LABarometer

The Sustainability and Resilience Report

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Special thanks to

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EXECUTIVE SUMMARY

This is the third in our series of quarterly reports on life in Los Angeles County. The theme of this report is sustainability and resilience. Sustainability has several dimensions, both at the individual and the community level. At its most basic, it deals with how individuals and households cope with their own micro-climate: how do they deal with heat and cold in their daily lives? As with so many dimensions of personal life, we find that the ability to cope with heat and cold is strongly related to one's economic position. Households that are better off are more likely to have air-conditioning and to be located in neighborhoods with more trees and shade. Those with less adequate cooling options tend to seek refuge in malls, parks, and the beach. Overall, we find that up to 30% of the LA County population reports sometimes suffering from symptoms related to heat exposure, such as headaches, tiredness/weakness, and heavy sweating.

There is ample evidence that global climate change affects the local climate in a number of ways, so we also have asked our respondents for their opinions about global climate change and how their concerns affect their behavior. The vast majority of Angelenos (upward of 70%) believe that climate change is a threat to the well-being of people living in LA County, and agree with the statement that climate change is mostly due to human activity. A slightly lower share (64%) agree that their actions can make a difference in fighting climate change. Asked about energy-saving devices, some common ones, like LED light bulbs, are owned by three-quarters of the population, but there is considerable scope for improvement. For instance, only 44% report to have well-insulated windows and doors.

As one would expect, those who are most concerned about climate change and who believe their actions make a difference are the ones most likely to adopt environmentally friendly behaviors, like recycling, limiting food waste, and limiting car use. In this realm there also is substantial scope for improvement. For example, less than half of the respondents are aware of government incentives for installing solar panels, electric car ownership, or improvement of home energy efficiency.

Pollution is a pernicious problem that has plagued LA County residents for many decades. One of the most direct consequences of bad air is the prevalence of asthma. About 11% of LA County residents are using medication or an inhaler for asthma. A substantial percentage of Angelenos (20%-30%) rate the quality of the air they breathe or the water they drink as unsafe. The responses show a strong socio-economic gradient: people with a higher income are much more likely to rate the quality of the water they drink and the air they breathe as safe. Wildfires are another aspect of life in LA County with which most residents are familiar. It does not seem that most people try to prevent the consequences of poor air quality. Only about 40% report avoiding going outside when air quality is bad due to wildfires.

Resilience can operate at the individual and the community level. At the individual level, the vast majority of households seem to be utterly unprepared for disasters. Just 8.5% report being very or extremely prepared for a disaster. Less than one third of Angelenos have developed an emergency response plan. When asked about resilience at the neighborhood level (for example, whether people in the neighborhood help each other, whether the neighborhood has effective leaders, or whether the neighborhood tries to prevent and prepare for disasters), the most striking aspect is that the level of agreement with these various statements was invariably highest in neighborhoods with average incomes above the L.A. Metro Area median.

One of the most important dimensions of sustainability is the type of transportation residents of LA County choose. Currently, about 10% of Angelenos own an electric or hybrid car. In view of these cars' generally higher list prices and charging requirements, it is not surprising that ownership is concentrated among populations with higher incomes. Asked about their plans for the future, about one-third state they are at least somewhat likely to buy or lease an electric car in the future. For hybrid cars, that percentage is about 40%. In contrast to current ownership, intention to buy or lease an electric or hybrid car in the future is not related to income. Nevertheless, when asked for reasons not to buy an electric car in the future, price is by far the one most mentioned (more than 50%). "Range anxiety," such as the fear of lacking access to charging stations and the fear of running out of power, is mentioned by about 25%. About 22% mention maintenance cost as a hurdle when considering an electric car. This latter point suggests room for more education, as the typical maintenance costs of an electric car are substantially lower than those of a gasoline-powered car.

The COVID-19 pandemic has severely affected people's transportation preferences, in contrast with fall 2019 from our Mobility report (https://cesr.usc.edu/labarometer/reports_releases). People work from home much more than they used to do before the pandemic struck. When asked about their preferences and expectations, on average people prefer that a large component of their work life remain at home. When comparing their preferences to their expectations, it is clear that people would like to work from home in the future, more than what they expect will be possible.

Those who still travel to work are much less likely to use public transportation than during the pre-COVID-19 period. The overall percentage of respondents using public transportation has fallen from 35% in the fall of 2019 to 12% in June/July 2020. The reduction in use is most dramatic for light-rail. In the fall of 2019, slightly more public transportation users chose light-rail (73.6%) than the bus (69.6%), whereas in June/July 2020 the bus was chosen by 81.6%, compared with 50.3% for light-rail. As far as frequency of usage is concerned, the fraction of L.A. County residents using their private vehicle at least one day per week has decreased significantly from 75% in the pre-COVID period to 66% during the pandemic. The proportions of Angelenos using ride-hailing, bus, and metro at least once a week have more than halved, passing from 11%, 14%, and 9% to 5%, 7%, and 4%, respectively.

We published our first Consumer Sentiment Index in the Livability report based on data collected during July/September 2019 (https://cesr.usc.edu/labarometer/reports_releases). Compared with that period, we find that the index has fallen nationwide. The decline was markedly larger in LA County, falling from 53.7 in 2019 to 47.5 in 2020, compared with the rest of the nation, where it fell from 56.9 in 2019 to 53.0 in 2020. This decline is consistent with the finding that job loss in LA County attributable to the pandemic was markedly greater than that in the country as a whole.

DATA AND METHODS

Sample Information

A total of 1,421 LA County residents participated in the Sustainability and Resilience Survey from June 3, 2020 through July 13, 2020. Participants were recruited from LABarometer's survey panel of 1,896 adults living in randomly selected households throughout LA County, described in greater detail in the Appendix. The participation rate for the survey was 75%. The overall margin of sampling error[†] is 2.6 percentage points.

The table below summarizes select characteristics of our Los Angeles County sample, with and without survey weights.

Select Sample Characteristics

	LA (n = 1,421)	
Fraction of	Unweighted	Weighted
Males	39%	49%
NH Whites	29%	29%
NH Blacks	8%	8%
NH Other	17%	17%
Hispanics	46%	46%
College Graduates	43%	35%
Age 18-34	35%	31%
Age 35-44	23%	21%
Age 45-54	16%	16%
Age 55-64	13%	15%
Age 65+	13%	18%

We calculate weights in two stages: (1) base weights account for the probabilities of selection in the UAS stemming from our sampling procedure, and (2) post-stratification weights align survey distributions with population benchmarks. Population benchmarks for LA County are obtained from the Basic Monthly Current Population Surveys, using data from December 2019 to May 2020 (corresponding to the six months preceding the month of June 2020, when most of the sustainability survey data were collected). The weighted statistics in the table above correspond to the population benchmarks.

[†] **Survey Error**

Factors other than sampling error, including question wording, question order, interviewing mode (e.g. telephone vs. probability-based panels, such as UAS), population coverage, and

impact of current events, may affect the results of any survey. The margin of sampling error is calculated at the 95% confidence level, using a sample proportion of 0.5 to generate an upper bound of uncertainty. Please note that this is only an approximate, and conservative, measure of error. A more precise measure would require upper and lower bounds to be calculated for each individual question or outcome.

Survey Information

The Sustainability and Resilience Survey (UAS 286) took an average of 13 minutes to complete. Respondents participated via computer, mobile device, or tablet, at any time of day or night during the field period. The data, codebooks, and questionnaires associated with the survey are available at https://uasdata.usc.edu/survey/UAS+286.

Analysis

The summary statistics included in this report are based on weighted data. Multivariate statistical analyses were conducted using unweighted data and the following demographic controls: gender, age, education, income, race/ethnicity, an indicator for being born in the U.S., marital status, and employment status. For some analyses, we add to this set of controls indicators for home ownership and residence in Los Angeles City, as well as contextual information, such as local level of pollution, water quality, and income level in the neighborhood. Statistical tests and regression models are not included in this report, but they are available upon request. Throughout the text, we identify effects that are statistically significant at a confidence level of 95%.

This report and links to the data archive are available at https://cesr.usc.edu/labarometer.
For questions about the survey, contact us at labarometer-l@usc.edu.

The USC Dornsife Center for Economic and Social Research is a proud member of the
American Association for Public Opinion Research's Transparency Initiative.
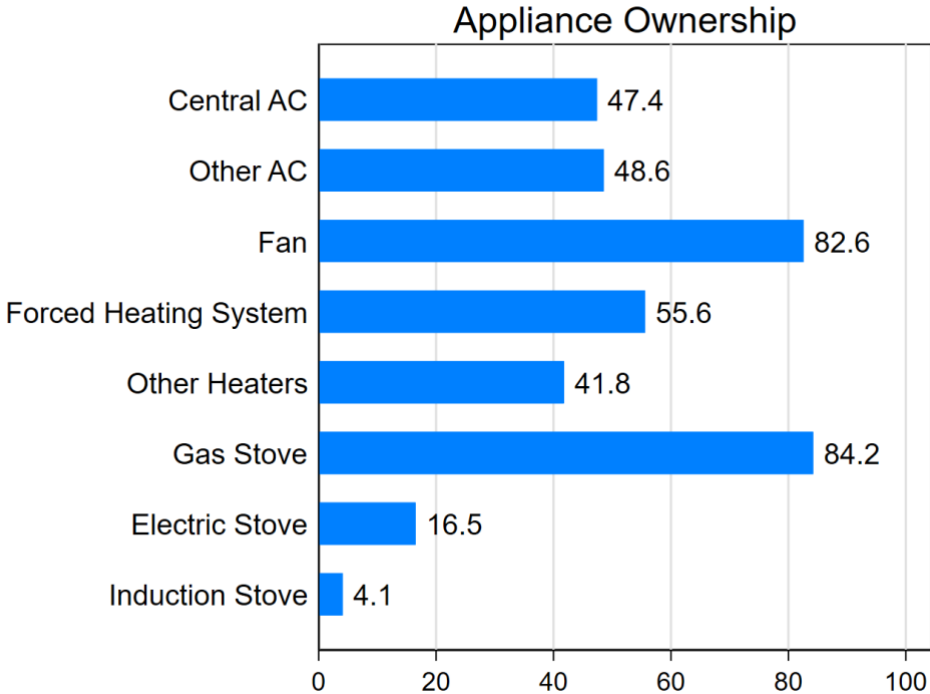
LABarometer is funded by Union Bank

SURVEY RESULTS

How Angelenos Deal with Heat and Cold

Takeaway #1: The ability to control the micro-climate in one's residence varies considerably across socio-economic and demographic groups

♦ **Air-conditioning is much more common among homeowners and higher-income households. People with lower incomes and lower education, and younger people struggle most with broken appliances and poor ventilation.**
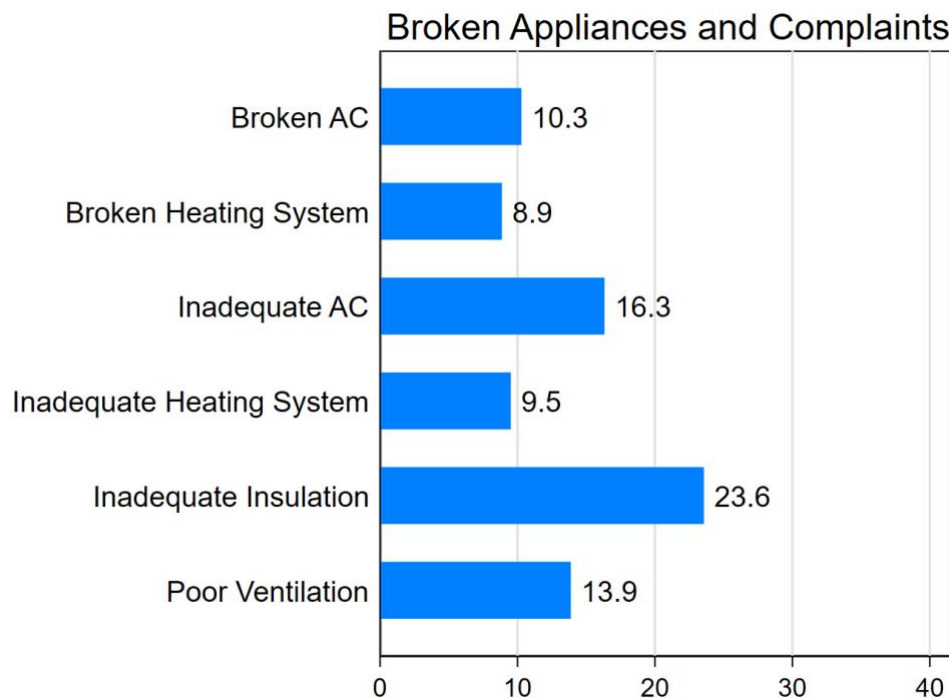
To assess how Angelenos cool or heat their homes, we asked respondents if they owned any of the following appliances: Central air-conditioning; Other type of air-conditioner (window, portable, etc.); Fan (window, ceiling, portable, etc.); Heating system (heat coming from vents in the wall or floor); Other type of heater (portable, etc.); Gas stove; Electric stove; or Induction stove. The figure below shows that many of the appliances are common, with ownership exceeding 40% or 50% for most. The vast majority of respondents report having a fan. Electric or induction stoves are rather rare.

