Food Justice Narratives, Agroecology, and Emergency Aid: Incremental and Potentially Transformation Responses to COVID Exacerbated Hunger in California

Christopher Bacon, PhD, Environmental Studies and Sciences Dept., Santa Clara University







Winter 2022

Dr. Chris Bacon, Student RA Teams Chloe Gentile-Montgomery, **Ava Gleicher,** Benjamin Grundy, Julia Jenak, Emma McCurry, Paige Whittaker, Erica Martinez, Skyler Kriese, Gabi Ballardo, **Paola Felix, Brooke Rose, Oliveya Leon,** Kylie Griggs, and Derek Hsu





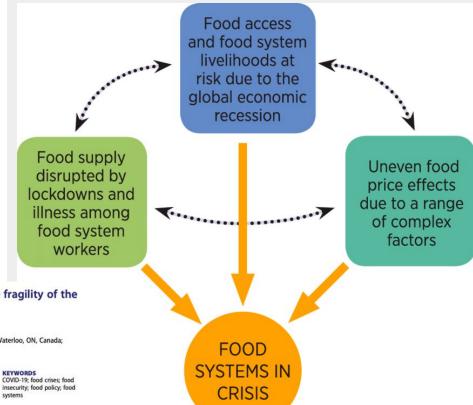
Food connects people, planet, and values

social values & ideas in the food system relationships, ethics, culture, justice, and more



The Impact of COVID-19 on Food Systems in the First Half of 2020





This food crisis is different: COVID-19 and the fragility of the neoliberal food security order

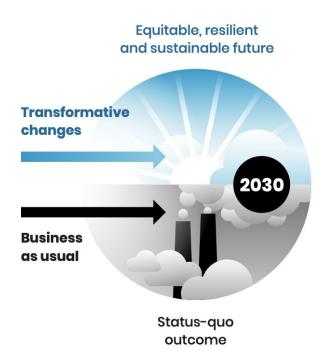
Jennifer Clapp ^{© a} and William G. Moseley ^{© b}

^aSchool of Environment, Resources and Sustainability, University of Waterloo, Waterloo, ON, Canada; Geography Department, Macalester College, St. Paul, MN, USA

Our analysis situates the current COVID-19 induced food crisis within a longer-term historical perspective on policy responses to past food crises. We argue that the legacies left by these past policies created vulnerabilities in the face of the present crisis, which is characterized by three interlocking dynamics: disruptions to global food supply chains, the loss of income and livelihoods due to the global economic recession, and uneven food price trends unleashed by a set of complex factors. We make the case that the COVID-19 pandemic marks an inflection point and demands a different set of policy responses that work toward fundamentally transforming food systems.

insecurity; food policy; food

How to respond to COVID + Climate change?



What kind of change?

- No change
- Backslide
- Incremental (positive) changes
 - Quick wins
 - Best buys
- Transformational changes
 - Re-thinking and remaking relationships
 - Building new food pathways

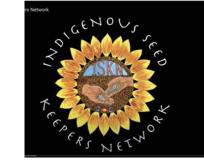


Alternative food systems

Responds to demands for greater access to healthy food for all, but also aims to create an "alternative" food system that:

- reconvenes trust between producers and consumers
- are more democratic,
- fairer distribution of resources
- more ecologically sustainable.

