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The Impact of COVID-19 on Food Insecurity in Los Angeles County: April to July 2020

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Disclaimer

The views expressed herein are those of the authors and not necessarily those of Los Angeles County, the USC Dornsife College of Letters, Arts and Sciences, the Keck School of Medicine, or the University of Southern California as a whole.

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Introduction

At the onset of the COVID-19 pandemic, our team documented a large increase in rates of food insecurity in Los Angeles (L.A.) County (de la Haye et al., 2020). Between early April and early May 2020, as the country and county closed down and experienced a major health and economic shock, almost one million households in Los Angeles experienced food insecurity. Following our earlier report, this study tracks food insecurity in L.A. County through July 2020, tracking changing food needs as the pandemic unfolds and identifying factors that continue to put people at risk for food insecurity and factors that have helped people become food secure.

Food insecurity refers to disruptions in food access and regular eating because of limited money or other resources. Food insecurity is often associated with hunger, but it also leads to a host of other negative physical and mental health outcomes. Children who experience food insecurity have poorer nutrition, worse general health and oral health, and a higher risk for cognitive problems, anxiety, and depression. Adults who experience food insecurity have poorer nutrition, a higher risk for obesity, diabetes, and hypertension, and greater mental health and sleep problems (Dhurandhar, 2016; Gundersen & Ziliak, 2015).

Food insecurity is a state that people can transition in and out of, often triggered by changes in employment, income, health, and mental health (Gundersen & Ziliak, 2014). The COVID-19 pandemic has heightened all of these risk factors, to varying degrees. Job losses and economic insecurity have spiked: in April, the unemployment rate in L.A. County peaked at 20.3% and has since declined to 17.5% in July, which remains well above the 13.3% statewide figure and 10.2% national level. Risks for food insecurity may also be exacerbated by policies promoting social distancing and closures of businesses and organizations. When people lose economic resources, and simultaneously become disconnected from family and friends, schools, places of worship, and other community centers and organizations, it may be especially difficult to find the money and support needed to get enough food.

Many food assistance programs have been launched, adapted, and/or expanded to address economic and food insecurity during this crisis. For example, the USDA issued waivers that enabled L.A. County's Department of Public and Social Services to remotely enroll eligible individuals into CalFresh (also called the Supplemental Nutrition Assistance Program, or SNAP: a critical food safety net for low-income families), and to increase benefits for enrolled individuals. Similarly, L.A. County adapted its Elder Nutrition Program in order to deliver meals directly to homes because it was unsafe for older adults to eat meals in their usual congregate settings. It also launched a Critical Delivery Service offering older adults free delivery of pre-paid foods. Nongovernmental organizations such as the LA Regional Food Bank also adapted their operations to enable socially-distanced food distributions via drive-through events while also fulfilling steep increases in demand.

In this report we evaluate the state of food insecurity in L.A. County several months into the pandemic, and evaluate the impact of these programs and ongoing barriers to food security. Our research uses data from USC Dornsife's Understanding Coronavirus in America tracking survey to understand food insecurity among adults (18 years and older) during the COVID-19 crisis. We measure food insecurity using three items from the validated Food Insecurity Experience Survey that assess behavioral markers of mild, moderate, and severe levels of food insecurity (Cafiero, 2018), shown in Table 1 below. As is standard in research on food insecurity, a household is classified as being food insecure if they report experiencing moderate or severe levels of food insecurity. Depending on the frequency of the surveys, food insecurity was assessed during the past 7 days or the past 30 days.

Table 1: Food insecurity as measured on the Food Insecurity Experience Survey

Food insecurity level	Behavioral marker	Item on the Food Insecurity Experience Survey
Mild	Uncertainty about the ability to obtain food	"In the past (X) days, were you worried you would run out of food because of a lack of money or other resources?"
Moderate	Reduced food intake	"In the past (X) days, did you eat less than you thought you should because of a lack of money or other resources?"
Severe	No food intake for an entire day or longer	"In the past (X) days, did you go without eating for a whole day because of a lack of money or other resources?"

This report presents our key results after four waves of survey administration, assessed between April and July 2020. Table 2 summarizes the dates of each survey wave, the food insecurity measure used at each wave (past 7 days or past 30 days), and how this data is aggregated to capture food insecurity in L.A. County during key phases of the pandemic. Other variables used in these analyses are measured at each wave (where indicated), or assessed at regular intervals to ensure they are current. For example, household income is assessed quarterly, and our analyses use the most recent indicator.

Table 2: Food insecurity indicators computed from the four survey waves

<table>
<tr><th>Survey Wave</th><th>Survey Dates (2020)</th><th>Food Insecurity measure</th><th colspan="2">Food insecurity indicator used in this report</th></tr>
<tr><td>1</td><td>April 1 to April 20</td><td>Past 7 days</td><td rowspan="3">April-May food insecurity:
any past 7 days
food insecurity experienced
at W1 or W2 or W3</td><td rowspan="4">April - July food insecurity:
any past 7 days
food insecurity experienced
at W1 or W2 or W3, or any
past month food insecurity
experienced at W4</td></tr>
<tr><td>2</td><td>April 15 to May 4</td><td>Past 7 days</td></tr>
<tr><td>3</td><td>April 29 to May 18</td><td>Past 7 days</td></tr>
<tr><td>4</td><td>July 8 to August 4</td><td>Past 30 days</td><td>June-July food insecurity:
any past month food insecurity
experienced at W4</td></tr>
</table>

Note: Food insecurity experiences between May 18 and June 8 were not measured.