Appliance Ownership

Appliance	Value
Central AC	47.4
Other AC	48.6
Fan	82.6
Forced Heating System	55.6
Other Heaters	41.8
Gas Stove	84.2
Electric Stove	16.5
Induction Stove	4.1

Analysis of ownership by background variables shows that air-conditioning is less common among Hispanics and males. It is much more prevalent among homeowners. The likelihood of having AC increases sharply with income, even conditional on home ownership. Other cooling devices are more common among Hispanics, young, and less affluent individuals.
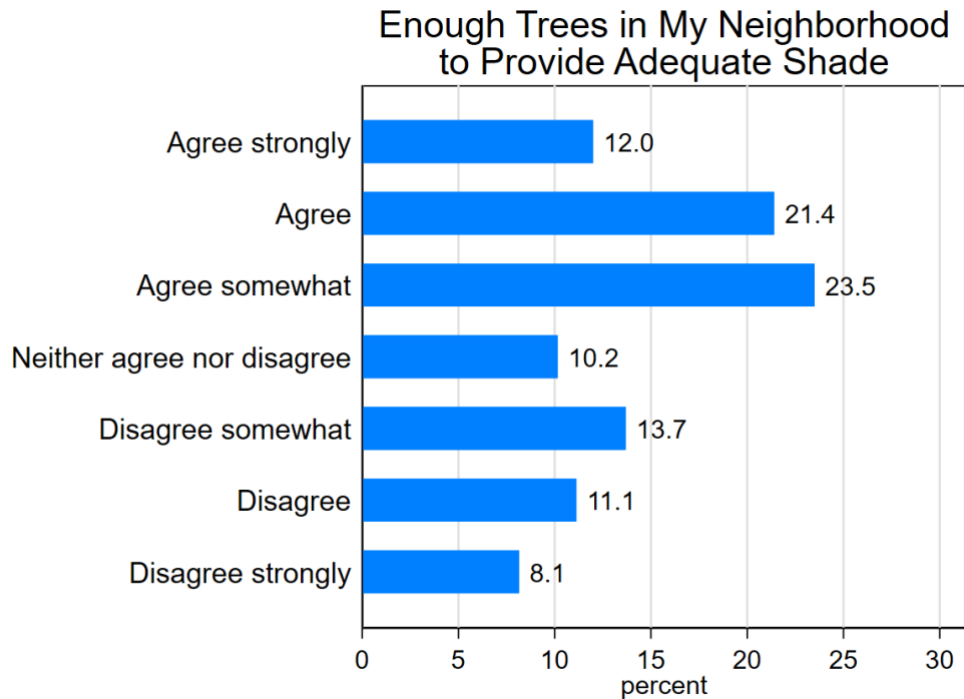
Central heating is more common among respondents with higher education, those with higher incomes, and homeowners. It is less prevalent among Hispanics, Asians, and men.

As the figure below shows, about 10% of Angelenos report having had to deal with broken appliances during the past 12 months. Among those reporting broken appliances, minorities and lower-income respondents are more likely to report that they could not afford to repair an air-conditioner or heater. Complaints about inadequate air-conditioning and heating are reported by approximately 16% and 9% of the sample, respectively. Both are less prevalent among Black respondents. Complaints about inadequate insulation are lodged by almost a quarter of the sample and are less common among Blacks, more affluent households, and homeowners. Complaints about poor ventilation are at 14% and are most common among younger, lower-educated, lower-income respondents.

Broken Appliances and Complaints

Category	Value
Broken AC	10.3
Broken Heating System	8.9
Inadequate AC	16.3
Inadequate Heating System	9.5
Inadequate Insulation	23.6
Poor Ventilation	13.9

♦ **Los Angeles does not provide enough shade.**

Only about one-third of respondents agree or strongly agree when asked if there are enough trees in the neighborhood to provide adequate shade for walking on a hot, sunny day. Further analysis does not show dramatic differences by background characteristics, except for higher endorsement among older respondents and those with higher incomes. Very few people think that bus or metro stops are well shaded (only 17% agree or agree strongly).

Enough Trees in My Neighborhood to Provide Adequate Shade

Response	percent
Agree strongly	12.0
Agree	21.4
Agree somewhat	23.5
Neither agree nor disagree	10.2
Disagree somewhat	13.7
Disagree	11.1
Disagree strongly	8.1

♦ **Respondents who are young, are Hispanic, and have a lower income are more likely to seek cooling places outside their own residence.**

We asked respondents where in the last 12 months they have gone for the sole purpose of cooling down or getting out of the heat. Up to about 49% of the sample have gone someplace just to cool off; beaches/pools, restaurants/cafés, parks/outdoor spaces, malls, and relatives' or friends' houses are the most popular places. Analysis of background variables shows that generally younger respondents and those with lower incomes are more likely to go to a place just to cool off. This is consistent with the fact that these groups are less likely to report having adequate cooling at home. Hispanics are significantly more likely to go to malls and parks to cool down.

Places to Cool Down

Location	Value
Pool/Beach	32.1
Restaurant/Café	26.8
Park/Outdoor Space	25.4
Mall/Store	25.1
Others' House	22.5
Library	11.1
Indoor Rec Center	6.5
Community Center	4.6
Other	4.0
Senior Center	2.2

♦ **The vast majority of workplaces provide adequate cooling.**
Most people (83%) have AC at their workplace; central heating is a bit less common (65%); a little less than half of the sample have windows at the workplace that can be opened and a fan.

Cooling/Heating Appliances at Work

Appliance	Value
Windows (can open)	43.7
Central AC	82.9
Other AC	30.9
Forced Heating System	64.6
Other Heaters	25.5
Fan	46.8

A relatively small percentage of workers (about 15%) spend more than 5 hours of their working time outside in a typical week. About one-third of those report being given additional break time on extremely hot days, and about two-thirds are provided a portable fan and shade from the sun.

Headaches are the most often reported consequence of heat exposure (one-third of respondents), but many other symptoms are listed as well.
When asked if they experienced symptoms due to heat exposure, respondents most often reported headache (31%), tiredness/weakness (24%), heavy sweating (21%), hot/red/dry skin (18%), dizziness (17%), and sunburn (14%). Hospitalizations due to heat exposure are rare (on the order of 1%).

Symptoms of Heat Exposure

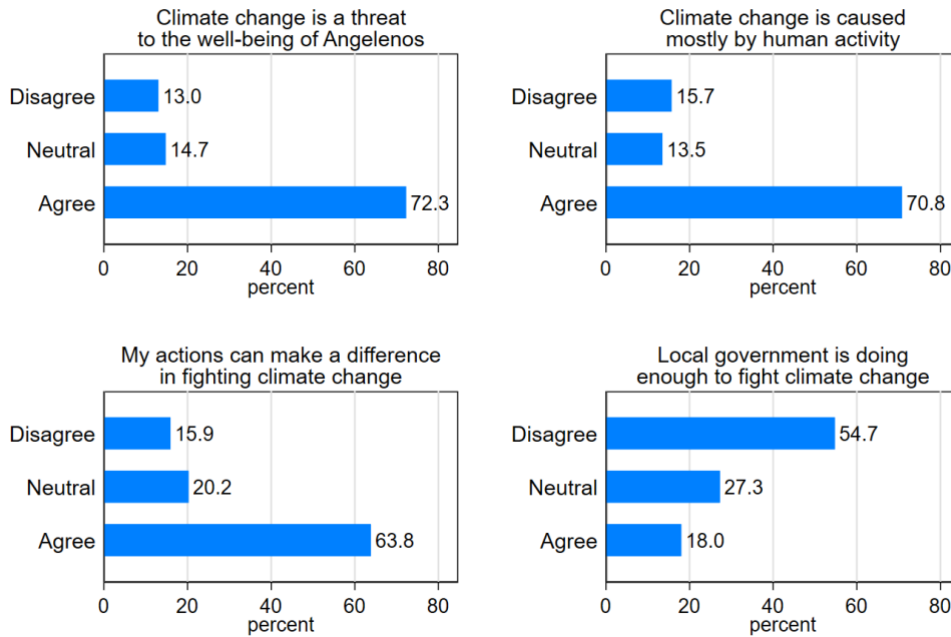| Symptom	Value
Headache	30.8
Tiredness/Weakness	24.4
Heavy Sweating	21.5
Hot/Red/Dry Skin	17.6
Dizziness	16.9
Sunburn	14.3
Muscle Pain/Spasm	10.8
Nausea	9.7
Fast/Strong Pulse	9.2
Heat Rash	6.9
Confusion	4.6
Cold/Pale/Clammy Skin	4.6
Vomiting	3.4
High Body Temperature	3.2
Fast/Weak Pulse	2.1
Passing Out	1.8

Climate Concerns

Takeaway #2: Climate change is a big concern and influences how people behave toward the environment. Knowledge of government-sponsored financial incentive programs is limited and uneven.