An alternative Food Justice & Food sovereignty

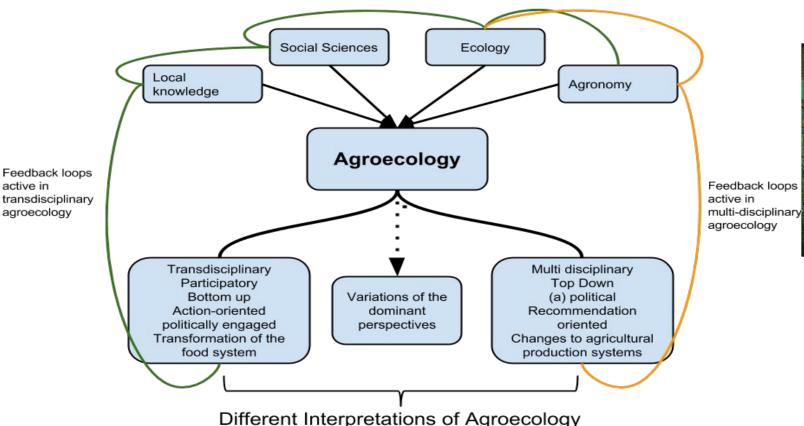




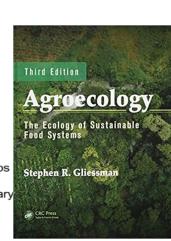
Food Justice happens when in community we exercise our right to grow, sell, and eat culturally appropriate, fresh, nutritious, and accessible food; cultivated locally while caring for the well-being of the earth, workers, and animals. (La Mesa Verde, 2019)

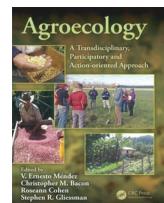


An Approach to Agroecology



active in





5 LEVELS OF FOOD SYSTEM CHANGE AND 10+ ELEMENTS OF AGROECOLOGY

TRANSFORMATIONAL

INCREMENTAL

LEVEL 5

Rebuild the global food system so that it is sustainable and equitable for all

LEVEL 4

LEVEL 3

LEVEL 2

Re-establish connections between growers and eaters, develop alternative food networks

Redesign the whole agroecosystem based on ecological processes





Human and Social Value



Responsible Governance



Culture and of Knowledge **Food Traditions**



Diversity













Efficiency



Increase efficiency of industrial inputs

Substitute alternative practices and inputs



LEVEL 0 No agroecological integration

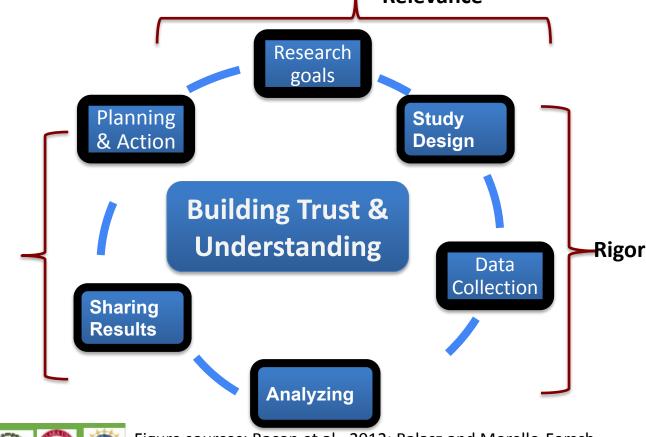
Community-Based Participatory Action Research Cycles Relevance

Context

- Our local community
- Our global community

Who are our partners?

- Cooperatives
- Universities
- Students
- Farmers









Reach







Our lab group.....

Agroecology, Climate Resilience, & Food Justice

An interdisciplinary research lab at Santa Clara University



Student Food Security

Soorch
Search

How to get involved:

- 1. Come to our events.
- 2. Apply to student RA positions forthcoming.
- 3. Volunteer with partner organizations.
 - Advocate
 across, campus,
 in the
 community &
 elsewhere

Student co-learning and mentoring























Partners and methods

WHAT WE DID: 484 # of student survey respondents 100% All Races/Ethnicities at SCU Represented 22 # of students interviewed

Student Life and Bronco Food Security Program.



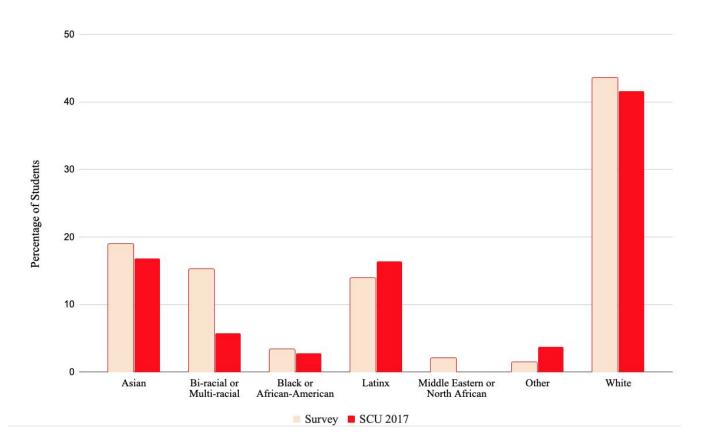






Dean of Arts & Sciences Survey recruitment support from Cowell Health, Provost, and President + many colleagues and student networks...

