



## Food Insecurity in the Census Household Pulse Survey Data Tables

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## “Food Insecurity in the Census Household Pulse Survey Data Tables” by Diane Schanzenbach and Abigail Pitts

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### Introduction

The U.S. Census Bureau has begun releasing waves of their Census Household Pulse Survey (CHHPS) that collect information about household experiences during the COVID-19 pandemic, including several measures of food access. In this report,<sup>1</sup> we analyze food insufficiency rates from the first two weeks of CHHPS summary tables and transform them to be comparable to other measures of food insecurity both during COVID-19 and prior to it. We take several approaches to the transformation, as described below, based on the relationship between food insecurity and food insufficiency in other datasets. We also explore using other information in the CHHPS to serve as a proxy for food insecurity, and conclude that the elevated rates measured in CHHPS reflect increased need and are not being driven in a meaningful way by lack of variety on store shelves.

We estimate rates of food insecurity from the CHHPS that, depending on the approach taken to map food insufficiency onto food insecurity, range in the first week of data collection from 22%–30% for respondents overall and 28%–35% among respondents with children. These estimates increased across waves. The estimates of food insecurity from the CHHPS are very similar to those found in the [COVID Impact Survey](#) (COVID Impact) and indicate that food insecurity rates have at least doubled from their previous levels. We also conclude that the attempt to assess retrospective food sufficiency status prior to the COVID-19 was unsuccessful.

### Comparing Food Insufficiency to Food Insecurity

The Census Household Pulse Survey (CHHPS) collects information on food sufficiency over the past 7 days. To estimate food security, we estimate the relationship between food sufficiency and food security from the Current Population Survey Food Security Supplement (CPS-FSS).

The CPS-FSS administers a 10-item scale (18 items for households with children) that assesses a variety of aspects of a household’s access to food, ranging from how often the household worried about having enough food to how often a child has gone for a day without eating. These 18 questions are then used to designate a household’s food security status. For comparison, the COVID Impact Survey only asked a subset of those questions.

<sup>1</sup> Updated June 9 2020 to correct a prior error in Table 7. The authors regret the error.

Instead of including any question(s) from the CPS-FSS, CHHPS collects a different measure that asks respondents about their food sufficiency. Respondents are asked to choose one of four answers to the following question: “In the last 7 days, which of these statements best describes the food eaten in your households?” Respondents are asked to choose one of the following answers:

- “Enough of the kinds of food we wanted to eat”
- “Enough, but not always the kinds of food we wanted to eat”
- “Sometimes not enough to eat”
- “Often not enough to eat.”

For those respondents who did not report having enough to eat or enough of the kinds of food they wanted to eat, a follow-up question asks them to report reasons why they did not have enough to eat. This question is with respect to the last 7 days prior to the survey, and as discussed further below is also asked for the period “before March 13, 2020.”

The CPS-FSS asks a similar question about food sufficiency as a screener question prior to asking a subset of respondents the battery of questions designed to measure food security. CPS respondents who report often or sometimes not having enough to eat, or not having enough of the kinds of food they want to eat, are asked the detailed battery to measure food security.<sup>2</sup> Because the CPS-FSS asks both about food insufficiency and about food insecurity, we can assess how the two concepts are typically related. We conduct these comparisons using pooled CPS-FSS data from 2015–18. We can use this relationship to map the measures of food sufficiency collected in the CHHPS to food security.

Below we take different approaches to comparing relationships between food insufficiency and food security, and then apply those correlations to the Household Pulse Survey to obtain estimates of the share of households experiencing food insecurity during the COVID-19 pandemic.

## Regression Approach

In the CPS-FSS, the share of households reporting food insufficiency (defined as reporting over the last year they “sometimes or often don’t have enough food,” or that they “don’t have the types of food they want”) is closely related to the share determined to be food insecure over the year. As shown in Table 1 below, using the CPS-FSS we calculated food insufficiency (column 1) and food insecurity (column 2) overall, by respondent’s race/ethnicity, by respondent’s education level, and repeat these in Panel B for respondents with children. To match the CHHPS tables, we estimate food insecurity rates among adults with individual weights throughout. We then fit regression lines, separately for respondents overall and those with children. Model 1, the “level” model, regresses the food insecurity level on the food insufficiency level plus a constant; model 2, the “log” model, regresses the log of food insecurity as a function of the log of food insufficiency and a constant. Both

<sup>2</sup> There are other ways that households can be screened into the CPS-FSS. Households that report on a different question that they ran short of money for food, or if they report an income below 185% of the federal poverty line, then they are also asked the CPS-FSS. Households that are not screened into the CPS-FSS are assumed to be food secure.

models have R-squared statistics over 0.97. To transparently illustrate the model fit, we present the predicted food insecurity levels based on the level and log models in columns 3–4. When comparing the predictions from the level and log models to the actual data, the level model does a slightly better job of predicting food insecurity among Hispanics and those with college degrees, and the log model fits better among for every other group.