1. In the first four months of the coronavirus pandemic, at least 1 in 4 L.A. County households experienced food insecurity.

Between April and July 2020, more than a quarter (26.4%) of **all** L.A. County households experienced food insecurity: an estimated 873,000 households. During this same timeframe, 41.6% of **low-income** households (defined here and in subsequent text as households with incomes <300% of the federal poverty line (FPL) based on income assessed between April and July), experienced food insecurity. This is markedly higher than historical rates of food insecurity in L.A. County.

Typically, food insecurity in the County is monitored among low-income households (< 300% FPL) only. The proportion of low-income households that experienced food insecurity **at some point in the previous year** was: 30.6% in 2011, 29.2% in 2015, and 26.8% in 2018 (LAC DPH, 2017, 2018).**(1)**

In 2018, it is likely that just 5.2% of low-income households experienced food insecurity **monthly**. Specifically, 5.2% of low-income households reported that they cut meal sizes or skipped meals due to a lack of money, almost every month (LAC DPH, 2018).**(2)**

During the first four, full months of the COVID-19 pandemic (April–July), the rate of low-income households that experienced food insecurity (41.6%) was notably higher than the 2018 monthly (5.2%) and annual (26.8%) estimates of food insecurity for this low-income population.

Approximately 873,000 L.A. County households experienced food insecurity between April and July 2020.

Footnote (1): Historical rates of food insecurity are based on data from the Los Angeles County Health Survey (LACHS). This survey includes the short form Household Food Security Scale (Blumberg et al., 1999) and food insecurity is defined based on United States Department of Agriculture guidelines, where households are considered to be food insecure if they experience either "low food security" (a reduction in the quality, variety, or desirability of diet with little to no indication of reduced food intake) or "very low food security" (multiple indications of disrupted eating patterns and reduced food intake).

Footnote (2): On the Household Food Security Scale, only one item asking about "cutting meal sizes or skipping meals due to a lack of money" records whether or not this experience occurred "almost every month", or less frequently over the past year. The other four items in this scale assess different food insecurity experiences, but they do not record if the experience occurred during most months of the past year.

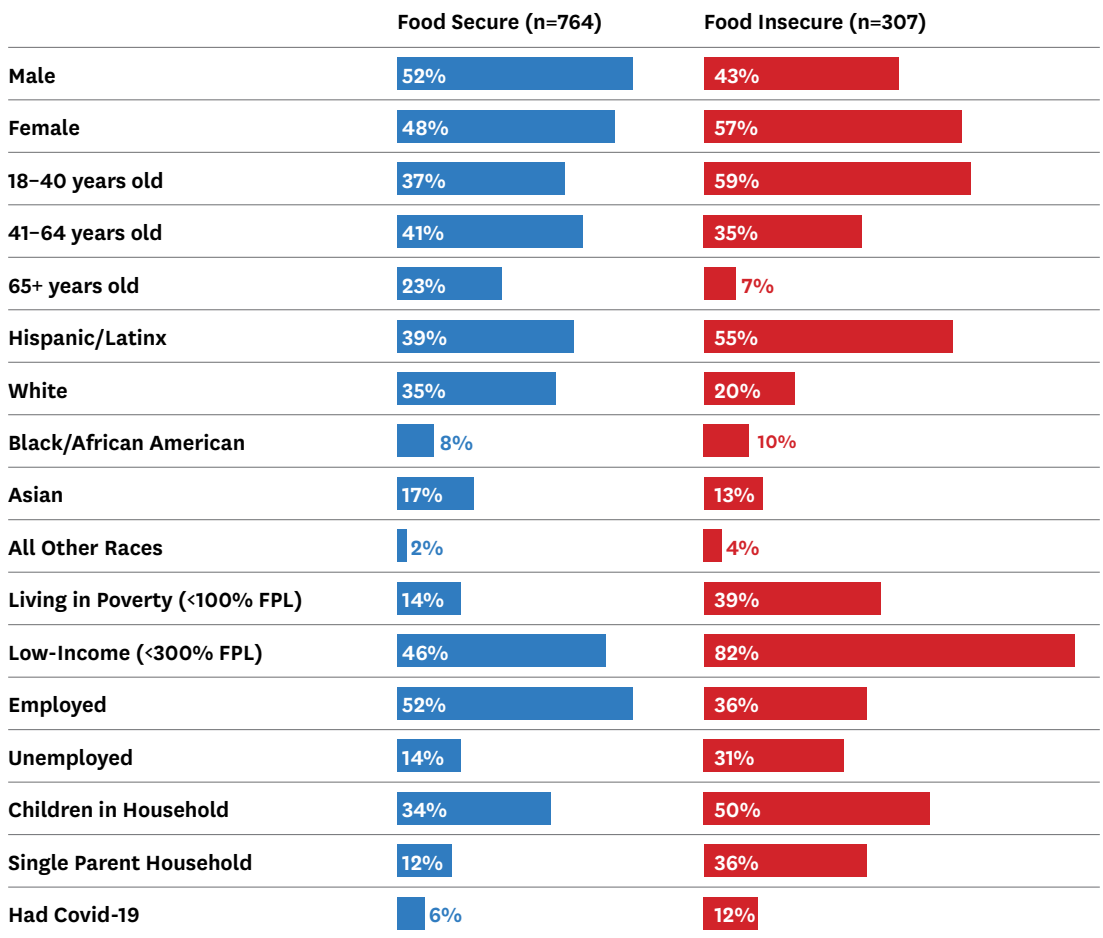
2. Major risk factors for food insecurity during the pandemic are having a low household income, being unemployed, being 18-50 years old, and being a single parent.