♦ **Most respondents see climate change as a serious problem caused by human behavior. Perception on whether local governments are doing enough varies.**

Most respondents agree that climate change is a threat that is caused by human activities, and that individual actions can make a difference. There is considerable disagreement on whether local government is doing enough to fight climate change.
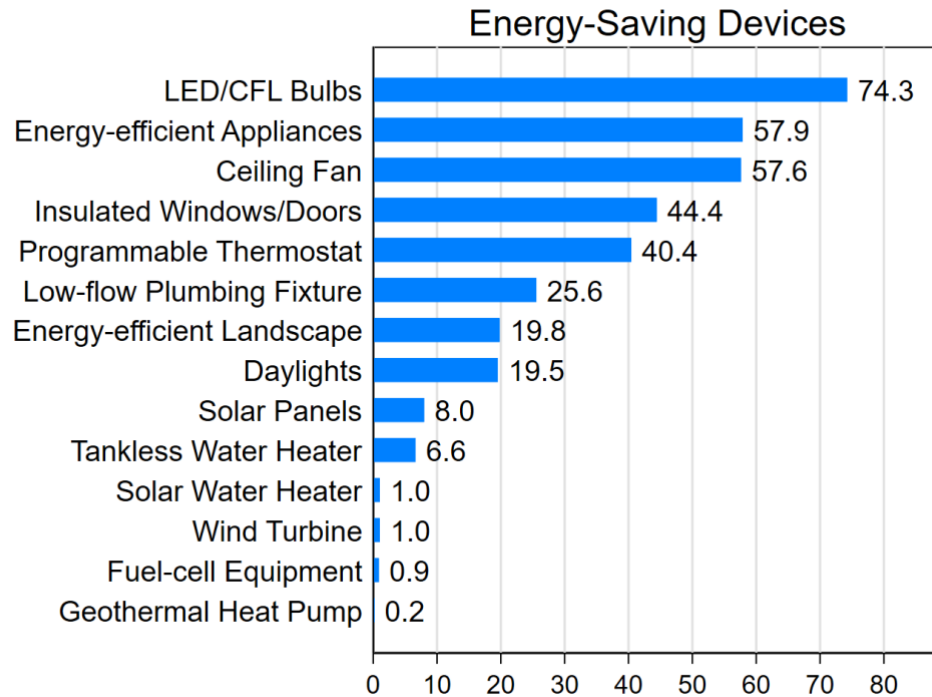
Further analysis shows that respondents with higher education and higher income are most likely to agree that climate change is a threat to the well-being of LA County residents. They are also more likely to agree that climate change is mainly caused by human activities. However, we also see that older respondents (60+) are less likely to believe it is caused by human activity. The age group 40-49 is most likely to state that individual actions can make a difference. Older people are most likely to state that local governments are doing enough.

Opinions about Climate Change

Climate change is a threat to the well-being of Angelenos

	percent
Disagree	13.0
Neutral	14.7
Agree	72.3

Climate change is caused mostly by human activity

	percent
Disagree	15.7
Neutral	13.5
Agree	70.8

My actions can make a difference in fighting climate change

	percent
Disagree	15.9
Neutral	20.2
Agree	63.8

Local government is doing enough to fight climate change

	percent
Disagree	54.7
Neutral	27.3
Agree	18.0

♦ **There is large variation in the ownership of energy-saving devices, which is partly explained by the ability to pay for them.**
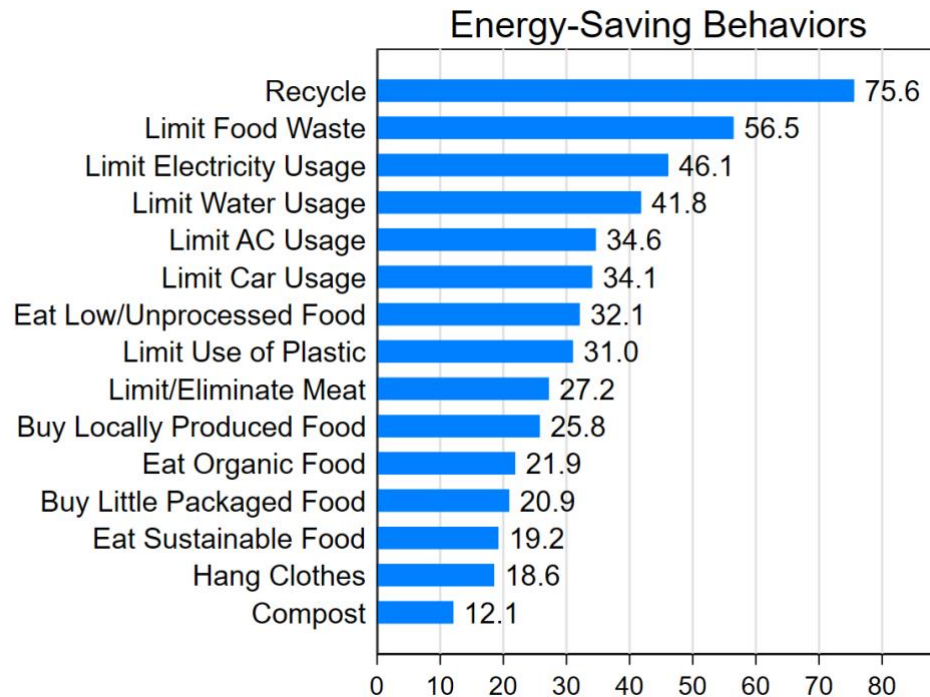
Questions about ownership of energy-saving devices point to the highest rate for LED/CFL bulbs (approximately 75%); 58% have a ceiling fan and energy-efficient appliances. About 44% have well-insulated windows/doors, and 40% have a programmable thermostat; 25% have low-flow plumbing fixtures, and 20% have energy-efficient landscaping. Only 8% of respondents report having solar panels, and 7% report having a tankless water heater; only a small portion own/use other sustainable energy sources (1% or less).

Energy-Saving Devices

Device	Value
LED/CFL Bulbs	74.3
Energy-efficient Appliances	57.9
Ceiling Fan	57.6
Insulated Windows/Doors	44.4
Programmable Thermostat	40.4
Low-flow Plumbing Fixture	25.6
Energy-efficient Landscape	19.8
Daylights	19.5
Solar Panels	8.0
Tankless Water Heater	6.6
Solar Water Heater	1.0
Wind Turbine	1.0
Fuel-cell Equipment	0.9
Geothermal Heat Pump	0.2

To be able to analyze variation in energy-saving devices across different groups, we have constructed a "sustainable device index", which sums up ownership of 14 possible devices. We find that racial/ethnic minorities are much less likely to own/use sustainable energy sources; so are single residents. In contrast, older, better-educated, and more affluent individuals are more likely to own/use sustainable energy sources. Compared to the rest of LA County, L.A. City residents are significantly less likely to own/use sustainable energy sources. One possible explanation for these findings is that many of the energy-saving devices are relatively costly, and not everyone can afford these devices to the same degree.

♦ **People who are most concerned about climate change and who think individual behavior can make a difference put their behavior where their mouth is. Their behavior is consistently more environmentally friendly.**

We have presented respondents with 15 different activities and asked if they undertook any to reduce the burden on the environment. Most likely behaviors, practiced often or very often, include recycling (75%), limiting: food waste (56%); electricity (46%); and water (42%) usage. A fair share also limit car usage (34%), buy/eat unprocessed food (32%), and limit use of plastic (31%) often or very often. Other behaviors, such as limiting meat consumption, buying locally produced food, eating organic food, and buying food with little or no packaging are mentioned by a portion of the sample ranging between 20% and 25%.
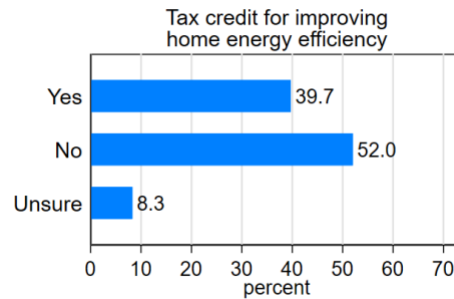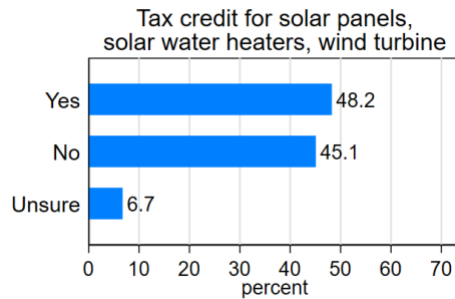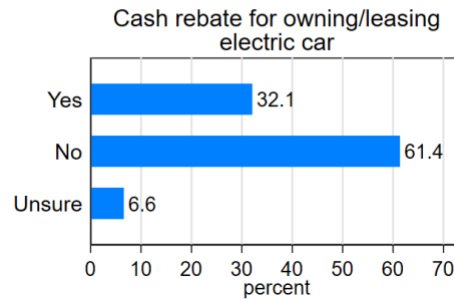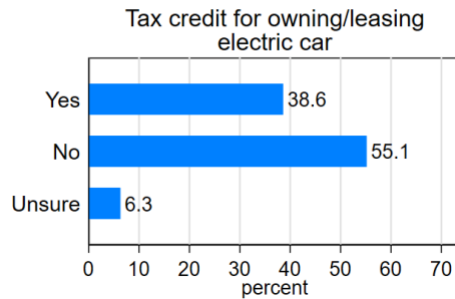
Energy-Saving Behaviors

Behavior	Value
Recycle	75.6
Limit Food Waste	56.5
Limit Electricity Usage	46.1
Limit Water Usage	41.8
Limit AC Usage	34.6
Limit Car Usage	34.1
Eat Low/Unprocessed Food	32.1
Limit Use of Plastic	31.0
Limit/Eliminate Meat	27.2
Buy Locally Produced Food	25.8
Eat Organic Food	21.9
Buy Little Packaged Food	20.9
Eat Sustainable Food	19.2
Hang Clothes	18.6
Compost	12.1

We have created a "sustainable behavior index" by summing up the indicators for whether the aforementioned environmentally friendly behaviors are adopted often or very often. Men, Blacks, and high-income individuals exhibit less environmentally friendly behavior, while singles, older individuals, and college graduates show more environmentally friendly behaviors. Compared with other residents of LA County, L.A. City residents report more environmentally friendly behaviors. Homeowners also show somewhat more environmentally friendly behavior than renters.

It is of interest to relate behaviors to opinions about climate change. When we do that, we observe that being concerned about climate change increases the number of environmentally friendly behaviors one practices. Agreement with the statement "individual actions can make a difference for climate change" is found to be an important driver of environmentally friendly behavior adoption. Those who agree with the statement that the local government is doing enough to fight climate change show more environmentally friendly behavior. When controlling for opinions about climate change, high-income people's behaviors are less environmentally friendly.

♦ **Knowledge of government-sponsored financial incentives is lacking.**

We asked about four government-sponsored programs providing financial incentives to reduce environmental burden. None of the four programs was known by at least half of the respondents. Of the four programs, tax credits for solar panels and the like are the best known, at 48%. Further analysis shows that men, and older, better-educated, and more affluent individuals are more likely to know about tax credits/incentives. Minorities and LA City residents are less likely to be familiar with these government programs.

Awareness of...