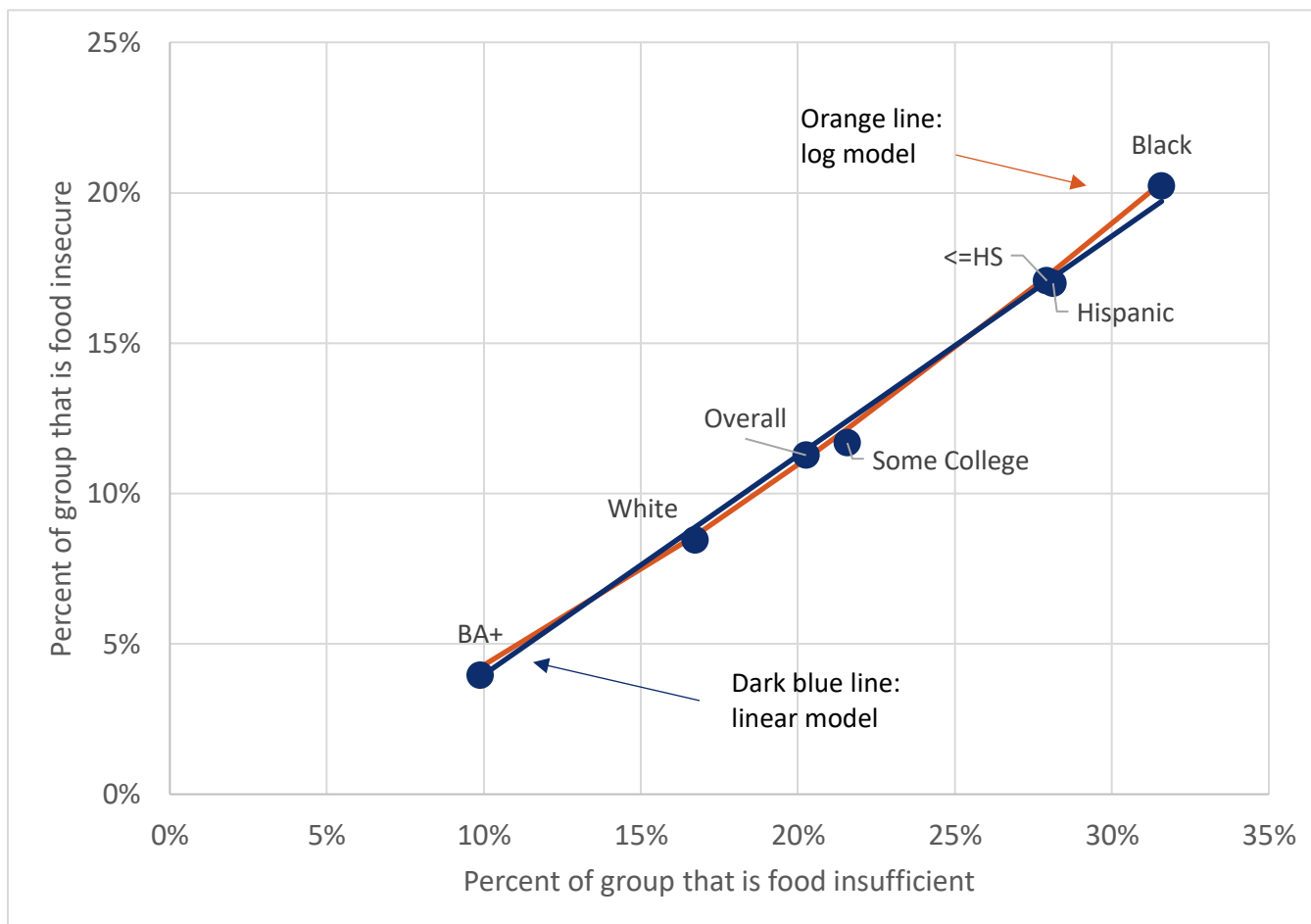
**Table 1. Food Insufficiency and Food Insecurity Last Year in the CPS-FSS, and Prediction Models**