A broadly representative sample at SCU in 2020



- Also broadly representative across colleges / schools, and income levels.
- Under sampled:
 - Men
 - International students?

Top level findings - food and housing insecurity

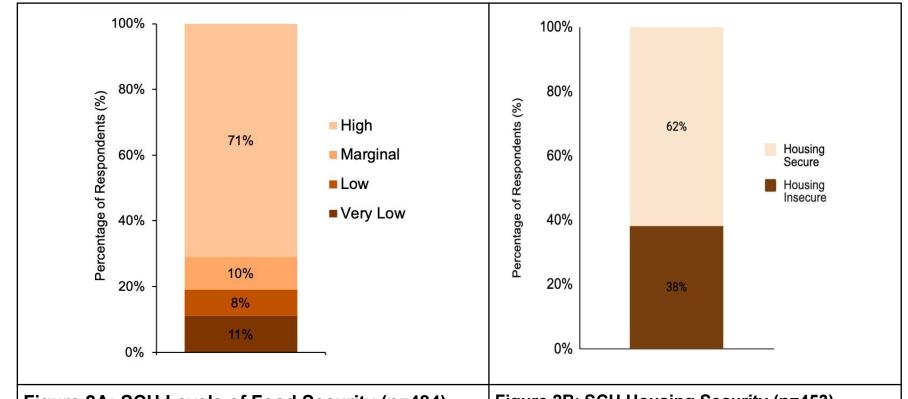


Figure 2A: SCU Levels of Food Security (n=484). Food security scores calculated using the USDA 10 question module. Each score corresponds to a food security level, with low and very low levels indicating food insecurity.

Figure 2B: SCU Housing Security (n=453).
Housing security scores were calculated through a series of questions that asked about their access to safe and reliable housing in the past 12 months

Table 1: Comparison of SCU Food, Housing, and Basic Needs Insecurity by Race and Ethnicity, 2020

	Total Number of Students	Percent Food Insecure past month	Percent Housing Insecure past month	SCU Percent Any Basic Needs Insecurity	National Average Any Basic Needs Insecurity	SCU compared to national average
Race / Ethnicity	n	percent	percent	percent	percent	arorago
Asian	88	9.09%	25.00%	26.14%	55* %	
Biracial	59	28.81	28.81	42.37	-	
Black or African American	14	50.00	50.00	64.29	70	-6%
Latinx	64	46.88	68.75	71.88	64	+12%
Middle Eastern/North African	10	40.00	50.00	60.00	62	
Multiracial	9	33.33	66.67	66.67	-	
Pacific Islander	2	100.00	50.00	100.00	66	
White	195	9.74	33.33	35.90	54	-18%
Other - Racial or Ethnic	11	45.45	54.54	63.64	64	

Student voices, cultural preference and food sovereignty

"I think there is a stigma [around food insecurity] because I would never feel comfortable telling anyone at Santa Clara."

"I feel like food insecurity is inherently tied to your class status, and if your class is something that you don't want to talk about, it's very hard to talk about not having food."

"It's a normalized thing

"I feel like it's difficult to ask for help. It's difficult to say that you're struggling in all senses."

"I also think that like on campus, when I was exposed to people who are food insecure, it was mostly like frat guys who were having older guys like steal their Benson points . . ."

"It's a normalized thing to run out of meal points."

Interviews and focus groups 2020

Food security and student mental health

Mental Health Themes in Focus Group with MCC Affiliated Students **Source**: MCC Focus Group, Nov 23 2020

Code	Description of Code	Fre- quency	Exemplary Quotes
Mental health	mentioned relationship between mental health and eating	5	"I mean, I think that I definitely relate to what you said about like having friends that only had like 3 yerbas [caffeinated drink] and then like wouldn't eat and just stress overriding your entire life." "But like this pandemic has caused like a slurry of mental health issues and like a lot of people, um, like something that I'm dealing with too. And like, it's just hard sometimes. Like when you have so much stress and work to do, to like, remember to eat"

Student organizing for mental health at SCU



Students at Santa Clara University still pushing for mental health services

KTVU's Ann Rubin reports.