Tax credit for owning/leasing electric car

Yes	38.6
No	55.1
Unsure	6.3

percent

Cash rebate for owning/leasing electric car

Yes	32.1
No	61.4
Unsure	6.6

percent

Tax credit for solar panels, solar water heaters, wind turbine

Yes	48.2
No	45.1
Unsure	6.7

percent

Tax credit for improving home energy efficiency

Yes	39.7
No	52.0
Unsure	8.3

percent

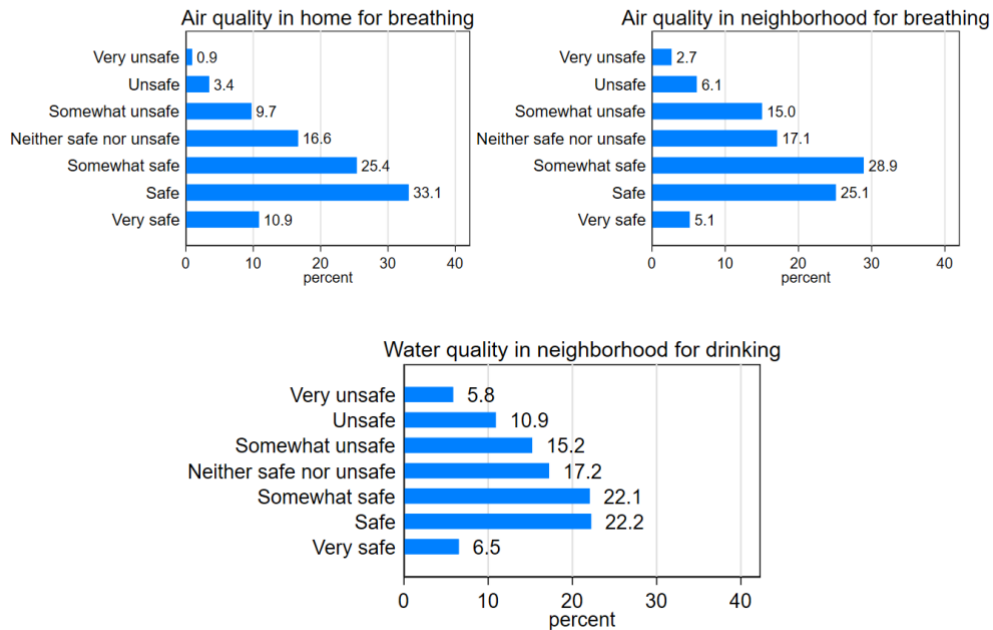# Pollution

Takeaway #3: Money buys cleaner air and water

♦ **About 11% of LA County residents use medication or inhalers for asthma.**

Breaking this down by background characteristics shows that men are less likely to use medication or inhalers, while the use of medication or inhalers goes up substantially with age. Use of medication or inhalers for asthma is more prevalent among L.A. City residents than among individuals living somewhere else in LA County. We have linked the survey data to an index of local pollution, measuring the average annual concentration of fine particulate matter (PM 2.5 in micrograms per cubic meter of air) in the air for the years 2012 to 2014. Controlling for demographics, including residence in L.A. City, we find a negative association between PM 2.5 concentration and use of medication or inhalers for asthma. Different factors may contribute to this finding. One possibility is that people with breathing problems tend to migrate to areas with better air quality. Second, since our pollution index refers to the years 2012-2014, it may not accurately capture the current level of pollution across areas in Los Angeles. Finally, individuals living in more polluted areas tend to be of lower socio-economic status and to exhibit lower rates of health care utilization. Hence, they may be less likely to be diagnosed with asthma and to be prescribed medication for it.

♦ **A large minority consider air or water quality to be unsafe.**

About 70% and 60% of respondents rate the air quality in their homes and in their neighborhood as somewhat safe, safe, or very safe, respectively. About 50% of respondents say the same about the quality of drinking water in their neighborhood.

How Safe Is...

Air quality in home for breathing

	percent
Very unsafe	0.9
Unsafe	3.4
Somewhat unsafe	9.7
Neither safe nor unsafe	16.6
Somewhat safe	25.4
Safe	33.1
Very safe	10.9

Air quality in neighborhood for breathing

	percent
Very unsafe	2.7
Unsafe	6.1
Somewhat unsafe	15.0
Neither safe nor unsafe	17.1
Somewhat safe	28.9
Safe	25.1
Very safe	5.1

Water quality in neighborhood for drinking

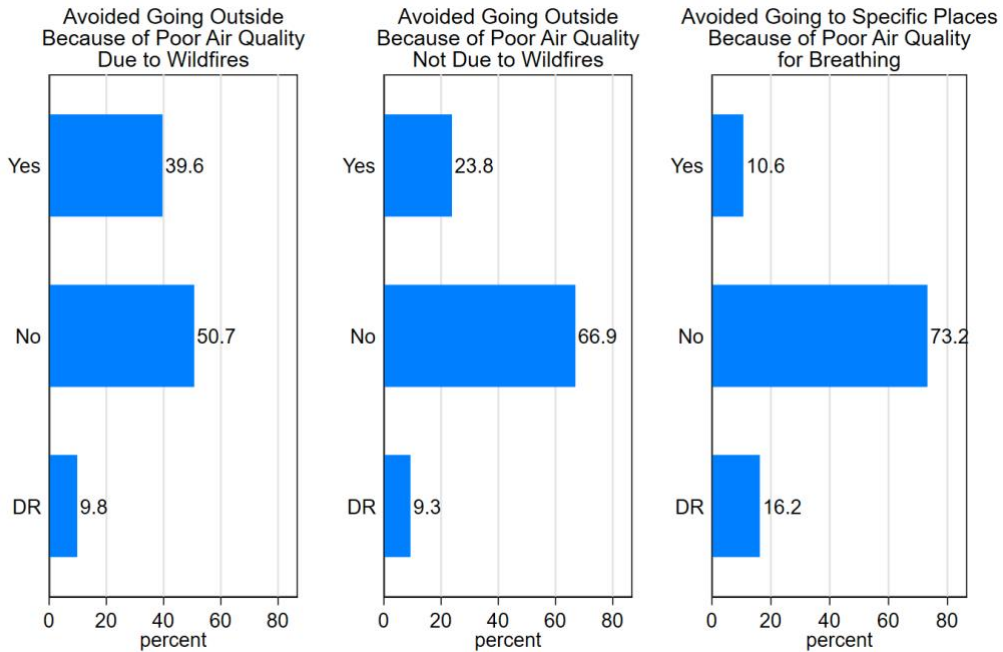|	percent
Very unsafe	5.8
Unsafe	10.9
Somewhat unsafe	15.2
Neither safe nor unsafe	17.2
Somewhat safe	22.1
Safe	22.2
Very safe	6.5

When considering background characteristics, we find that Hispanics, middle-aged respondents, singles, and LA City residents are more likely to report poor air quality at home. Respondents with higher incomes report better air quality at home. Importantly, a one-standard deviation increase in the local concentration of PM 2.5 is associated with a 2.5 percentage point increase in the likelihood of reporting poor air quality at home.

The results for neighborhood air quality are similar, with some important differences. Hispanics and LA City residents are more likely to report poor air quality in the neighborhood, while high-income respondents are 8 percentage points less likely to report poor air quality in their neighborhood. A one-standard deviation increase in the local concentration of PM 2.5 is associated with a nearly 5 percentage-point increase in the likelihood of reporting poor air quality in the neighborhood.

Regarding water quality, minorities are much more likely to report poor water quality. In contrast, seniors and more affluent individuals are significantly less likely to report poor water quality. We correlate individuals' assessments of water quality with an index measuring the average annual concentration of 10 common contaminants in the water systems for the years 2005-2013 and find no evidence of a sizeable or statistically significant association.

♦ **People do try to avoid bad air quality**

Wildfires are one of the constants of life in Los Angeles County. Apart from the risk of losing one's residence, some fires lead to very bad air quality, sometimes for extended periods. Many LA County residents are attuned to that. About 40% report avoiding going outside because of poor air quality due to wildfire. A smaller percentage (24%) report avoiding going outside because of poor air quality due to reasons other than wildfires, and 11% avoided going to specific places in LA because of concerns about poor air quality.
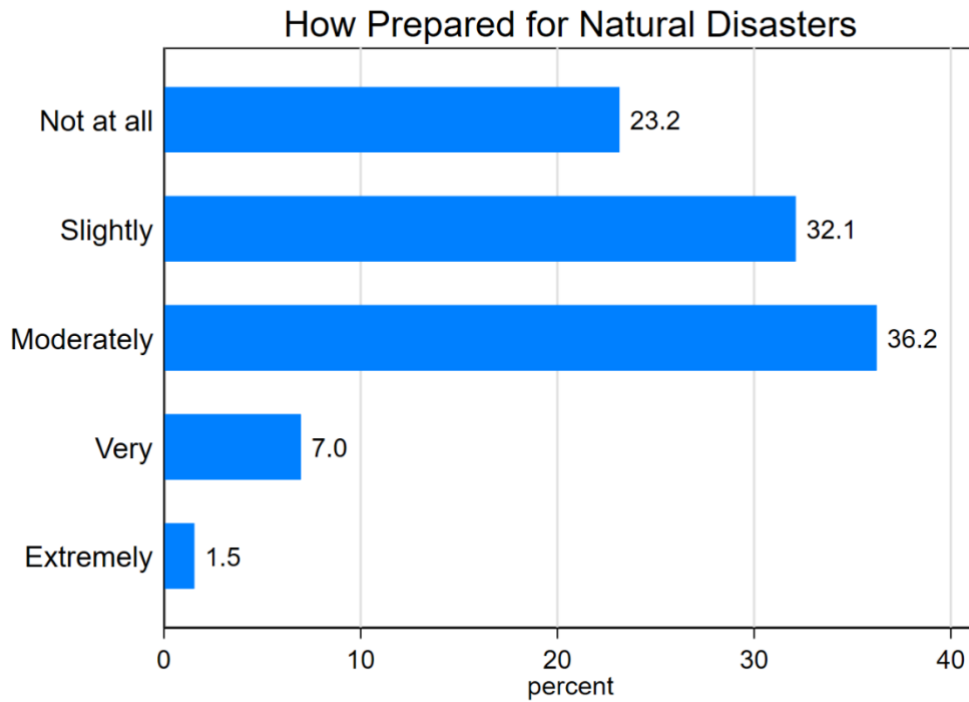

DR: Don't Remember

Further investigation of the patterns of avoiding bad air quality reveals that men and respondents with higher incomes are less likely to be concerned with poor air quality due to reasons other than wildfire when going outside. As one would expect, the higher the local PM 2.5 concentration, the higher the likelihood that respondents report avoiding going outside due to air quality concerns. We also find that LA City residents and those who live in areas with high PM 2.5 concentration report they are more likely to avoid specific places due to poor air quality for breathing.

Community Resilience

Takeaway #4: Respondents are mostly not prepared for disasters. Communities with a higher average income are most likely to report that their community is resilient.
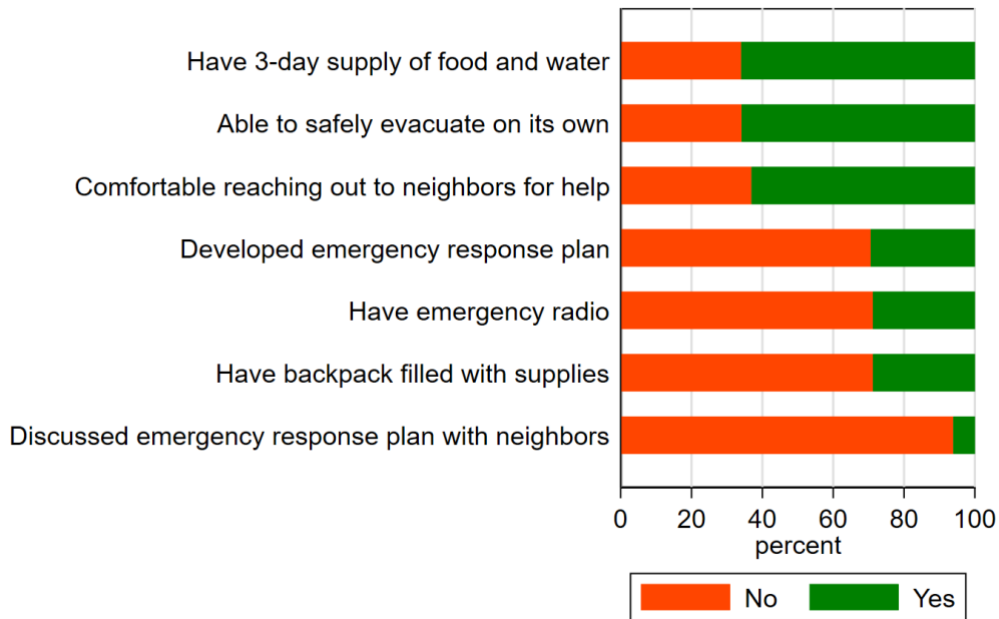
♦ **Most households feel they are not prepared for a disaster; only 8.5% feel they are very or extremely prepared.**

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How Prepared for Natural Disasters

We find that confidence about disaster preparedness is higher among men, older individuals, and higher socio-economic status. It is lower among Asians and Hispanics.