	Food Insufficient	Food Insecure	Predicted Insecurity: Level Model	Predicted Insecurity: Log Model
	(1)	(2)	(3)	(4)
<i>Panel A: Respondents Overall</i>				
Overall	20.3%	11.3%	11.5%	11.1%
White	16.7%	8.4%	8.9%	8.6%
Black	31.6%	20.2%	19.7%	20.3%
Hispanic	28.1%	17.0%	17.2%	17.4%
<=HS	27.9%	17.1%	17.0%	17.2%
Some College	21.6%	11.7%	12.4%	12.1%
BA+	9.9%	4.0%	3.9%	4.2%
<i>Panel B: Respondents with Children</i>				
Overall	24.0%	14.7%	14.9%	14.6%
White	20.1%	11.3%	12.1%	11.8%
Black	34.2%	23.0%	22.5%	23.0%
Hispanic	30.1%	19.4%	19.4%	19.5%
<=HS	33.1%	21.8%	21.7%	22.0%
Some College	25.7%	15.4%	16.2%	16.0%
BA+	11.0%	5.0%	5.3%	5.4%

*Notes: Authors' calculations of household food insufficiency and food insecurity from CPS-FSS 2015–18 microdata using person weights. Column 3 (4) is predicted insecurity from a linear (log) model in which group-level food insecurity is a function of group-level food insufficiency and a constant term.*

Figure 1 illustrates the relationship between food insufficiency and food insecurity, and the model fits, for respondents overall and by subgroup. The blue line illustrates the linear prediction model, and the orange line illustrates the log model.

**Figure 1. Relationship Between Food Insufficiency & Food Insecurity in CPS-FSS**



Notes: Authors’ calculations of household food insufficiency and food insecurity from CPS-FSS 2015–18 microdata using person weights. Blue (orange) line predicted insecurity from a linear (log) model in which group-level food insecurity is a function of group-level food insufficiency and a constant term.

Table 2 displays the rates of household food insufficiency in the CHHPS collected from April 23–May 5 (column 1) and collected from May 7–12 (column 4). Between the two surveys, food insufficiency estimates increased somewhat.<sup>3</sup> Overall, 42–45% of respondents, and 48–51% of those with children reported food insufficiency. Using the models described above, we predict food insecurity rates overall to be in the range of 27–30% using the linear model and 30–33% using the log model. Among respondents with children, the estimates are 33–35%

<sup>3</sup> The published tables do not provide standard errors. The CHHPS microdata have recently become available, and we calculate that the increases are statistically significantly different from zero across the weeks for all groups except Hispanics. (Fields, J.F., Hunter-Childs, J., Thersine, A., Sisson, J., Parker, E., Velkoff, V., Logan, C., and Shin, H. Design and Operation of the 2020 Household Pulse Survey, 2020. U.S. Census Bureau. Forthcoming).

and 35–38%, respectively. Nearly half of those who are black and Hispanic and those with a high school diploma or less, are estimated to have been food insecure in May.

**Table 2: Food Insufficiency & Regression Predicted Food Insecurity, 2 CHHS Waves**

	Census Household Pulse April 23–May 5			Census Household Pulse May 7–12		
	Food Insufficient	Predicted Food Insecurity: Level Model	Predicted Food Insecurity: Log Model	Food Insufficient	Predicted Food Insecurity: Level Model	Predicted Food Insecurity: Log Model
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Respondents Overall</i>						
Overall	41.7%	27.1%	29.7%	45.2%	29.6%	33.0%
White	36.1%	23.0%	24.4%	39.4%	25.4%	27.5%
Black	52.2%	34.8%	40.2%	59.4%	40.0%	47.8%
Hispanic	54.4%	36.4%	42.5%	57.2%	38.4%	45.5%
<=HS	47.7%	31.5%	35.5%	53.9%	35.9%	41.9%
Some College	45.5%	29.8%	33.3%	48.0%	31.6%	35.8%
BA+	30.4%	18.8%	19.3%	31.3%	19.5%	20.1%
<i>Panel B: Respondents with Children</i>						
Overall	47.6%	32.5%	35.0%	50.9%	34.9%	38.0%
White	42.2%	28.4%	30.0%	45.4%	30.8%	32.9%
Black	54.7%	37.7%	41.6%	60.7%	42.1%	47.5%
Hispanic	56.7%	39.1%	43.5%	58.2%	40.3%	45.1%
<=HS	56.0%	38.6%	42.9%	61.4%	42.7%	48.2%
Some College	50.2%	34.3%	37.3%	52.8%	36.3%	39.8%
BA+	32.8%	21.4%	21.8%	33.7%	22.1%	22.5%