The characteristics of adults who experienced food insecurity from April to July 2020 are depicted in **Figure 1**, in contrast to those who were food secure during this timeframe. The majority of adults who experienced food insecurity are female, 18-40 years old, Hispanic/Latinx, and/or low-income (based on incomes reported after the onset of the pandemic). Only 1 in 3 (35.6%) were employed in July. Half (50.3%) have children in their household, and 35.6% are single parent households. People who were food insecure were almost twice as likely to have been infected with COVID-19 (11.6%), compared to people who were food secure (6.4%).

50.3% of adults who experienced food insecurity have children in their households and 35.6% are single parents.

Figure 1. Profile of L.A. County population with food insecurity during COVID-19

Characteristics of adults who experienced food insecurity from April to July 2020, compared to people who did not experience food insecurity during this time (food secure).

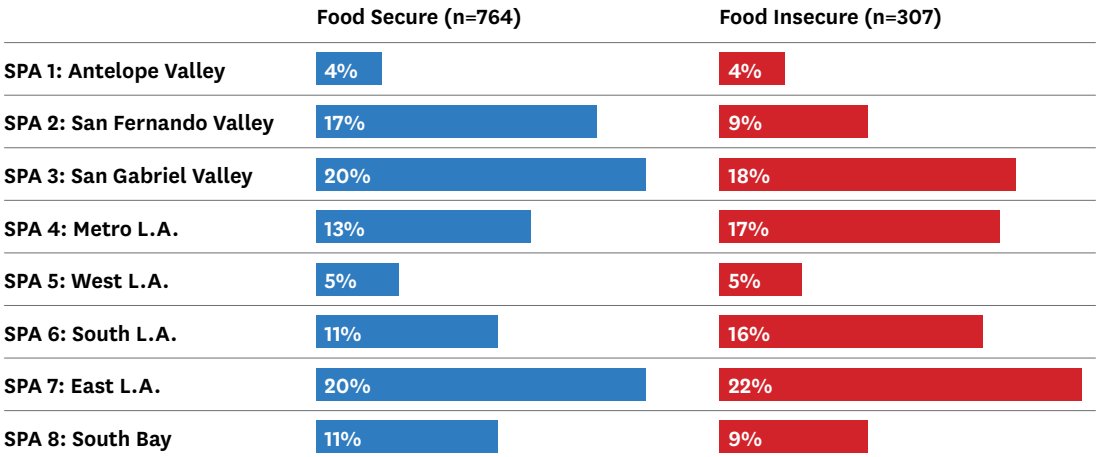


We also found that people experiencing food insecurity live across all Service Planning Areas (SPA) of L.A. County (**Figure 2**), with the highest proportions residing in: SPA 7: East L.A. (21.8%), SPA 3: San Gabriel Valley (17.9%), SPA 4: Metro L.A. (17.4%), and SPA 6: South L.A. (15.8%).

1 in 5 people that experienced food insecurity live in East L.A.

Figure 2. Location of L.A. County population with food insecurity during COVID-19

The Service Planning Area (SPA) in which people reside, for those who experienced food insecurity from April to July 2020, compared to people who did not experience food insecurity during this time (food secure).



Several factors are independently associated with significantly higher odds of being food insecure during COVID-19 (from April to July) in statistical models that test for multiple factors that could increase or decrease someone's risk of food insecurity. We tested several risk factors that included gender, age, household income, education level, employment status, household size, and others. We found that the following characteristics all predicted food insecurity risk:

- As expected, being **lower income** significantly increased the odds of being food insecure: people with a household income <300% FPL had 3.1 times the odds of experiencing food insecurity compared to people with higher incomes. And people who were **unemployed** had 1.9 times the odds of being food insecure, compared to people who were employed.

- After household income and employment status are accounted for, two other factors predicted food insecurity risk: (i) People **aged 18 to 50** had significantly greater odds of experiencing food insecurity, compared to people 65 and older. The odds were greatest among 18 to 30 year old people (2.9 times the odds) and among theose aged 31 to 40 (2.4 times the odds). (ii) People in **single-parent households** had 2.4 times the odds of experiencing food insecurity, compared to those not living in this type of household. Importantly, this effect is significant even when accounting for household poverty level that is computed based on household income relative to the number of people living in the household.