About 30% of households have developed an emergency response plan, and only 6% have discussed such a plan with their neighbors. In terms of active preparations, approximately 30% report having a backpack with supplies ready to take in case of emergency, while 66% report having a 3-day food and water supply in the house (this may partly reflect hoarding behavior during the COVID-19 pandemic). About 66% report that household members would be able to evacuate without assistance, and 63% would feel comfortable reaching out to neighbors for help. As one would expect, those who are more confident they are prepared have taken the most actions to be prepared. We find that preparedness increases with age, education, and income. It is lower among Asians and Hispanics.
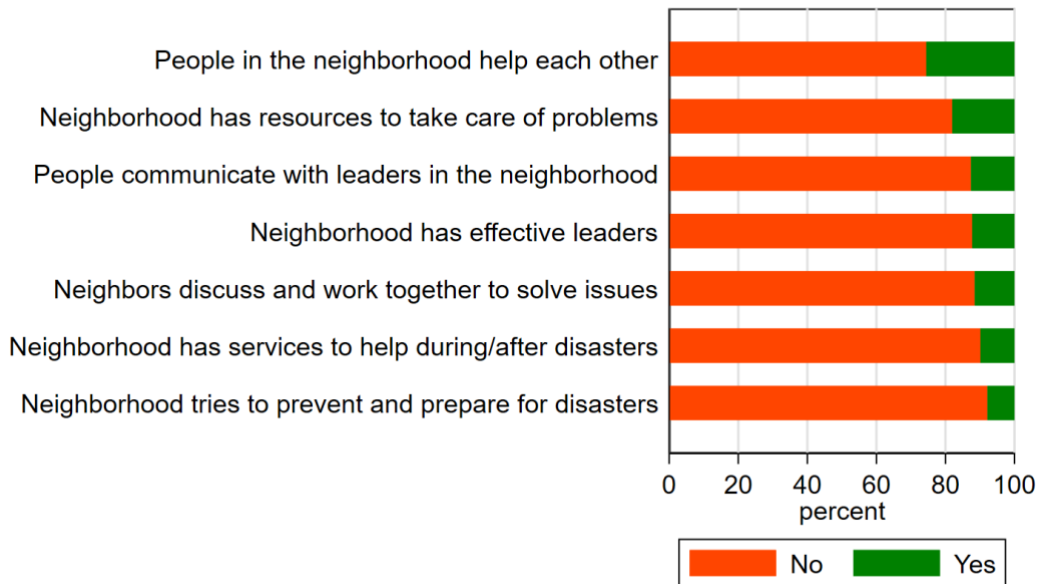
Disaster Preparedness: Behaviors

♦ **Community resilience is highest in well-to-do neighborhoods.**
As the figure shows, generally not many respondents endorse the various indicators of community coherence and resilience. We relate these indicators to both individual characteristics and neighborhood income. The latter is measured as the percent of families in the neighborhood with incomes above the median for the Los Angeles Metro Area. Generally, individual characteristics do not affect answers to the questions much, although Asian respondents are somewhat less likely to agree that "people in the neighborhood help each other" or that the "neighborhood has services and programs to help people during and after a disaster". The most striking finding is that for each community resilience indicator, the fraction of individuals who agree with the statement is significantly higher in neighborhoods where more families have incomes above the median family income in the Los Angeles Metro Area.

Community Resilence Indicators
(share of those who somewhat agree/agree/strongly agree with the statement)

Hybrid and Electric Cars

Takeaway #5: Although current ownership of hybrid or electric cars is modest, there is considerable room for growth.
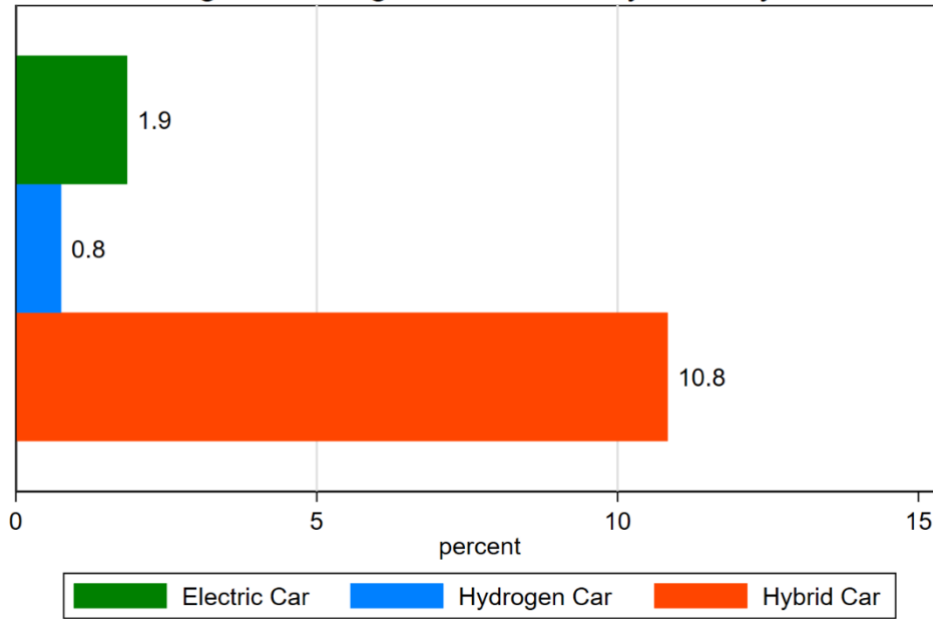
♦ **Employer commuter benefit programs are rare and not popular.**

19% of respondents report that their employer has a commuter benefit program; 15% do not know. For those who are offered the program, take-up is about 25%. There is tentative evidence that higher-income respondents are less likely to participate in a program, if offered.

♦ **Ownership of hybrid or electric cars is about 10%. About one-third of the sample is considering buying or leasing a hybrid or electric car in the future.**
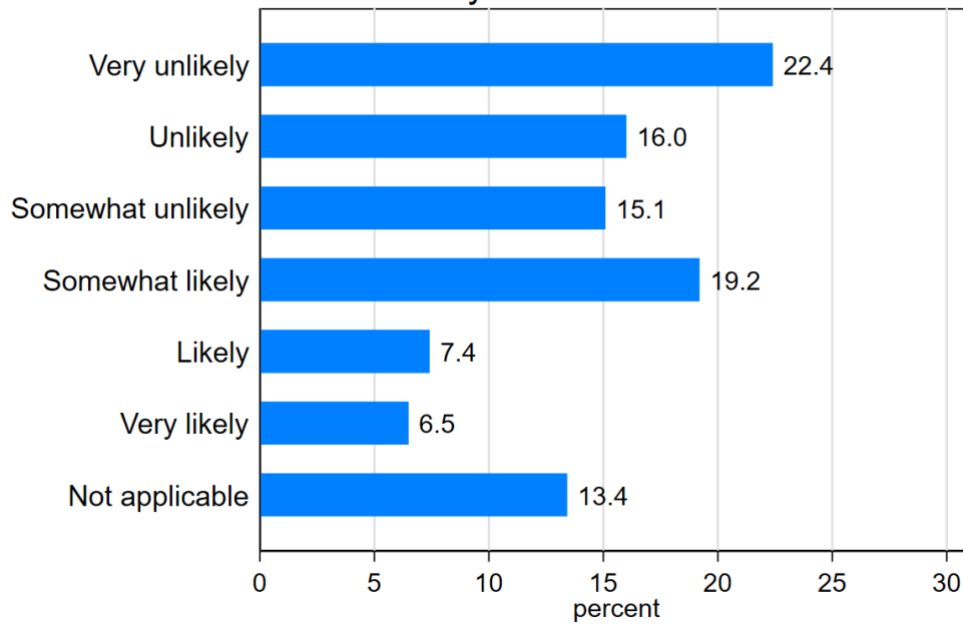
In view of the fact that hybrid and electric cars tend to be more expensive than purely gasoline-powered cars, it is not surprising the ownership of these cars is more prevalent among higher-income respondents. There is weak evidence that respondents who think that individual actions matter to fight climate change are more likely to own an environmentally friendly car.

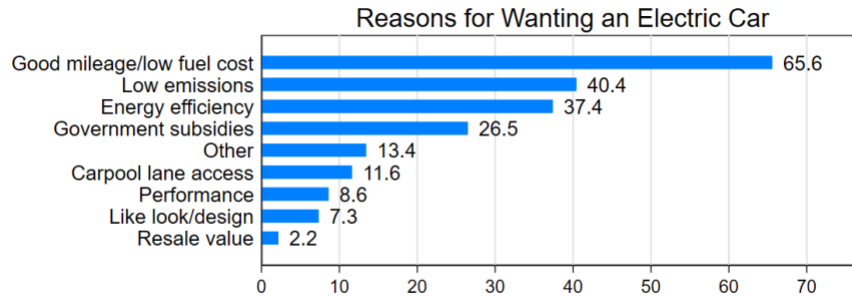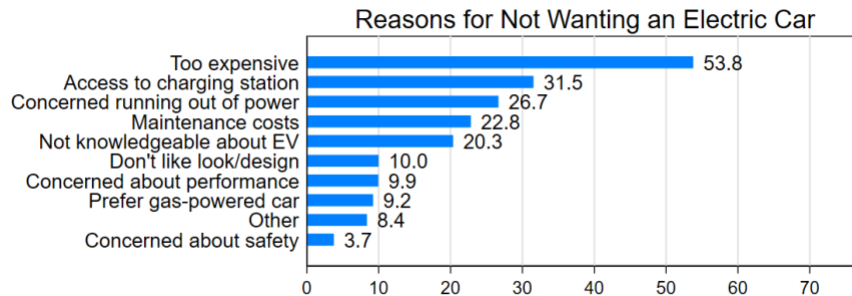## Owning or Leasing Environmentally Friendly Cars

About 33% of the sample report they are at least somewhat likely to buy/lease an electric car in the future.

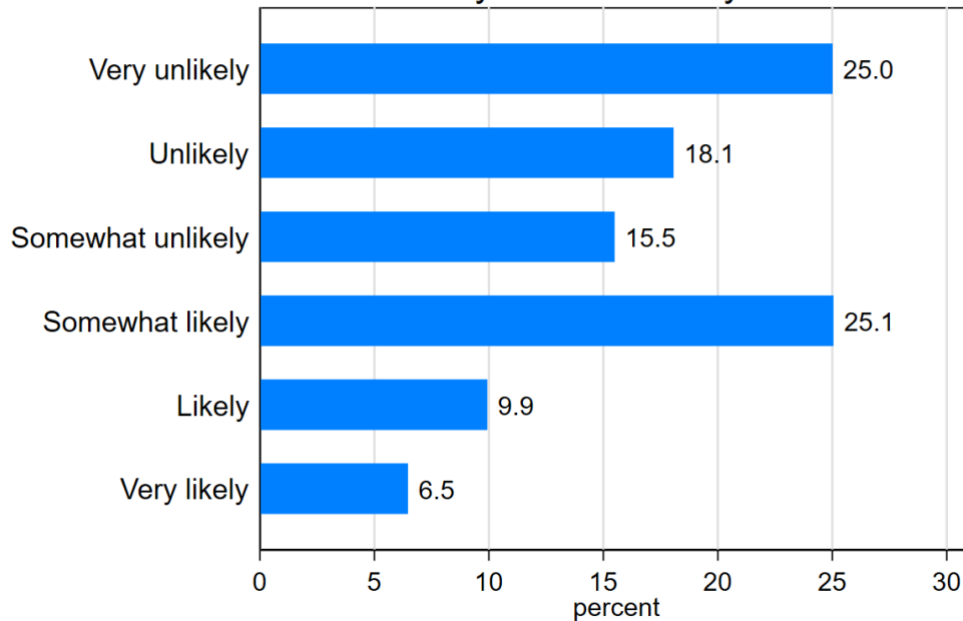## How Likely That the Next Car to Buy or Lease Is Electric

The figure below shows that the main reasons for not wanting an electric car are related to purchasing costs (54%), access to charging stations (32%), concerns about running out of power (27%), and maintenance costs (23%). These concerns can be addressed by installing more charging stations, by lowering prices as a result of mass production, and more information about maintenance, which is thought to be substantially lower than for gasoline-powered cars.

