

Food Insecurity in a Low-Income, Predominantly African American Cohort Following the COVID-19 Pandemic

Tamara Dubowitz, MSc, SM, ScD, Madhumita Ghosh Dastidar, PhD, Wendy M. Troxel, PhD, Robin Beckman, MPH, Alvin Nugroho, BS, Sameer Siddiqi, PhD, Jonathan Cantor, PhD, Matthew Baird, PhD, Andrea S. Richardson, PhD, MPH, Gerald P. Hunter, MCP, Alexandra Mendoza-Graf, MPP, and Rebecca L. Collins, PhD

Objectives. To examine the impact of COVID-19 shutdowns on food insecurity among a predominantly African American cohort residing in low-income racially isolated neighborhoods.

Methods. Residents of 2 low-income African American food desert neighborhoods in Pittsburgh, Pennsylvania, were surveyed from March 23 to May 22, 2020, drawing on a longitudinal cohort (n = 605) previously followed from 2011 to 2018. We examined longitudinal trends in food insecurity from 2011 to 2020 and compared them with national trends. We also assessed use of food assistance in our sample in 2018 versus 2020.

Results. From 2018 to 2020, food insecurity increased from 20.7% to 36.9% ($t = 7.63$; $P < .001$) after steady declines since 2011. As a result of COVID-19, the United States has experienced a 60% increase in food insecurity, whereas this sample showed a nearly 80% increase, widening a preexisting disparity. Participation in the Supplemental Nutrition Assistance Program (52.2%) and food bank use (35.9%) did not change significantly during the early weeks of the pandemic.

Conclusions. Longitudinal data highlight profound inequities that have been exacerbated by COVID-19. Existing policies appear inadequate to address the widening gap. (*Am J Public Health.* 2021;111:494–497. <https://doi.org/10.2105/AJPH.2020.306041>)

The disease burden of COVID-19 has disproportionately fallen on racial/ethnic minority groups and marginalized populations in the United States.¹ Food insecurity—a lack of consistent access to enough food for an active, healthy life—is a fundamental social determinant of health linked to poor nutrition, obesity, and chronic disease.² Food insecurity is projected to grow across the United States and globally in response to the COVID-19 pandemic³ and is likely to exacerbate existing racial inequities, as African Americans experienced

disproportionate rates of food insecurity even before the pandemic.^{3,4} Structural racism has been identified as an upstream determinant of these inequities as well as a critical determinant of population health.⁵ To date, no longitudinal investigations of which we are aware have assessed changes in food insecurity in response to COVID-19 in at-risk, low-income communities.

We examined the impact of COVID-19 and shutdowns on food insecurity in a cohort of low-income, primarily African American residents of 2 food deserts

(neighborhoods without access to healthy, fresh foods) in Pittsburgh, Pennsylvania. We assessed longitudinal trends in food insecurity over 9 years, before and during the early stages of the COVID-19 pandemic, in this sample relative to the US population.

METHODS

Our participants were part of the PHRESH (Pittsburgh Hill/Homewood Research on Eating Shopping and Health) cohort,⁶ and they had taken part

in up to 5 previous waves of data collection (in 2011, 2013, 2014, 2016, and 2018). Detailed descriptions of PHRESH design and enrollment have been reported previously.^{6,7} Briefly, PHRESH drew a random sample from a complete listing of residential addresses in the 2 food desert study neighborhoods in 2011. Both neighborhoods are urban and residential, are approximately 1.4 square miles in area, and have a density of about 6500 households per square mile. They were sociodemographically matched (e.g., with respect to race, median income, and percentage of unemployment).

Data collectors were neighborhood residents who completed 80 hours of training in survey administration, community-based participatory research, ethics, and data collection methods. They enrolled the household's primary food shopper (18 years or older) through door-to-door recruitment. In 2018, additional participants were recruited to refresh the sample according to the same procedures (random sampling of households recruited and enrolled by data collectors).