Source: Authors’ calculations from CPS-FSS 2015–18; Census Household Pulse Survey Food Sufficiency and Food Security Tables 2b and 3b.

### Conditional Probability Method

A drawback of the regression approach is that by categorizing food insufficiency into a binary category, it leaves unused the information about the extent of food insufficiency. Those reporting that they “often did not have

enough to eat” have higher rates of food insecurity than those reporting they had “enough, but not always the kinds of food we wanted to eat.” As a result, we can potentially use variation in the intensity of food insufficiency to more accurately predict rates of food insecurity.

Table 3 reports the share of respondents’ households that are coded to be food insecure based on their responses to the CPS-FSS, separately by their response to the food insufficiency screener question. The overwhelming majority, 86–88%, of those reporting they “sometimes or often did not have enough to eat” were determined to be food insecure (columns 3 and 4). Among those who reported that they had “enough food to eat but not the kinds they wanted,” 38% of respondents overall were food insecure, as were 43% of those with children. Even 2–3% among those who reported sufficient food in desired variety, once screened, were determined to be food insecure.

**Table 3. Likelihood of Being Food Insecure, by Food Sufficiency Response in CPS-FSS**

	CPS-FSS Enough of the Kinds of Foods (1)	CPS-FSS Enough But Not the Kinds of Foods (2)	CPS-FSS Sometimes Not Enough to Eat (3)	CPS-FSS Often Not Enough to Eat (4)
<i>Panel A: Respondents Overall</i>				
Overall	2.1%	37.8%	85.4%	87.5%
White	1.4%	34.2%	87.8%	90.4%
Black	4.3%	43.8%	83.1%	87.2%
Hispanic	4.1%	41.6%	83.8%	80.5%
<=HS	3.6%	41.2%	86.0%	88.9%
Some College	2.2%	37.6%	85.3%	87.7%
BA+	0.7%	28.1%	81.3%	75.7%
<i>Panel B: Respondents with Children</i>				
Overall	3.2%	43.1%	86.2%	86.3%
White	2.2%	39.6%	90.7%	92.5%
Black	5.1%	47.6%	85.8%	92.3%
Hispanic	5.1%	45.4%	82.6%	76.5%
<=HS	5.5%	46.1%	85.6%	88.4%
Some College	3.3%	43.1%	88.1%	85.1%
BA+	1.0%	33.2%	84.9%	76.2%

*Notes: Authors’ calculations of household food insufficiency and food insecurity from CPS-FFS 2015–18 microdata using person weights.*

We can take the share of households with food sufficiency status in each category in the CHHPS and predict their food security status based on the relationship observed in Table 3. Results are presented in Table 4. Columns 1–3 and 5–7 present the share of respondents reporting food insufficiency; recall that the share

reporting food sufficiency can be calculated as 100 less the sum of these columns. Columns 4 and 8 present predicted food insecurity, multiplying the share of respondents reporting each level of food sufficiency by the conditional probability of being food insecure in the CPS-FSS as reported in Table 3. Note that each row is multiplied by the conditional probability of being food insecure for the same subgroup in Table 3.<sup>4</sup> Based on this approach, 22–23% of respondents overall, and 28–29% of those with children are food insecure in the CHHPS data. The point estimates at each level of food insufficiency are higher in the second wave than the first.

One concern about all of these approaches is whether the normal relationship between food insufficiency and food insecurity holds during the COVID-19 crisis. Under normal circumstances, 38-44% of those reporting that “they had enough food but not the types they wanted” are food insecure. It is possible that during the early weeks of the COVID-19 crisis some portion of those reporting “we had enough food but not the *types we wanted*” could be reflecting disruptions to the supply chain, which have meant that some stores were not stocked with their normal diversity of goods. The evidence to date suggests that little of the increase in food insufficiency is due to supply chain issues, and it instead reflects increased need. We draw this conclusion based on the facts that all food sufficiency responses are elevated, including those in which respondents indicate they “often or sometimes do not have enough to eat.” Further, the share reporting “enough but not the types we wanted” has remained steady or increased across weeks as the supply chain issues have been resolving.<sup>5</sup> Further, as shown below the projections from CHHPS line up closely with the COVID Impact Survey results which asks explicitly about resource availability to purchase food. We will return to this topic below.