The main reasons for wanting an electric car are good gas mileage (66%), low emissions (40%), energy efficiency (37%), and government subsidies (26%).

Reasons for Not Wanting an Electric Car

Reason	Value
Too expensive	53.8
Access to charging station	31.5
Concerned running out of power	26.7
Maintenance costs	22.8
Not knowledgeable about EV	20.3
Don't like look/design	10.0
Concerned about performance	9.9
Prefer gas-powered car	9.2
Other	8.4
Concerned about safety	3.7

Reasons for Wanting an Electric Car

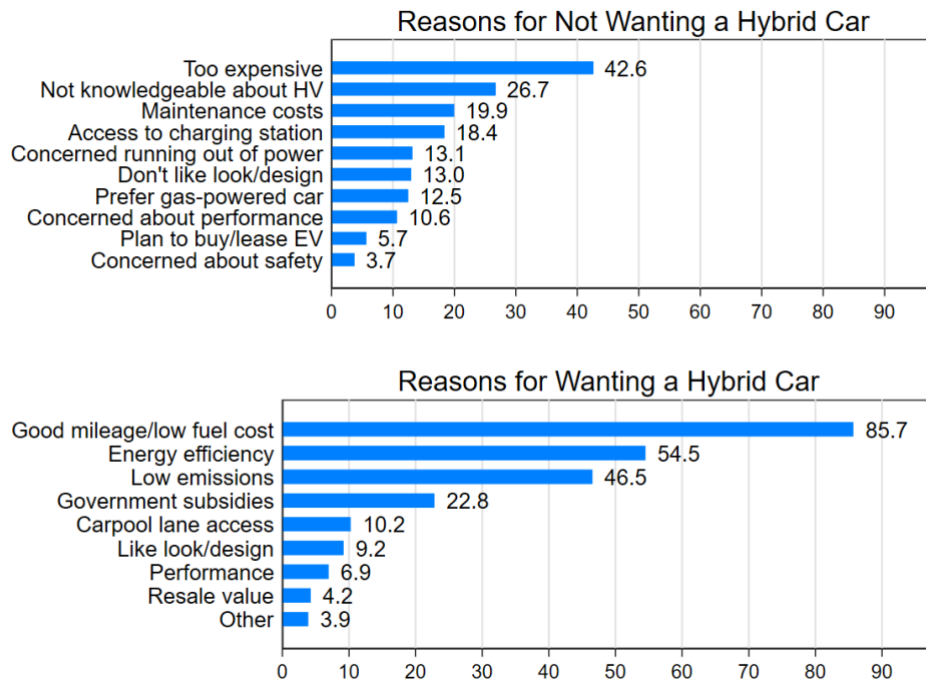| Reason	Value
Good mileage/low fuel cost	65.6
Low emissions	40.4
Energy efficiency	37.4
Government subsidies	26.5
Other	13.4
Carpool lane access	11.6
Performance	8.6
Like look/design	7.3
Resale value	2.2

Analysis of the background characteristics of the respondents reveals that the likelihood of buying/leasing an electric car in the future is significantly lower among Blacks and Hispanics, seniors, and separated/divorced individuals. It is significantly higher among highly educated individuals. There is a very strong association with thinking that individual actions matter to fight climate change and adoption of other environmentally friendly behaviors. There is no relation with the pollution level in one's neighborhood (concentration of PM 2.5). We find no relationship between the likelihood of buying/leasing an electric car in the future and income, while, as we saw above, current ownership of environmentally friendly cars is strongly and positively related to income.

How Likely That the Next Car to Buy or Lease Is Hybrid

Category	Percent
Very unlikely	25.0
Unlikely	18.1
Somewhat unlikely	15.5
Somewhat likely	25.1
Likely	9.9
Very likely	6.5

percent

About 41% report being at least somewhat likely to buy/lease a hybrid car in the future. The main reasons for not wanting a hybrid car are related to purchasing costs (43%), lack of knowledge (27%), maintenance (20%), and access to charging stations (18%). The main reasons for wanting a hybrid car are good gas mileage (86%), energy efficiency (54%), low emissions (46%), and government subsidies (23%).

The factors that affect the likelihood of buying/leasing a hybrid car in the future are similar to those for a future purchase of electric car. The likelihood of buying/leasing a hybrid car in the future is significantly lower among Blacks and Hispanics, as well as separated/divorced individuals, while it is significantly higher among highly educated and high-income individuals. There are very strong associations between the likelihood of wanting a hybrid car and both the belief that individual actions matter to fight climate change and the adoption of other environmentally friendly behaviors. There is no significant link with the neighborhood pollution level (concentration of PM 2.5).

Reasons for Not Wanting a Hybrid Car

Reason	Value
Too expensive	42.6
Not knowledgeable about HV	26.7
Maintenance costs	19.9
Access to charging station	18.4
Concerned running out of power	13.1
Don't like look/design	13.0
Prefer gas-powered car	12.5
Concerned about performance	10.6
Plan to buy/lease EV	5.7
Concerned about safety	3.7

Reasons for Wanting a Hybrid Car

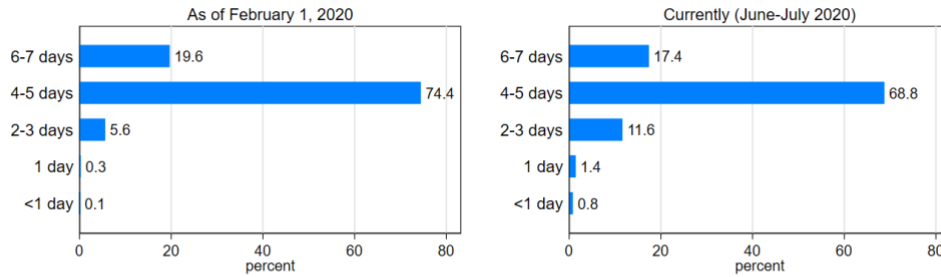| Reason	Value
Good mileage/low fuel cost	85.7
Energy efficiency	54.5
Low emissions	46.5
Government subsidies	22.8
Carpool lane access	10.2
Like look/design	9.2
Performance	6.9
Resale value	4.2
Other	3.9

Transportation after COVID-19

Takeaway #6: People like to commute less.

The COVID-19 pandemic has fundamentally altered work and commuting patterns. For a start, we asked respondents what their labor force status was on February 1, 2020. About 57% reported that they were working on February 1, 2020. We also asked respondents to report their current labor force status. At the time of this survey (June and the first half of July), the percentage of respondents reporting they were currently working was 46%, indicating a decline of more than 10 percentage points since February 1, 2020.
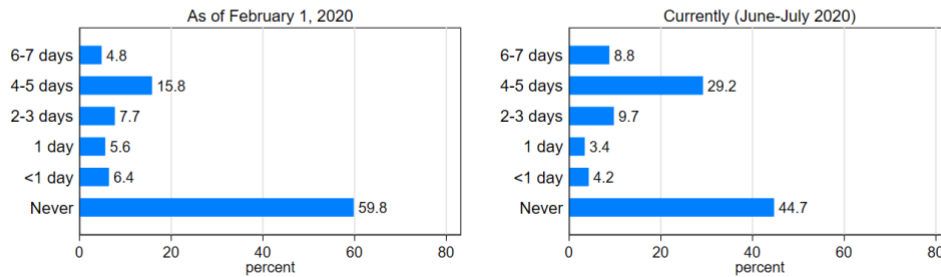
The two graphs in the upper panel of the figure below show a comparison between the number of days per week respondents reported working as of February 1, 2020 and the number of days per week respondents reported working at the time they answered the sustainability survey. For this exercise, we only consider individuals who were working at the time of the sustainability survey. It is clear that, among those still having a job in June, the number of working days per week has decreased.

In the lower panel of the figure, we compare the number of days individuals reported to be working from home as of February 1, 2020 and as of June 2020. As can be seen, the number of remote work-days has increased dramatically, with the percentages of people working from home 6-7 days and 4-5 days per week increasing from 5% and 21% in February to 9% and 38% in June, respectively.
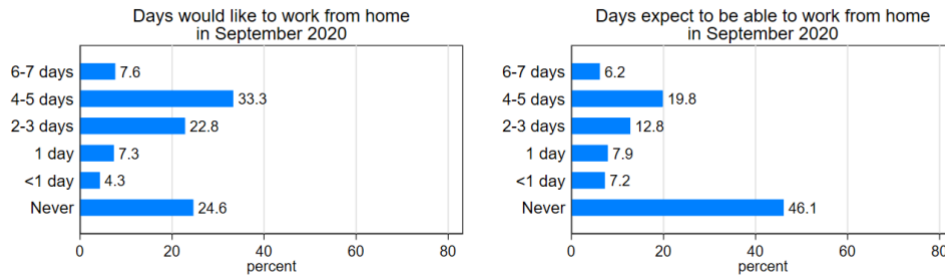
Days of Work per Week

As of February 1, 2020

	percent
6-7 days	19.6
4-5 days	74.4
2-3 days	5.6
1 day	0.3
<1 day	0.1

Currently (June-July 2020)

	percent
6-7 days	17.4
4-5 days	68.8
2-3 days	11.6
1 day	1.4
<1 day	0.8

Days Working from Home per Week

As of February 1, 2020

	percent
6-7 days	4.8
4-5 days	15.8
2-3 days	7.7
1 day	5.6
<1 day	6.4
Never	59.8

Currently (June-July 2020)

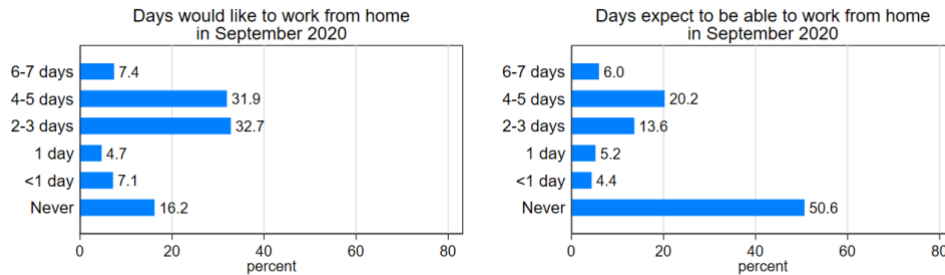|	percent
6-7 days	8.8
4-5 days	29.2
2-3 days	9.7
1 day	3.4
<1 day	4.2
Never	44.7