Compared to older adults, 18 to 30 year olds are almost 3 times more likely to experience food insecurity. Single parents are 2.5 times more likely to experience food insecurity, compared to other adults.

We also tested if living in a "food desert," meaning a neighborhood where residents have less access to grocery stores because they are further away or fewer in number, increased the risk of experiencing food insecurity during the pandemic. We found no evidence of this impacting peoples' risk once income, unemployment and other risk factors listed above were accounted for.

3. Food insecurity in L.A. County peaked in April-May 2020 and improved in June-July 2020, but still remains significantly higher than pre-pandemic levels.

At the beginning of the pandemic in April-May, 26.3% of **all** households, and 39.0% of **low-income** households, experienced food insecurity. By June-July these rates **dropped by almost two thirds**; 10.0% of all households, and 14.2% of low-income households, experienced food insecurity. This is a promising shift. Specifically, 71.0% of households that experienced food insecurity at the onset of the pandemic (April-May) were food secure in June-July. However, of the estimated 869,500 households that experienced food insecurity from April to May, over one-quarter (29.0%, or 252,000 households) **remained** food insecure in June-July.

The majority of adults who remained food insecure in June-July are female, 18-40 years old, Hispanic/Latinx, and/or low-income. Over 1 in 3 are unemployed.

The characteristics of these two groups — those who experienced food insecurity and then 'recovered' vs. those who remained food insecure — are summarized in **Table 3**. Importantly, the majority of adults who remained food insecure in June-July are female, 18-40 years old, Hispanic/Latinx, and/or low-income, and over 1 in 3 are unemployed. There are also a few notable differences in their demographics: compared to people who transitioned to being food secure, more people who remained food insecure are (i) 41 to 60 years old, (ii) living in poverty (<100% FPL), and (iii) have children under the age of 5. When comparing these groups in terms of assistance and barriers, there was a pattern that people who transitioned to food security had received more social support and financial assistance and had fewer barriers to accessing food. Specifically:

- People who remained food insecure had a smaller number of family and friends (average = 17) compared to people who transitioned to food security (average = 28).
- The two groups had very similar rates of CalFresh use. However, of the people who received CalFresh, almost all who transitioned to food security said they were able to use their CalFresh benefits (94.5%) while more than one-quarter (28.4%) of people who remained food insecure said they were not able to use these benefits.
- One-quarter (24.6%) of those who transitioned to food security had received unemployment insurance, while just 1 in 10 (11.1%) who remained food insecure had received this insurance. Those who transitioned to food security were also more likely to receive other financial assistance, including economic stimulus funds and financial aid for people impacted by the coronavirus.
- Finally, simply accessing food appeared to be more challenging for people who remained food insecure. More people who remained food insecure (vs. transitioned to food security) reported difficulty getting food because stores were closed or had limited hours, and because they had no car or personal transportation.

Our future work will use statistical models to tease apart factors that meaningfully increase or decrease someone's chances of transitioning from experiencing food insecurity, to being food secure.

These profiles provide insights into how we might help those households that remain food insecure transition to food security. For example, identifying barriers to using CalFresh benefits and opportunities for continued financial assistance, finding strategies to prevent food store closures, or helping these households deal with these closures and lack of personal transportation.

It is also important to keep in mind that the lower June-July rate of food insecurity — 14.2% of low-income households — is markedly higher than the estimated 5.2% of low-income households that experienced **monthly** food insecurity in 2018 (LAC DPH, 2018). Thus, there remains major unmet food needs to address. Additionally, the 18.6% of L.A. County households (approximately 595,100 households) that quickly experienced food insecurity at the onset of the pandemic, but then transitioned into food security by June/July, may be important to monitor: they could be at risk for transitioning back into food insecurity should major economic or pandemic-related shocks occur again.

The June-July rate of food insecurity in low-income households (14.2%) is markedly higher than the same estimated monthly rate in 2018 (5.2%).

Table 3. Demographics, assistance, and barriers among adults who transitioned from experiencing food insecurity (April-May) to food security (June-July), compared to those who remained food insecure.

	Food insecure in April-May, but food secure in June-July (n=199)	Food insecure in April-May and June-July (n = 81)
% of L.A. County households	**18.6**	**7.6**
% female	57.3	57.4
% 18–40 years old	57.0	61.7
41–64 years old	**38.3**	**28.3**
65+ years old	4.8	10.0
% Hispanic/Latinx	53.6	58.2
White	20.1	17.4
Black/African American	10.2	9.2
Asian	12.7	13.0
% living in poverty (<100% FPL)	**36.2**	**49.9**
% low-income (<300% FPL)	83.1	83.6
% employed	36.1	29.6
unemployed	27.6	35.7
% with school-aged children	44.7	41.4
with children under 5 years old	**9.6**	**19.4**
% receiving assistance/benefits (June/July)		
CalFresh	24.6	24.9
of those receiving CalFresh, % that were able to use it	**94.5**	**71.6**
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)	9.0	13.3
used a food pantry	15.1	12.0
food donations from a NGO	11.3	16.6
unemployment insurance	**24.6**	**11.1**
economic stimulus funds	17.2	11.6
financial aid for people affected by coronavirus	3.7	0.1
% with potential barriers to food security (June/July)		
difficulty getting food because stores closed/limited hours	**16.0**	**32.2**
difficulty getting food because no car	**14.1**	**32.8**
had COVID-19 (at any time)	9.0	16.5

Note: Statistics in bold have a 10% or more difference between the two groups.