<sup>4</sup> If we used the overall relationship to predict food insecurity, then predictions for blacks, Hispanics, and those with lower levels of education would come down a bit, and predictions for whites and those with higher levels of education would increase.

<sup>5</sup> Just-released week 3 data indicate that the share reporting “enough food but not the types we wanted” remained steady at 34% of respondents overall and 36% of those with children.



**Table 4. Food Insufficiency & Conditional Probability Predicted Food Insecurity, 2 CHPS Waves**

	Census Household Pulse April 23–May 5				Census Household Pulse May 7–12			
	Enough But Not the Types of Foods	Sometimes Not Enough to Eat	Often Not Enough to Eat	Predicted Food Insecurity	Enough But Not the Types of Foods	Sometimes Not Enough to Eat	Often Not Enough to Eat	Predicted Food Insecurity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A: Respondents Overall</i>								
Overall	31.9%	7.9%	1.9%	21.7%	34.6%	8.5%	2.1%	23.3%
White	29.6%	5.4%	1.1%	16.7%	32.4%	5.7%	1.3%	18.2%
Black	31.8%	16.6%	3.9%	33.1%	35.0%	20.3%	4.1%	37.5%
Hispanic	39.0%	11.9%	3.5%	30.9%	41.3%	12.5%	3.4%	32.1%
<=HS	33.1%	11.5%	3.0%	28.2%	37.0%	13.5%	3.4%	31.5%
Some College	34.9%	8.7%	1.9%	23.4%	37.7%	8.3%	1.9%	24.1%
BA+	27.4%	2.6%	0.5%	10.6%	28.3%	2.4%	0.7%	10.9%
<i>Panel B: Households with Children</i>								
Overall	34.8%	10.4%	2.4%	27.8%	38.0%	10.6%	2.3%	29.1%
White	33.6%	7.4%	1.2%	22.4%	37.1%	7.0%	1.2%	23.4%
Black	30.6%	19.8%	4.2%	37.8%	33.3%	22.9%	4.5%	41.7%
Hispanic	40.0%	12.5%	4.2%	33.9%	42.7%	12.7%	2.8%	34.2%
<=HS	36.8%	15.0%	4.1%	35.9%	41.0%	16.8%	3.6%	38.6%
Some College	37.2%	11.0%	1.9%	29.0%	41.9%	9.3%	1.7%	29.2%
BA+	29.2%	3.1%	0.5%	13.4%	29.6%	3.1%	1.0%	13.9%

Source: Authors' calculations from CPS-FSS 2015–18; Census Household Pulse Survey Food Sufficiency and Food Security Tables 2b and 3b.

## Comparing Transformed CHHPS Results to COVID Impact Survey

Table 5, below, lines up the two regression prediction models (columns 1, 2, 5, 6) alongside the conditional probability method (columns 3, 7) for each wave of the CHHPS. The conditional probability method predicts the lowest rates of food insecurity across the board, and the log regression model predicts the highest. For respondents overall, the estimates range from 22–31% in wave 1, and 23–33% in wave 2. Columns 4 and 8 display averages for very similar dates from the COVID Impact Survey. In most cases, the results from the COVID Impact Survey are very similar to the conditional probability method. COVID Impact Survey has substantially higher estimated rates for black and Hispanic respondents with children, but the confidence intervals on these numbers in the COVID Impact are high enough that we cannot reject that the numbers are the same. The COVID Impact Survey shows a sharp decline among whites between waves 1 and 2, which is not supported in the CHHPS data.