We also asked how many days respondents would like to work from home and how many days they expect to be able to do so in September 2020. The figure below shows these two outcomes for currently working individuals as well as for those currently on leave or temporarily laid off. Clearly, individuals would like to work from home substantially more than they expect will be possible in September 2020. Among those on leave and temporarily laid off, there seems to be a slightly higher demand for working from home than among currently employed individuals.
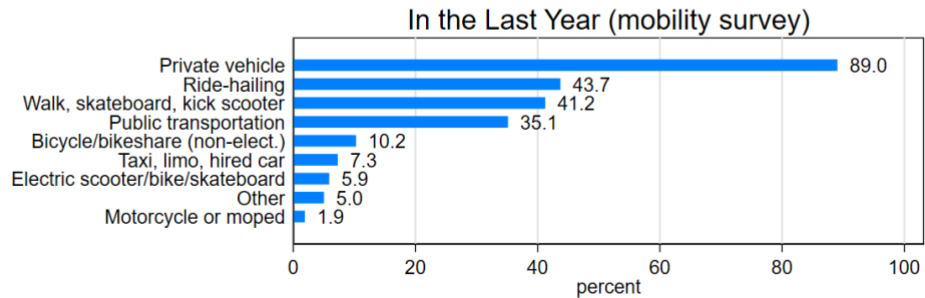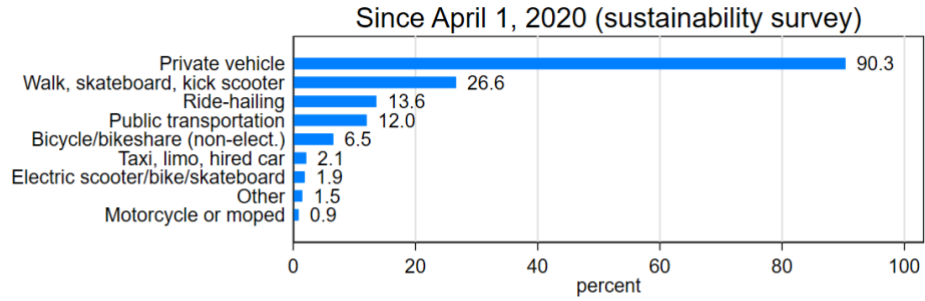
Currently Working Individuals

Days would like to work from home in September 2020

	percent
6-7 days	7.6
4-5 days	33.3
2-3 days	22.8
1 day	7.3
<1 day	4.3
Never	24.6

Days expect to be able to work from home in September 2020

	percent
6-7 days	6.2
4-5 days	19.8
2-3 days	12.8
1 day	7.9
<1 day	7.2
Never	46.1

On Leave and Temporarily Laid Off Individuals

Days would like to work from home in September 2020

	percent
6-7 days	7.4
4-5 days	31.9
2-3 days	32.7
1 day	4.7
<1 day	7.1
Never	16.2

Days expect to be able to work from home in September 2020

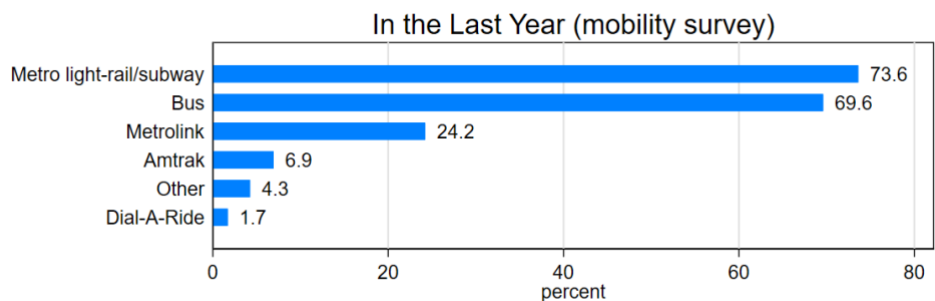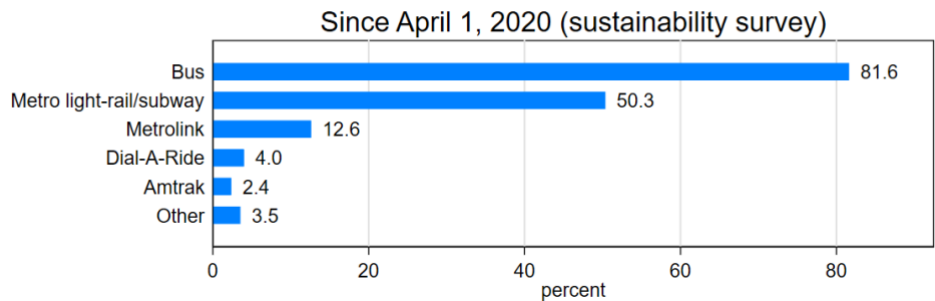|	percent
6-7 days	6.0
4-5 days	20.2
2-3 days	13.6
1 day	5.2
<1 day	4.4
Never	50.6

Takeaway #7: Use of ride-hailing and public transportation has decreased during the pandemic, and it is unlikely to come back soon.

We asked respondents what modes of transportation they have used to go to places in or around Los Angeles County since April 1, 2020. About 90% report having used their private vehicle, 27% walk/skateboard/kick scooter, 14% ride-hailed, and 12% used public transportation. Compared with the mobility survey data (collected between December 2019 and January 2020), the ranking of transportation modes has changed slightly, with walk/skateboarding/kick scooter replacing ride-hailing as the second most used transportation mode. Among public transit users, the most used mode of transportation since April 1, 2020, is the bus, as indicated by 82% of respondents. The second most used mode is the metro, as reported by 50% of respondents. The data from the mobility survey showed a different ranking, with metro being the preferred mode among public transit users (74%) and bus in second position (70%). Since the reference periods in the sustainability and mobility surveys are different – time since April 1, 2020, and last year, respectively – one has to be careful with reading too much into these comparisons. Nevertheless, it seems fair to conclude that during the pandemic use of ride-hailing and public transportation has decreased, and so has the use of the metro among those relying on public transit.
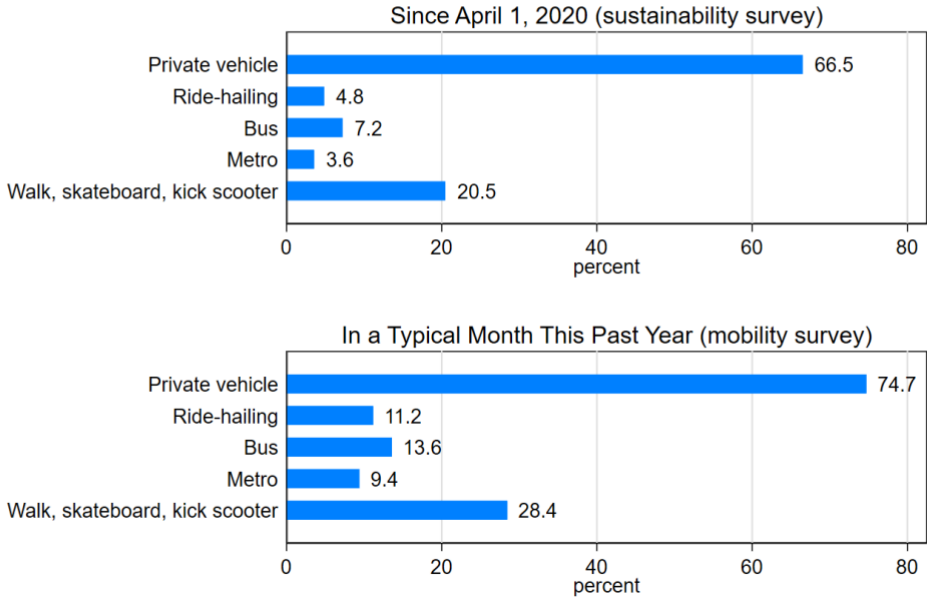
Mode of Transportation Used

Since April 1, 2020 (sustainability survey)

Mode	percent
Private vehicle	90.3
Walk, skateboard, kick scooter	26.6
Ride-hailing	13.6
Public transportation	12.0
Bicycle/bikeshare (non-elect.)	6.5
Taxi, limo, hired car	2.1
Electric scooter/bike/skateboard	1.9
Other	1.5
Motorcycle or moped	0.9

In the Last Year (mobility survey)

Mode	percent
Private vehicle	89.0
Ride-hailing	43.7
Walk, skateboard, kick scooter	41.2
Public transportation	35.1
Bicycle/bikeshare (non-elect.)	10.2
Taxi, limo, hired car	7.3
Electric scooter/bike/skateboard	5.9
Other	5.0
Motorcycle or moped	1.9

Mode Used by Public Transit Users

Since April 1, 2020 (sustainability survey)

Mode	percent
Bus	81.6
Metro light-rail/subway	50.3
Metrolink	12.6
Dial-A-Ride	4.0
Amtrak	2.4
Other	3.5

In the Last Year (mobility survey)

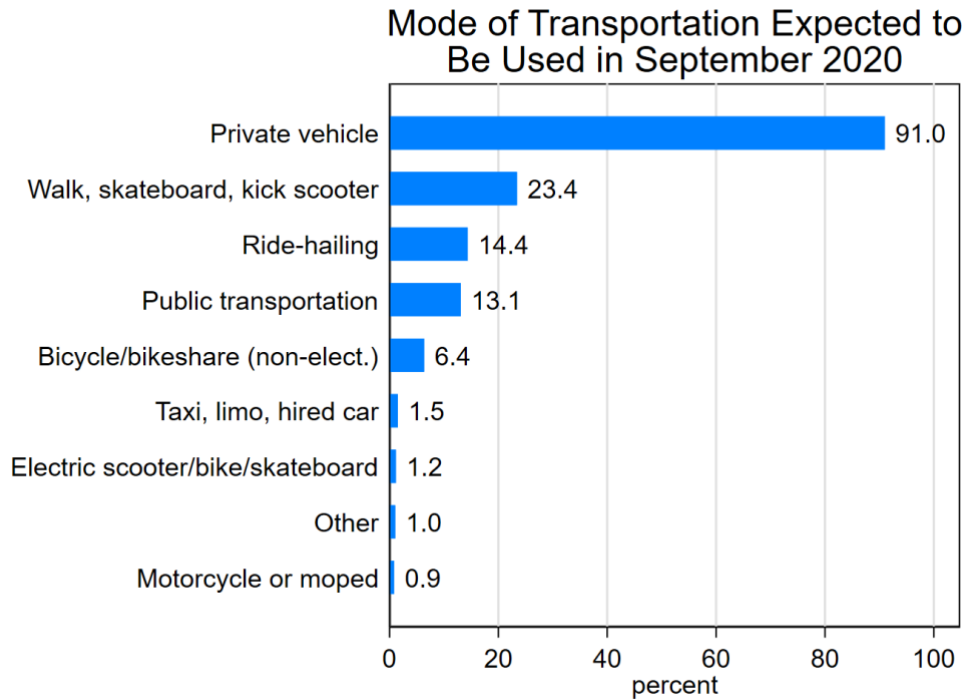| Mode	percent
Metro light-rail/subway	73.6
Bus	69.6
Metrolink	24.2
Amtrak	6.9
Other	4.3
Dial-A-Ride	1.7

With reduced mobility due to the pandemic, the frequency of using transportation modes has likely changed since the beginning of the year. The sustainability survey asked respondents about the frequency with which they used different modes of transportation since April 1, 2020. The mobility survey (collected between December 2019 and January 2020) asked respondents to

report the frequency with which they used different modes of transportation in a typical month during the past year. Based on this information, we construct a binary indicator in each of the two surveys for whether a person used a particular transportation mode at least one day per week and report the corresponding proportions in the figure below. While differences in the reference periods hinder valid comparisons between the reports in the sustainability and mobility surveys, it seems apparent that the pandemic has reduced frequency of usage across the board. Specifically, the fraction of people using their private vehicle at least once a week has decreased from 75% to 66%. A more detailed analysis of at the data (not shown in the figure in the interest of space) reveals that the fraction of people using their private vehicle every day has plummeted from 38% to 15%. The proportion of Angelenos relying on ride-hailing at least once a week has more than halved. Similarly, the fractions of L.A. County residents using bus and metro at least one day per week have passed from 14% and 9% to 7% and 4%, respectively.