4. Between April and July 2020, the decline in food insecurity paralleled a 20% increase in the use of CalFresh in L.A. County. Households that received CalFresh were more likely to transition from food insecurity to food security.

L.A. County data show there has been a 19.8% increase in households receiving CalFresh, from 686,378 households in March to 822,356 households in July (County of Los Angeles, 2020). This precisely parallels the 20.2% uptick in CalFresh benefits received by participants in the Understanding Coronavirus in America survey, from 12.4% of the population in early April to 14.9% in July.

As of July, between 14.7% and 26.7% of households in L.A. County are likely eligible for CalFresh but are not enrolled in the program.

Among participants in the Understanding Coronavirus in America survey, those who received CalFresh in June/July had an 18% higher chance of transitioning from being food insecure in April-May to being food **secure** in June/July. This effect is significant after controlling for changes in other types of financial support, employment, and poverty level. CalFresh has historically helped households become food secure and it continues to do so in the face of this pandemic.

We also find that among households who were food insecure in April-May and remained food insecure in June-July, between a third to one-half (37.5%-47.6%) **(3)** of these households were **not** receiving CalFresh as of July, but were likely to be eligible for the program based on their household income (measured between April and July). There is an opportunity to help these people enroll in food assistance programs, to support their transition to food security.

Overall, between 14.7% and 26.7% of households in L.A. County are likely eligible for CalFresh as of July, thus at risk for food insecurity, but **are not** enrolled in the program. Connecting all of these individuals to CalFresh and other food assistance programs, regardless of whether they have or have not experienced food insecurity during the pandemic, is crucial for minimizing the physical and psychological toll of the pandemic.

Footnote (3): This range is based on a conservative under-estimate where eligibility is defined as household incomes <130% FPL, and an overestimate where eligibility is defined as household incomes <200% FPL.

5. The surge in food insecurity during the pandemic affected higher-income households and more people who were unemployed, compared to 2018-2019

Although food insecurity in L.A. County has historically been measured among low-income households only, this study measured food insecurity among a representative sample of **all** L.A. County households. We found that of the households that experienced any food insecurity from April to July 2020, the majority (81.8%) were low-income (< 300% FPL), but 18.2% had incomes at or above 300% of the FPL (e.g., this translates to an annual income of $51,120 or more for a household with 2 persons, and $78,600 or more for a household with 4 persons). Additionally, households with higher incomes (> 300% FPL) made up 16.9% of the group who experienced food insecurity in April-May and then were food secure in June-July, *as well as* 16.4% of the group who experienced regular food insecurity in April-May *and* June-July. What this means is that higher-income households did not necessarily recover from food insecurity experienced at the onset of the pandemic. Overall, almost 1 in 5 households that experienced food insecurity during the pandemic were not "low-income": specifically, 13.5% had annual household incomes of $60,000-$99,999, and 5.5% had annual household incomes of $100,000 or more.

Almost 1 in 5 households that experienced food insecurity during the pandemic were higher-income households: 13.5% had annual household incomes of $60,000-$99,999 and 5.5% had annual household incomes of $100,000 or more.

Some national surveys have measured food insecurity among higher-income households. In 2019, just 5.1% of households in the United States that had incomes at or above 185% of the FPL experienced food insecurity **in the past year** (Coleman-Jensen et al., 2020). Our study finds this figure is more than 3 times higher in L.A. County during the pandemic, when 17.8% of households with incomes at or above 185% FPL (as measured during the pandemic) experienced food insecurity **between April and July 2020**. This contrast provides some evidence that food insecurity may be impacting a greater share of higher-income households during the pandemic than it has historically. More research is needed to explain this trend, but one hypothesis that that these higher-income households may have recently experienced a meaningful loss in household finances (e.g., due to a lost job), such that their household income remains relatively 'high' but not high enough to meet their budget commitments, like mortgages and set living expenses. Their available money for food, after other expenses are accounted for, could be impacted by a recent loss in economic resources. Additionally, it could reflect the increased prices of many staple foods as the food supply struggles to manage the shock of the pandemic.

In **Figure 3**, we compare the characteristics of adults who (a) experienced food insecurity in 2018, to (b) those who experienced food insecurity at the onset of the pandemic (April-May 2020) and were food secure by June-July, and (c) those who regularly experienced food insecurity during the pandemic (April-May **and** June-July 2020). Although there are some subtle differences in age groups, ethnicity, and race, we find just one statistically meaningful difference: more people experiencing food insecurity during the pandemic were unemployed, compared to 2018. This indicates that food insecurity is especially impacting the large numbers of people who have lost their jobs during this crisis.