**Table 5. Comparing CHHPS Predictions to the COVID Impact Survey**

	CHHPS April 23–May 5			COVID Impact Survey April 20–26	CHHPS May 7–12			COVID Impact Survey May 4–10
	Level Model	Log Model	Conditional Probability Method		Level Model	Log Model	Conditional Probability Method	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Panel A: Respondents Overall</i>								
Overall	27.1%	29.7%	21.7%	22.8%	29.6%	33.0%	23.3%	21.7%
White	23.0%	24.4%	16.7%	18.2%	25.4%	27.5%	18.2%	14.4%
Black	34.8%	40.2%	33.1%	29.0%	40.0%	47.8%	37.5%	37.5%
Hispanic	36.4%	42.5%	30.9%	34.2%	38.4%	45.5%	32.1%	33.9%
<=HS	31.5%	35.5%	28.2%	34.3%	35.9%	41.9%	31.5%	34.0%
Some College	29.8%	33.3%	23.4%	23.5%	31.6%	35.8%	24.1%	22.2%
BA+	18.8%	19.3%	10.6%	9.7%	19.5%	20.1%	10.9%	7.8%
<i>Panel B: Respondents with Children</i>								
Overall	32.5%	35.0%	27.8%	34.5%	34.9%	38.0%	29.1%	31.6%
White	28.4%	30.0%	22.4%	32.9%	30.8%	32.9%	23.4%	18.3%
Black	37.7%	41.6%	37.8%	37.7%	42.1%	47.5%	41.7%	51.4%
Hispanic	39.1%	43.5%	33.9%	41.6%	40.3%	45.1%	34.2%	44.3%
<=HS	38.6%	42.9%	35.9%	54.6%	42.7%	48.2%	38.6%	50.7%
Some College	34.3%	37.3%	29.0%	32.8%	36.3%	39.8%	29.2%	28.6%
BA+	21.4%	21.8%	13.4%	11.7%	22.1%	22.5%	13.9%	11.8%

Source: Authors' calculations from CPS-FSS 2015–18; Census Household Pulse Survey Food Sufficiency and Food Security Tables 2b and 3b.

## Lingering Questions

There are some other issues worth considering in analyzing the CHHPS data and comparing them to other benchmarks.

### ***COVID Impact Survey Comparability***

The COVID Impact Survey and the CHHPS have several differences that complicate their comparison. First, the reference periods are different: COVID Impact asks about food insecurity over the previous 30 days, while CHHPS asks about experiences over the prior week only. This should imply that COVID Impact Survey estimates will be slower to decline than CHHPS when we start to see improvements, because CHHPS would ask respondents to omit food experiences that happened 8–31 days ago while COVID Impact asks them to include these experiences. On the other hand, both measures would be expected to be similarly responsive during the increase period—e.g., in either survey if the respondent experienced her first bout of food insecurity yesterday it would be included in the response. It is not clear how much this distinction matters in practice because each is asked without other anchoring timeframes (that is, no one is asked to compare the last year to the last month/week like they are in the CPS-FSS. The fact that CHHPS respondents are also asked about experiences prior to March 13 may complicate the framing, though.)

Second, we use the response to the statement that the food “just didn’t last and we didn’t have resources to buy more” as the food insecurity proxy from the COVID Impact Survey. In future work, we will repeat the exercises in the sections above to map the measures collected in the COVID Impact Survey onto food insecurity.

### ***Using Information on the Reasons for Food Insufficiency in CHHPS***

Because of the disruptions to the food supply system unique to this moment, more families may report that they had enough food but not always the type of food that they wanted than at other times. For some of these families, the ability to purchase the types of food that they wanted is constrained by limited availability at the grocery store and not due to a lack of household resources to purchase food. In this case, the normal relationship between food insufficiency and food insecurity measured in the CPS-FSS may not hold.

The CHHPS also asks a follow-up question to the food insufficiency question, in which it asks the reason(s) for a household’s recent food insufficiency—including couldn’t afford to buy more food, couldn’t get out to buy food, afraid to go, couldn’t get delivery, and the stores didn’t have the food I wanted. We have explored using this information as presented in the summary tables, counting as food insecure those who report that the reason for their food insufficiency was that they couldn’t afford to buy more food. At this point the information is only available for households overall and those with children. Taking the ratio of those who reported they “couldn’t afford to buy food” to the total population in each group/week, we estimate 26–27% of households overall and 27–29% of households with children reported food insufficiency because they couldn’t afford enough food as shown in column 1 of Table 6.