Between March 23 and May 22, 2020, we contacted all PHRESH cohort participants who had completed the most recent wave of data collection (2018; $n = 855$) for a 15-minute telephone survey (PHRESH COVID); 605 participated (72% response rate), 163 could not be reached, 18 were no longer eligible (cognitive decline), and 69 refused (Figure A, available as a supplement to the online version of this article at <http://www.ajph.org>). Participants were compensated \$20.

We estimated the percentage of food insecurity in the resulting cohort ($n = 605$) at the 4 study waves (2011, 2014, 2018, and 2020). In 2018, 599 participants had complete food insecurity data. In 2011 and 2014, before sample refreshment, 449 of the 605 cohort members had participated,

and 441 and 443 had complete data, respectively.

We measured food insecurity using the validated 6-item Adult Food Security Survey Module, administered with a reference period of the past 30 days.⁸ Participants with low (reports of reduced diet quality, variety, or desirability) or very low (reports of disrupted eating patterns and reduced food intake) food security were categorized as food insecure.⁸

Participation in the Supplemental Nutrition Assistance Program (SNAP) and use of food banks were self-reported in 2018 and 2020. Other sample characteristics (from 2018) that were self-reported included neighborhood of residence, age, gender, race, education, employment, whether the participant's home was rented, annual household income, marital status, presence of children in the household, whether the participant was living alone, and presence of a chronic health condition (heart disease, kidney disease, diabetes or high blood sugar). Body mass index was derived from participants' height and weight as measured by interviewers. High blood pressure was assessed via an interviewer-measured blood pressure level of 140/90 mm Hg or higher, a self-reported hypertension diagnosis, or reported use of blood pressure medications.

US food insecurity rates for 2011 to 2018, based on the Current Population Survey Food Security Supplement, were drawn from the Economic Research Service of the US Department of Agriculture.⁹ The US 2020 (COVID-related) food insecurity estimate was based on the Coronavirus Tracking Survey.¹⁰

RESULTS

In 2018, the PHRESH COVID sample was 94% African American, with a mean age

of 62 years and an average annual household income of \$23 021. Sixty-seven percent of the participants rented their home, 54% had completed some education beyond high school, and 74% had high blood pressure; the mean body mass index was 31.6. Overall, 55% of sample members were SNAP participants, and 32% used food banks. Chi-square and *t* tests revealed no significant differences between the PHRESH COVID sample and the full 2018 sample, indicating that there was no systematic nonresponse. Full sample descriptives are reported in Table A (available as a supplement to the online version of this article at <http://www.ajph.org>).

SNAP participation (52.2%) and food bank use (35.9%) at the time of the PHRESH COVID survey did not differ from 2018 ($t = -1.43$; $P = .15$; and $t = 1.82$; $P = .07$, respectively).

Figure 1 plots the percentage of participants who were food insecure at each PHRESH wave in comparison with food insecurity rates in the US population. Across all periods, food insecurity was, on average, 2 times higher in the PHRESH cohort than in the US population. Both trend lines show relatively high levels of food insecurity in 2011 (following the Great Recession) and steady declines until 2018, when 20.7% of the PHRESH cohort members were food insecure. In 2020, within weeks of the COVID-19 stay-at-home orders, food insecurity in the PHRESH sample was 37%, an increase of nearly 80% ($t = 7.63$; $P < .001$). By comparison, in the general US population, the prevalence of food insecurity in May 2020 was 17.7%, an increase of 60% from 2018.¹⁰