Figure 3. Demographic differences in adults experiencing food insecurity: 2018 vs. April-July 2020

	Food insecure in 2018	Food insecure in April-May 2020, but food secure in June-July (n=199)	Food insecure in April-May and June-July 2020 (n=81)
Female	60%	57%	57%
18–29 years old	25%	30%	26%
30–49 years old	40%	43%	47%
50–64 years old	27%	22%	17%
65+ years old	8%	5%	10%
Hispanic/Latinx	67%	54%	58%
White	14%	20%	17%
Black/African American	9%	10%	9%
Asian	6%	13%	13%
All Other Races	4%	3%	2%
Employed	45%	36%	30%
Unemployed	16%	28%	36%

Note: 2018 statistics are measured among households <300% FPL (source: LAC DPH, 2018), while April-July 2020 statistics are measured among households with any income level.

6. There have been unhealthy changes to peoples' diet during the pandemic, and people experiencing food insecurity have been impacted the most.

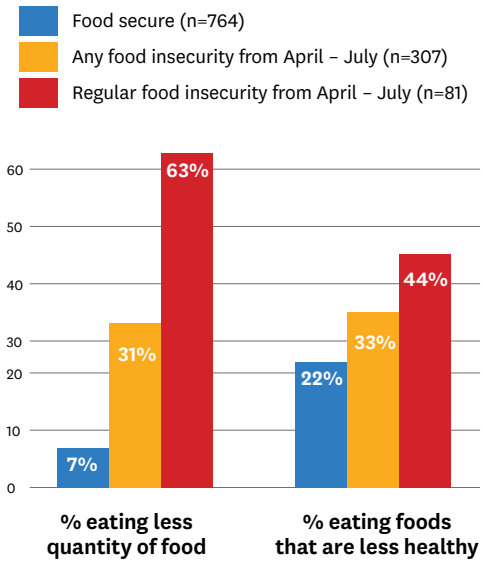
The majority of the L.A. County adult population reported that they are consuming different quantities and qualities of foods during the pandemic, compared to their pre-pandemic diet. More than one-quarter of the population (27.3%) said they have been eating **more food** than usual, while 13.8% said they have been consuming **less food** than usual. Nearly 3 out of 10 (28.3%) also said they are eating **healthier** food — i.e., eating more fruits and vegetables, and/or less sugary and fried food — while another quarter (24.8%) said they are eating **less healthy** food. This parallels findings in studies outside of the United States that have shown similar trends for both healthier and unhealthier dietary changes since the start of the COVID-19 pandemic (e.g., Ammar et al., 2020; Rodríguez-Pérez et al., 2020; Scarmozzino & Visioli, 2020). These substantial dietary shifts could be caused by many factors that have changed day-to-day life during the pandemic, such as shortages or increased prices of staple foods, limited access to school lunches, closure of restaurants, shift towards more meals prepared at home, and changes in food security.

People who experienced food insecurity during the pandemic appear to have particularly unhealthy dietary changes. This is not surprising as food insecurity is known to compromise the quality of peoples' diets (Gundersen & Ziliak, 2015). Compared to people who were food secure during the pandemic, people who experienced food insecurity were more likely to report eating less food, and less healthy food (**Figure 4**). This was especially true for people experiencing **regular food insecurity** during the pandemic (i.e., who were food insecure in April/May and June/July): 63.0% of this group said they are eating less food, and 44.2% said they are eating less healthy food.

The consequences of large segments of the population having poorer diets due to income losses, food insecurity, or other challenges to the food system caused by the pandemic are far reaching. A large number of non-communicable diseases are caused by poor nutrition, including type 2 diabetes, obesity, heart disease, and some cancers (CDC, 2020). And many of these diet-related diseases exacerbate risk for COVID-19. The high rates of food insecurity experienced during the pandemic and corresponding negative dietary changes could worsen the county's already high rates of diet-related disease — e.g., 27.7% of adults with obesity, 11.3% diagnosed with diabetes, and 25.0% with hypertension (LAC DPH, 2018) — and could increase nutritional health inequities among low-income populations.

Adults who experienced regular food insecurity during the pandemic were more likely to report eating less food (63.0%) and less healthy food (44.2%) compared to people who were food secure.

Figure 4. Unhealthy dietary changes during the COVID-19 pandemic among adults who are food secure and food insecure



Summary and Next Steps

As the COVID-19 pandemic unfolds, it has left in its wake major economic, social, and health crises. In Los Angeles County we find a large spike in food insecurity rates during the pandemic — 26.4% of L.A. County households — and the trajectory of people experiencing food insecurity parallels the massive economic and job loss at the onset of the pandemic, followed by a substantial but partial 'recovery' by July. This is not surprising as key risk factors for food insecurity historically, and during the pandemic, are poverty and unemployment.