While using this “couldn’t afford food” approach has intuitive appeal, there are some irregularities with how the Census Bureau has reported on the measure in its published tables. Columns 2–4 of Table 6 display the share of respondents indicating that they “couldn’t afford food” based on their responses to the food insufficiency question. It is surprising that such a low share of households that report “often” not having enough to eat report that it is due to lack of resources for food. At the same time, a very high share of those reporting “enough food but not always the types wanted” said that was due to resources. Because this is the first time that this question has been fielded, we are unaware of other sources to compare these results to; we do not have direct evidence about how these distributions should look. Recall, though, that in the CPS-FSS, the share of those found to be food insecure conditional on “sometimes or often not having enough to eat” was nearly 90%, compared to approximately 40% among those reporting “not having the types of food desired.” It is highly suspect that the relationship is so different in the CHHPS.

We draw two preliminary conclusions. First, one could conclude that this variable is currently not a reliable indicator. Whether this is borne out by further investigation, it remains the case that the best course of action going forward would be to ask a validated household resource question from the Food Security Supplement separate from the unique-to-coronavirus questions in the Pulse. Second, preliminary analyses of the recently released microdata suggest the published tables have substantial discrepancies regarding the level and distribution of responses on these variables.<sup>6</sup> This lends weight to the conclusion that the published tables are in error.

<sup>6</sup> We analyzed the CHHPS microdata to reproduce the published tables and produced different results in both the distribution and levels of responses. Separately, Lauren Bauer was also unable to reproduce the published tables, and found results similar to ours (authors’ correspondence).

**Table 6. Share Reporting They Couldn't Afford Enough Food in CHPS, Overall and by Food Sufficiency Response**

	% Reporting Couldn't Afford	Enough But Not the Types of Foods	Sometimes Not Enough to Eat	Often Not Enough to Eat
	(1)	(2)	(3)	(4)
<i>Panel A: Respondents Overall</i>				
Week 1	25.9%	73.6%	25.8%	20.1%
Week 2	27.2%	72.1%	24.1%	9.8%
<i>Panel B: Respondents with Children</i>				
Week 1	27.3%	69.6%	24.6%	22.4%
Week 2	28.9%	68.0%	25.7%	12.5%

Source: Authors' calculations from Census Household Pulse Survey Food Sufficiency and Food Security Tables 2b, 3b, 4, and 5.

One concern with the approach of mapping food insufficiency to food insecurity using the relationship in the CPS-FSS is that during the COVID-19 crisis, food insufficiency may occur for some respondents because of unprecedented supply-chain limitations that have resulted in some items being out of stock. Some respondents who had “enough food but not the types they desired” due to lack of normal inventory at stores are likely mixed in with others who “do not have the types they desire” due to insufficient resources. Using the microdata, we make an attempt to identify the group that reported they experienced food insufficiency but that it occurred likely due to lack of usual variety on store shelves, i.e., a supply-chain issue and not a household resource issue. In particular, we can recode as food sufficient those respondents who indicate that they had “enough but not the types of foods” available and reported the only reason for this status because the “stores didn't have the food I wanted” to be food secure. Results of this exercise are displayed in Table 7. The estimates of food insufficiency are reduced by approximately 10 percentage points. Since only a minority of those reporting “enough but not the types of foods” are predicted to be food insecure, food insecurity is reduced by less—the estimates adjusted for supply variety limitations indicate 17–18% of respondents are food insecure overall, as are 22–23% of respondents with children.<sup>7</sup> If this adjustment is accurate, it suggests that supply chain issues have contributed modestly to the elevated rates of food insufficiency and food insecurity.

<sup>7</sup> Supply chain issues have also contributed to price increases, which in turn elevate food insufficiency and food insecurity.

**Table 7. Food Insufficiency & Conditional Probability Predicted Food Insecurity Adjusted for Supply Variety Limitations, 2 CHHPS Waves**

	Wave 1: Food Insufficiency Less Supply Variety (1)	Wave 2: Food Insufficiency Less Supply Variety (2)	Wave 1: Predicted Food Insecurity Less Supply Variety (3)	Wave 2: Predicted Food Insecurity Less Supply Variety (4)
<i>Panel A: Respondents Overall</i>				
Overall	28.6%	30.0%	17.0%	17.9%
White	21.7%	21.9%	12.0%	12.4%
Black	42.4%	50.1%	29.1%	33.5%
Hispanic	41.3%	45.4%	25.9%	27.7%
<=HS	34.3%	38.9%	23.1%	25.8%
Some College	31.7%	31.1%	18.5%	18.1%
BA+	18.1%	17.6%	7.2%	7.1%
<i>Panel B: Respondents with Children</i>				
Overall	34.1%	35.4%	22.4%	22.8%
White	26.7%	25.0%	16.7%	15.8%
Black	45.5%	52.3%	33.9%	37.3%
Hispanic	42.6%	48.2%	28.2%	30.1%
<=HS	42.1%	47.1%	30.2%	32.5%
Some College	36.4%	34.3%	23.5%	21.8%
BA+	20.1%	19.9%	9.3%	9.4%

Source: Authors' calculations from CPS-FSS 2015–18 and Census Household Pulse Survey Weeks 1 and 2 microdata.

