. Establish data systems to ensure effective monitoring for adverse health and environmental impacts and rapid response to address these impacts.
5. Promote a health equity framework to ensure that actions are taken to mitigate harms in low income communities, communities of color, and other marginalized populations. (For more information about health equity, visit the Center for Health Equity at <http://publichealth.lacounty.gov/CenterForHealthEquity/>.)

Additional Resources

The Los Angeles County Department of Public Health:

- Offers information and fact sheets regarding the laws and risks related to marijuana use.
<http://publichealth.lacounty.gov/media/Cannabis/>
- Provides current facts on the effects of marijuana on teens and what researchers are looking out for in future studies on marijuana.
<https://www.mjfactcheck.org/los-angeles-county>
- Has a YouTube channel with educational videos, peer-to-peer conversations, and roundtable discussions on marijuana and various effects on teens to promote #BiggerChoices.
www.LetsTalkCannabisLACounty.com
- Provides teen-focused information on the consequences and health effects of marijuana on teens and ways they can make bigger choices than weed.
<http://publichealth.lacounty.gov/sapc/teens/>

The role of **Los Angeles County's Office of Cannabis Management (OCM)**, working closely with the Board of Supervisors and County departments, is to coordinate the implementation of County cannabis policies and regulations.

<http://cannabis.lacounty.gov/>

The **California Department of Public Health** has an educational website on responsible adult use of marijuana post-legalization, as well as other resources on marijuana.

<http://bit.do/letstalkcannabis>

The **National Institute on Drug Abuse (NIDA) for Teens** provides interactive tools and blog posts on marijuana and how it affects teens.

<https://teens.drugabuse.gov/drug-facts/marijuana>

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In this issue:

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For additional information about the LA County Health Survey, visit: www.publichealth.lacounty.gov/ha



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The Los Angeles County Health Survey is a periodic, population-based telephone survey that collects information on sociodemographic characteristics, health status, health behaviors, and access to health services among adults and children in the County. The 2015 survey collected information on a random sample of 8,008 adults and 5,982 children. The survey was conducted for the Los Angeles County Department of Public Health by Abt SRBI Inc., and was supported by grants from First 5 LA, the Los Angeles County Department of Mental Health, and Department of Public Health programs including the Division of Chronic Disease and Injury Prevention, Children's Medical Services, the Emergency Preparedness and Response Program, Substance Abuse Prevention and Control, and Environmental Health.