Our findings show that about two-thirds of households that experienced food insecurity at the onset of the pandemic transitioned to food security by June/July (18.6% of the L.A. County population), and food and financial assistance programs may have helped them to do so. Households that were not in poverty and who received unemployment insurance were more likely to make this transition. They may have been able to recover more quickly from financial loss and challenges accessing sufficient food by leveraging economic and social capital. However, the magnitude of this group of people who quickly transitioned into food insecurity when the pandemic began is alarming and suggests our food system and many peoples' food security is quite fragile. A future surge in COVID-19 cases paired with economic shutdowns or withdrawal of financial support could put this group at risk of transitioning back into food insecurity.

1 in 10 households in L.A. County experienced food insecurity at the onset of the pandemic, and remained food insecure as of July; rates that are substantially higher than pre-pandemic levels. This may even be underestimating the scope of the problem because it is likely that some high-risk groups (e.g., individuals experiencing homelessness) are not captured by this survey. The vast majority of households that remained food insecure were low-income, and although household economic status is the biggest underlying driver of food insecurity, other factors emerged that may be affecting peoples' ability to acquire sufficient food. This group reported more difficulties getting food because of store closures, limited store hours, and a lack of personal transportation. They also had notably higher rates of being infected with COVID-19 (16.5%). One quarter (24.9%) of this group received CalFresh, but they reported more difficulties using it, and at least one-third are likely eligible for CalFresh but not receiving it.

These research findings highlight how important it will be for L.A. County to continue raising awareness of CalFresh and other public food resources and to maximize access to financial assistance programs that make household income more available for food. The County is also using the findings to inform the development of a COVID Food Assistance Grant Program which will fund community organizations that are providing additional forms of food assistance to people who are affected by the pandemic and in need of help.

This study also highlights the impact the pandemic is having on the diets of most adult Angelenos, both positive and negative. Unsurprisingly, people who experienced food insecurity during the pandemic were more likely to have unhealthful changes in their diet. This has important long-term health implications: if many of the 1 in 4 households in L.A. County that experienced food insecurity are eating less healthy foods, we could see increased risk for many diet related diseases like diabetes, obesity, heart disease and some cancers. These are diseases that are already much too common in L.A., particularly among people who are low-income and of color. Our team will continue to investigate patterns of dietary changes during the pandemic and how this differs based on food security, socio-demographics, and food environments.

Neighborhood food environments and whether or not someone has access to a grocery store near where they live was not found to be a risk factor for food insecurity during the pandemic. However, the data used in these analyses were based on pre-pandemic information about access to grocery stores in one's home neighborhood. The next stage of our research will measure how food environments have changed, with food outlets closing or having limited hours, or with varying availability of food delivery, to better understand if and how these changes impact food security and equitable access to food.

We also plan to gain a richer understanding of the lived experiences of people who are food insecure during the COVID-19 crisis, including what has helped or hindered them from transitioning to food security and why food assistance is not always reaching those who are eligible. One way to do this would be to interview individuals in the USC Dornsife Understanding Coronavirus in America sample who reported experiencing food insecurity, and the barriers they face in accessing food and food assistance programs. Findings from these interviews could then be followed up with the larger L.A. County survey sample to examine the prevalence of those barriers and to whom they occur. These findings would serve to improve food programs and interventions.

Altogether, this research provides one of the first comprehensive analyses of the COVID-19 pandemic's impact on food security in Los Angeles County. This data will be essential to the development of a long-term strategy for food justice that ensures people at risk for food insecurity have the resources and access to food they need as the pandemic continues to unfold.

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Survey Methodology

This report is based on data from four waves of the Understanding Coronavirus in America tracking survey, administered by the USC Dornsife Center for Economic and Social Research (CESR). Respondents are members of CESR's Understanding America Study (UAS) probability-based internet panel who participated in tracking survey waves conducted between April 1 and August 4, 2020. All respondents are 18 years or older. The survey is conducted in English and Spanish. All results are weighted to CPS benchmarks, accounting for sample design and non-response. Weighted sample sizes for each survey wave in this report range from 1,015 to 1,216, and the weighted sample for most analyses (that answered surveys at Wave 1, Wave 2, **or** Wave 3, and who also answered the survey at Wave 4) was 1071. Estimates based on overall results have a margin of sampling error (MOSE) of +/- 3 percentage points for each wave.

Participants were recruited for the UAS internet panel using an ABS household sample; internet connected tablets are provided as needed. Graphical results and full methodological details for the tracking survey are available at https://covid19pulse.usc.edu/. Questionnaires with full text of questions, toplines, data files, and press releases are available at https://uasdata.usc.edu/page/Covid-19+Home. Methodological details for the UAS panel are available at https://uasdata.usc.edu. The Understanding Coronavirus in America Tracking Survey has been funded in part by the Bill & Melinda Gates Foundation, the University of Southern California, and many others who have contributed questions to individual waves or sets of waves.

Sample sizes and MOSE for subgroups in each section of this analysis

Section 1. Analysis in this section on food insecurity categories among all households had a sample size of 1071 participants, with a MOSE of +/- 3 percentage points. Analysis among low-income households had a sample size of 599 participants, with a MOSE of +/- 4 percentage points.