Proportion of People Using Transportation Modes at Least One Day per Week

As shown in the last figure, respondents do not expect their use of transportation modes to change from June/July to September 2020. Overall, it appears that the COVID-19 pandemic has shifted people away from public transportation, while among public transportation users, light-rail has suffered a larger drop in ridership than the bus. Questions about future transportation modes show that this pattern is not likely to reverse soon.
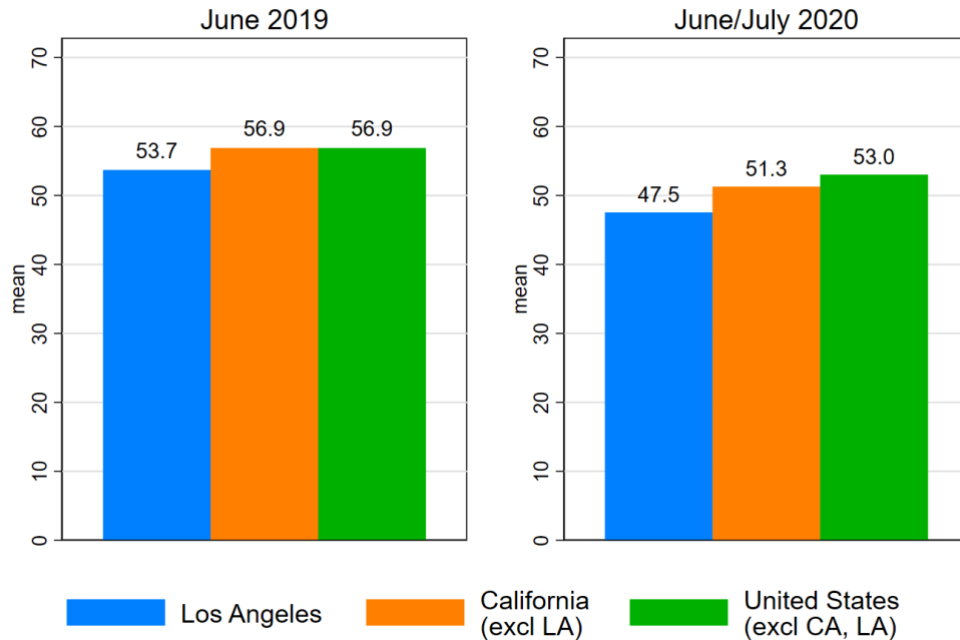
Mode of Transportation Expected to Be Used in September 2020

Mode	Percent
Private vehicle	91.0
Walk, skateboard, kick scooter	23.4
Ride-hailing	14.4
Public transportation	13.1
Bicycle/bikeshare (non-elect.)	6.4
Taxi, limo, hired car	1.5
Electric scooter/bike/skateboard	1.2
Other	1.0
Motorcycle or moped	0.9

Consumer Sentiment

Takeaway #8: Substantial drop in consumer sentiment.

To assess consumer sentiment at the county, state, and national levels, we have asked respondents to rate their current financial situation, future financial situation, current business conditions in the county, future business conditions in the county, current business conditions in the U.S., and future business conditions in the United States on a sliding scale of 0 to 100, with 0 representing "poor" and 100 "excellent." To calculate a consumer sentiment score for each respondent, we take the average of these six measures. We have asked these questions before, in June 2019.

The figure below compares the consumer sentiment index values in June 2019 – the time of the Livability Survey – and in June/July 2020 – the time of the Sustainability and Resilience Survey. In our previous report (https://cesr.usc.edu/sites/default/files/Livability_Wave1_Report_v3.pdf), we noted that consumer sentiment in LA County was significantly below the national average. The figure shows that this is still the case, and the gap has widened from 3.2 to 5.5. Not surprisingly, the index has fallen across the board due to the COVID-19 pandemic, but the fall in LA County has been greater than in the rest of the nation. This is consistent with the findings in the Understanding Corona in America Study, where we have found that job loss in LA County was substantially larger in than in the rest of the nation (https://covid19pulse.usc.edu/). What applies to LA also applies to California, but to a lesser extent.

Consumer Sentiment Index (0-100)

June 2019

53.7   56.9   56.9

June/July 2020

47.5   51.3   53.0

■ Los Angeles   ■ California (excl LA)   ■ United States (excl CA, LA)

ABOUT US

USC Dornsife LABarometer

LABarometer is a quarterly, internet-based survey of approximately 1,800 randomly selected Los Angeles County residents, designed and administered by the Center for Economic and Social Research (CESR) at the USC Dornsife College of Letters, Arts and Sciences. The survey monitors social conditions in Los Angeles, with a focus on four key issues: livability, mobility, sustainability/resiliency, and affordability and prosperity. By following the same residents over time, LABarometer aims to capture trends and shifts in residents' attitudes and circumstances, allowing decision-makers in the public and private sectors to better understand the evolving lives and needs of L.A. residents. LABarometer is made possible by the financial support of Union Bank.

Center for Economic and Social Research

The Center for Economic and Social Research (CESR), part of the USC Dornsife College of Letters, Arts and Sciences, conducts basic and applied research in economics, psychology, demography, and sociology. The center's name signifies the breadth of the research, which encompasses numerous disciplines, topics, and methodologies. The center's multi-disciplinary philosophy fosters an informal and free-flowing research environment.

About the Sustainability and Resilience Survey

The LABarometer Sustainability and Resilience survey assesses how residents cope with heat and cold, and with air and water quality; how they perceive climate change risks and the extent to which they are adapting their behavior to aid in mitigating the effects of human behavior on global warming. We have asked respondents about disaster preparedness and community resilience. To gauge the effect of the COVID-19 pandemic, we have repeated a module from our mobility survey to see how mobility patterns have changed. Finally, we have repeated questions that serve to construct a consumer sentiment index.

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APPENDIX
LABarometer Panel Information

The LABarometer Panel

The LABarometer panel is an internet survey panel of approximately 1,900 individuals (as of June 1, 2020) residing throughout Los Angeles County. LABarometer is a subpanel of the Understanding America Study (UAS), a national internet panel managed by the USC Dornsife Center for Economic and Social Research.

Following UAS procedures, LABarometer panel members are recruited through address-based sampling using postal codes. Eligible individuals are all non-institutionalized adults aged 18 and older living in a contacted household in LA County. Compared to convenience ("opt-in") panels, LABarometer's probability-based panel is more likely to accurately reflect our population of interest, LA County, and to reduce biases in our estimates. All LABarometer surveys include weights, which allow data users to generalize survey results to the larger population of Los Angeles County residents.

Below is a summary of the demographic composition of the LABarometer panel (as of June 1, 2020), alongside LA County population benchmarks for individuals aged 18 and older obtained from the Basic Monthly Current Population Survey (December 2019-May 2020).

LABarometer Panel Demographic Characteristics and Population Benchmarks
(percentages)

Demographic Characteristics	LABarometer Panel (N = 1,896)	Los Angeles County (N = 7,890,138)
Male	37.5	48.7
Age		
18-34	36.6	31.1
35-44	22.4	20.2
45-54	16.2	15.8
55-64	12.5	15.0
65+	12.3	17.9
Race & Ethnicity		
NH White	27.9	28.8
NH Black	7.5	7.9
NH Other	16.2	17.4
Hispanic	48.4	45.9
Education		
High school or less	21.6	40.2
Some college	37.1	24.7
BA or more	41.3	35.1

The Understanding America Study

The Understanding America Study (UAS) is a national internet panel of approximately 8,900 non-institutionalized adults living in households throughout the U.S. It includes special subpanels of California residents, LA County residents (the LABarometer panel), and Native Americans. The UAS started in 2014 and has been expanding since. Panel members are recruited in batches through a probability-based sampling design. As of June 1, 2020, there are 20 recruitment batches. The UAS draws from multiple sample frames (U.S.,California, Los Angeles County, Native American populations), but each batch is drawn from only one frame. The UAS uses an adaptive sampling approach to keep the subpanels representative of their target populations, even in the face of selective nonresponse and attrition. Nevertheless, sampling weights that adjust for imbalances in the distribution of demographics and socio-economic variables are provided with each survey. To ensure full coverage of the targeted populations, the UAS provides internet-connected tablets to individuals who do not have internet access.

Panel Recruitment and Retainment

Procedures for LABarometer panel recruitment and retainment follow UAS procedures. For a full description of UAS recruitment procedures, visit: https://uasdata.usc.edu/page/Recruitment. For a full description of UAS retainment procedures, visit: https://uasdata.usc.edu/page/Retainment.

In line with the general UAS recruitment procedure, LABarometer panel members were recruited in batches. The bulk of the LABarometer panel (91%) belongs to batches specifically targeting LA County residents, namely LA County Batches 2-5.[1] The remainder of the sample is split between California Batches 1 and 2 targeting California residents, which account for 5% of the LABarometer sample, and the ASDE Nationally Representative Batch and MSG Nationally Representative Batches 1 and 4-8, accounting for another 4% of the sample. For a full description of response rates for each of these batches, visit: https://uasdata.usc.edu/page/Response+And+Attrition.

Attrition rates have not yet been calculated for the LABarometer panel. LABarometer attriters are defined as panel members who have not participated in a UAS survey in 10 months or who, according to the UAS quarterly household survey, no longer reside in Los Angeles County.

Survey Participation

LABarometer panel members take surveys specifically designed for LA County residents, as well as general UAS surveys, which allow for comparisons of outcomes between LA County and other geographic areas in the country. Response rates for each LABarometer survey are provided with each survey's documentation. All surveys are distributed online in English and in Spanish and are mobile-friendly. To participate in a survey, panel members can use any computer, cell phone, or tablet with internet access.

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[1] UAS recruitment batch 4 is a simple random sample from a list of women who gave birth in Los Angeles County between 2009 and 2012 in zip codes around restaurants participating in a healthy menu options project. Because of the highly specific nature of this subsample, we do not include UAS members from batch 4 in the LABarometer sample.

Standard Variables

Following UAS procedures, each LABarometer data set contains a set of default survey and demographic variables. Default survey variables include individual, household, and batch identifiers, language indicator, time stamps, and respondents' rating of how much they liked the survey. The demographic variables provide background information on the respondent and household, including gender, age, race/ethnicity, education, marital status, work status, state of residence, family composition, and family income. Demographic variables are taken from the most recent MyHousehold survey, which elicits UAS members' basic demographic information every quarter. If at the time of a survey, the information in MyHousehold is more than three months old, a respondent is required to check and update the information before being able to take the survey. The complete list of standard variables included with each LABarometer (and UAS) data set is available at https://uasdata.usc.edu/page/Standard+Variables.

Survey Weights

Each LABarometer data set includes a set of survey weights. These weights allow data users to generalize survey results and statistics to the reference population. This is the Los Angeles County adult population, for LA County–specific surveys, or the U.S. adult population for general UAS surveys.[2] The weighting procedure consists of two steps. In the first step, we generate base weights that correct for unequal probabilities of selection in the sample. Due to selective nonresponse, the sample of actual respondents may have different characteristics than the population of interest, even after correcting for different sampling probabilities through the base weights. Hence, in the second step, we calculate post-stratification weights (using a raking algorithm) so that weighted distributions of specific socio-demographic variables in each survey sample match their population counterparts. The socio-demographic variables used in this second step of the weighting procedure are gender, race/ethnicity, age, and education. For post-stratification purposes, population benchmarks are obtained from the Basic Monthly Current Population Survey. A full description of the general UAS weighting procedure can be found at https://uasdata.usc.edu/page/Weights.

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[2] In national surveys relevant for the LABarometer project, separate weights for Los Angeles residents, California residents (excluding Los Angeles), and U.S. residents (excluding Los Angeles and California) are also provided.

This survey was conducted by the

University of Southern California
Dana and David Dornsife College of Letters, Arts and Sciences
Center for Economic and Social Research

Sponsored by

UnionBank

Toplines and survey data available at
https://cesr.usc.edu/labarometer

For more information,
please contact us at
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