DISCUSSION

In this marginalized, predominantly African American, low-income cohort,

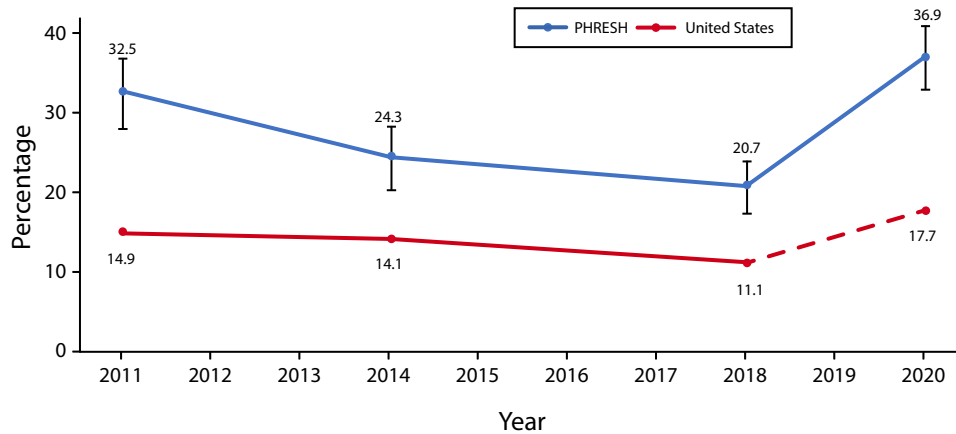


FIGURE 1— PHRESH (Pittsburgh Hill/Homewood Research on Eating Shopping and Health) Trend Plot of Shifts in Food Insecurity: Pittsburgh, PA, 2011–2018

Note. PHRESH sample sizes for food insecurity in 2011, 2014, and 2018 were based on participants who were part of the PHRESH COVID sample. Denominators for the PHRESH sample are as follows: 2020, n = 605; 2018, n = 599; 2014, n = 441; and 2011, n = 443. National data for 2011 to 2018 were derived from the Current Population Survey Food Security Supplement. The national prevalence of food insecurity in 2020 included in this figure is based on a recent estimate produced by the Urban Institute and the Coronavirus Tracking Survey.¹⁰

COVID-19 has magnified preexisting racial/ethnic disparities in food security in a very short time, a circumstance linked to a wide variety of health outcomes. We observed a significant spike in food insecurity during the first weeks of the pandemic that far outpaced the increase in the general US population. Disparities between our African American cohort and the nation that had gradually narrowed since 2011 are now at the highest levels observed over the past decade.

In spite of this spike, food bank use and SNAP participation were relatively unchanged. This suggests that existing safety nets may be failing to reach those with emerging needs. Difficulties enrolling in SNAP, problems accessing food banks during shutdowns, or feelings of stigma or uncertainty regarding eligibility may be to blame. Other factors contributing to the food insecurity spike may be loss of work, increased psychological distress, and concerns about leaving one's home for food shopping. Major food sources are outside of participants' neighborhoods, and most use

public transit or shared rides for food shopping.¹¹ Systemic racism is evident in the 2 racially isolated low-income neighborhoods and their reduced access to retail, employment, housing, and education and likely plays an overarching role in their increasing food insecurity.

Limitations

The findings of this study may be limited to our sample or to the 10% of census tracts that can be classified as food deserts.¹² The 2020 survey modality (telephone) differed from past survey waves (in person).

Public Health Implications

Social distancing, unemployment, and health risks have continued since May 2020, likely exacerbating food insecurity beyond what we observed. Policy-makers should consider strategies including continuing flexible enrollment and certification requirements for SNAP and expanding benefits for and

outreach to the communities at greatest risk of food insecurity. Novel approaches to reach these communities and reduce growing racial disparities in food insecurity may also be needed. *AJPH*

ABOUT THE AUTHORS

The authors are with the RAND Corporation, and this work was performed in the Division of Social and Economic Well-Being.

CORRESPONDENCE

Correspondence should be sent to Tamara Dubowitz, MSc, SM, ScD, 4570 Fifth Ave #600, Pittsburgh, PA 15213 (e-mail: dubowitz@rand.org). Reprints can be ordered at <http://www.ajph.org> by clicking the "Reprints" link.

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CONTRIBUTORS

T. Dubowitz conceptualized the study with the assistance of W. M. Troxel and R. L. Collins and supervised all aspects of its implementation. W. M. Troxel and R. L. Collins helped lead the writing. M. Ghosh Dastidar led all statistical analyses. R. Beckman performed analyses. A. Nugroho helped with

implementation and administering surveys. A. Mendoza-Graf helped to administer surveys. All of the authors contributed to the writing of the article and interpretation of data.

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CONFLICTS OF INTEREST

The authors have nothing to disclose and no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

This research was approved by the RAND Corporation institutional review board.

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