Section 2. For the descriptive analysis in this section, summarized in Figure 1 and Figure 2, analysis is based on sample sizes of between 307 (food insecure) and 764 (food secure) participants, with a MOSE of +/- 6 percentage points for the characteristics of food insecure participants, and a MOSE of +/- 4 percentage points for the characteristics of food secure participants. The regression analysis is based on a sample size of 1071 participants, with statistically significant effects reported.

Section 3. Analysis in this section on food insecurity categories among all households had a sample size of 1071 participants, with a MOSE of +/- 3 percentage points. Analysis among low-income households had a sample size of 599 participants, with a MOSE of +/- 4 percentage points. Analysis for each food security category is based on the following sample sizes: "Food insecure in April-May, but food secure in June-July" had 199 participants, with a MOSE of +/- 7 percentage points; "Food insecure in April-May and June-July" had 81 participants, with a MOSE of +/- 11 percentage points.

Section 4. Analysis in this section on food insecurity categories among all households had a sample size of 1071 participants, with a MOSE of +/- 3 percentage points. Analysis of each food security category is based on the following sample sizes: "Food insecure in April-May, but food secure in June-July" had 199 participants, with a MOSE of +/- 7 percentage points; "Food insecure in April-May and June-July" had 81 participants, with a MOSE of +/- 11 percentage points.

Section 5. Analysis in this section on food insecurity categories among all households had a sample size of 1071 participants, with a MOSE of +/- 3 percentage points. Analysis of each food security category is based on the following sample sizes: "Any food insecurity from April – July" had 307 participants, with a MOSE of +/- 6 percentage points; "Food insecure in April-May, but food secure in June-July" had 199 participants, with a MOSE of +/- 7 percentage points; "Food insecure in April-May and June-July" had 81 participants, with a MOSE of +/- 11 percentage points.

Section 6. Analysis in this section on food insecurity categories among all households had a sample size of 1071 participants, with a MOSE of +/- 3 percentage points. Analysis among low-income households had a sample size of 599 participants, with a MOSE of +/- 4 percentage points. Analysis of each food security category is based on the following sample sizes: "Food secure" had 764 participants, with a MOSE of +/- 4 percentage points; "Any food insecurity from April – July" had 307 participants, with a MOSE of +/- 6 percentage points; "Food insecure in April-May and June-July" had 81 participants, with a MOSE of +/- 11 percentage points.

The sample sizes and all results are weighted.

References

- Ammar, A., et al. 2020. Effects of COVID-19 home confinement on eating behaviour and physical activity: Results of the ECLB-COVID19 International Online Survey. *Nutrients*, *12*(6), 1583.
- Blumberg, SJ, Bialostosky, K, Hamilton, WL, & Briefel, RR. 1999. The effectiveness of a short form of the Household Food Security Scale. *American Journal of Public Health*, 89, 1231-1234.
- Cafiero, C., Viviani, S. & Nord, M. 2018. Food security measurement in a global context: The food insecurity experience scale. *Measurement*, 116, 146-152.
- Centers for Disease Control (CDC), National Center for Chronic Disease Prevention and Health Promotion. 2020. *Poor Nutrition*. https://www.cdc.gov/chronicdisease/resources/publications/factsheets/nutrition.htm
- Coleman-Jensen, A, Rabbitt, M.P., Gregory, C.A., & Singh, A. 2020. *Household Food Security in the United States in 2019*, ERR-275, U.S. Department of Agriculture, Economic Research Service.
- County of Los Angeles. 2020. L.A.County.gov: DPSS Department at a Glance. https://myapps.dpss.lacounty.gov/pls/apexprod/f?p=202001230O2:10:297278329514:::::
- Dhurandhar, E.J. 2016. The food-insecurity obesity paradox: A resource scarcity hypothesis. *Physiology & Behavior*, 162, 88-92.
- Gundersen, C., & Ziliak, J.P. 2014. Childhood food insecurity in the US: trends, causes, and policy options. *The Future of Children*, 1-19.
- Gundersen, C., & Ziliak, J.P. 2015. Food insecurity and health outcomes. *Health Affairs*, 34(11), 1830-1839.
- Los Angeles County Department of Public Health (LAC DPH), Office of Health Assessment and Epidemiology. 2017. *Food Insecurity in Los Angeles County*. https://admin.publichealth.lacounty.gov/chronic/docs/LA%20Health_FoodInsecurity_finalB.pdf
- Los Angeles County Department of Public Health (LAC DPH), Office of Health Assessment and Epidemiology. 2018. *2018 Los Angeles County Health Survey*.
- Rodríguez-Pérez, C., et al. 2020.Changes in dietary behaviours during the COVID-19 Outbreak Confinement in the Spanish COVIDiet Study. *Nutrients*, *12*(6), 1730.
- Scarmozzino, F., & Visioli, F. 2020. Covid-19 and the subsequent lockdown modified dietary habits of almost half the population in an Italian sample. *Foods*, *9*(5), 675.