### ***Using the Retrospective Data from CHHPS***

The CHHPS also asks respondents to assess their food sufficiency for the period before March 13, 2020, the date when a national emergency was declared for the COVID-19 pandemic. Ideally, this question could be used to try to understand the change in food security statuses relative to the time before the pandemic. We employ the conditional probability method from above to transform the data to a food insecurity metric. Table 8, below, shows the reported rates of food insufficiency for each of the first two weeks of the CHHPS in columns 1 and 2, and predicted rates of food insecurity in columns 4 and 5. For comparison, we present rates of food insufficiency and food insecurity rate for each subgroup in the 2018 CPS-FSS data in columns 3 and 6, respectively.

If the retrospective questions adequately measure food sufficiency prior to the COVID-19 health emergency, the predictions should be the same across the two waves of the CHHPS, subject to sampling error. Between waves 1 and 2, food insufficiency increased by 2 percentage points overall and for respondents with children. Among some subgroups, it increased by as much as 5 percentage points. Without yet having the information to calculate the standard errors on these estimates, we cannot state whether the estimates are statistically different. Importantly, we can also compare retrospective food insufficiency reports to those measured in the December 2018 CPS-FSS. The retrospective estimates from CHHPS are approximately 40% higher than the CPS-FSS measures. Food insufficiency is highly unlikely to have increased that much between 2018 and early 2020, given that economic conditions continued to improve over that time period. Similar patterns hold for predicted food insecurity levels in columns 4–5 compared to column 6.

The inconsistencies between the predictions for the two waves and their deviation from the most recent official food insufficiency rates leads us to conclude that the retrospective question is an inaccurate measure of food insufficiency status prior to March 13. That food insecurity rates appear higher before March 13 as we get further from that date suggests respondents may be misremembering their pre-COVID-19 status. We advise against using these questions to assess changes in food insecurity during the COVID-19 health emergency.

**Table 8. Food Insufficiency & Conditional Probability Predicted Food Insecurity Prior to March 13, 2020, 2 Waves of CHHPS and December 2018 CPS-FSS**

	Wave 1: Food Insufficiency Prior to March 13, 2020	Wave 2: Food Insufficiency Prior to March 13, 2020	Food Insufficiency, December 2018	Wave 1: Predicted Food Insecurity Prior to March 13, 2020	Wave 2: Predicted Food Insecurity Prior to March 13, 2020	Measured Food Insecurity, December 2018
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Respondents Overall</i>						
Overall	28.4%	32.6%	19.2%	16.2%	18.4%	10.4%
White	22.4%	26.4%	15.6%	11.6%	13.2%	7.7%
Black	41.8%	49.8%	30.5%	28.2%	33.4%	19.5%
Hispanic	40.3%	45.3%	26.1%	24.4%	27.5%	15.0%
<=HS	36.3%	43.0%	26.5%	23.1%	27.1%	15.9%
Some College	30.6%	34.6%	20.8%	17.0%	18.5%	11.0%
BA+	15.9%	17.4%	9.7%	6.2%	6.6%	3.8%
<i>Panel B: Respondents with Children</i>						
Overall	34.0%	37.4%	22.6%	21.6%	23.3%	13.0%
White	26.7%	31.3%	19.1%	15.7%	17.9%	9.9%
Black	44.4%	49.5%	32.0%	32.7%	36.9%	22.8%
Hispanic	45.2%	44.6%	27.1%	28.8%	27.9%	15.9%
<=HS	45.1%	49.5%	31.5%	30.9%	33.7%	19.8%
Some Coll	33.7%	37.7%	23.6%	21.3%	22.6%	13.5%
BA+	18.0%	19.5%	11.0%	8.1%	8.6%	4.6%

Source: Authors' calculations from CPS-FSS 2015–18; Census Household Pulse Survey Food Sufficiency and Food Security Tables 2a and 3a.