Discussion -

RESEARCH ARTICLE

Open Access

The association between food insecurity and mental health during the COVID-19 pandemic



Di Fanq^{1*}, Michael R. Thomsen² and Rodolfo M. Nayga Jr²

Abstract

Objective: To explore the association between food insecurity and mental health outcomes among low-income Americans during the COVID-19 pandemic.

Methods: We conducted a survey of 2714 low-income respondents nationwide from June 29, 2020 to July 21, 2020. A proportional odds logit model was employed to estimate the associations between food insecurity and anxiety and between food insecurity and depression.

Results: Food insecurity is associated with a 257% higher risk of anxiety and a 253% higher risk of depression. Losing a job during the pandemic is associated with a 32% increase in risk for anxiety and a 27% increase in risk for depression.

Conclusions: Food insecurity caused by the pandemic was associated with increased risk of mental illness. The relative risk of mental illness from being food insecure is almost three-fold that of losing a job during the pandemic. Public health measures should focus on getting direct subsidies of food purchases to poor families, especially families with children. They should also reduce the stigma and shame that is associated with accepting charitable foods.

Self-reported COVID-19 infection and implications for mental health and food insecurity among American college students

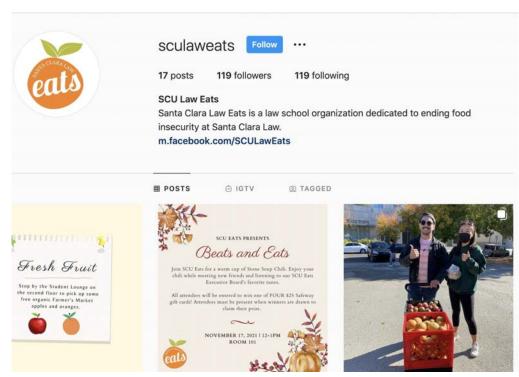
Sara Goldrick-Rab^a, Vanessa Coca^{a,1}, Japbir Gill^a, Morgan Peele^a, Kallie Clark^a, and Elizabeth Looker^a

^aThe Hope Center for College, Community, and Justice, Lewis Katz School of Medicine at Temple University, Philadelphia, PA 19122

"...A fall 2020 survey of more than 100,000 students at 202 colleges and universities in 42 states reveals socio-demographic variation in self reported infections, as well as associations between self-reported infection and food insecurity and mental health. We find that 7% of students self-reported a COVID-19 infection, with sizable differences by race/ethnicity, socioeconomic status, parenting status, and student athlete status. Students who self-reported COVID-19 infections were more likely to experience food insecurity, anxiety, and depression. Implications for higher education institutions, policy makers, and students"

Students are responding....

- SCU Law Eats
- Informal meal sharing
- SCU food recovery network
- Other forms of mutual aid…



SCU is responding....

SANTA CLARA UNIVERSITY OFFICE OF STUDENT LIFE

STUDENTS PARENTS FACULTY AND STAFF REPORTING WHO WE ARE Y

Food Insecurity Program

Home > Office of Student Life > Food Insecurity Program



Support is available through the Office of Student Life's Food Insecurity Program (FIP) for students who are experiencing food insecurity. The program is grounded in trust, thus all requests will be honored without documented legitimacy of need.

Through the program, students have the opportunity to gain access to the Bronco Pantry, donated gift cards to local stores, and are offered individual consultation sessions to gain access to additional community resources. The Bronco Pantry regularly stocks non-perishable food items and fresh produce in partnership with the SCU Forge Garden.

This program is supported 100% through donations with no expectation of re-payment.

Since the start of the Food Insecurity Program in Spring 2018, SCU has served over 250 students and has been an essential resource for many of our students during the COVID-19 pandemic.

Office of Student Life

Culture of CARE

Student Conduct

Policies and Protocols **Emergency Resources**

Off Campus Living

Being a Bronco

Food Insecurity Program

- Partnership with
- Meal point sharing program
- Direct Donations (gift cards)
- CARES programs and more..
- Hardship Funds and more...

Gaps in SCU's response

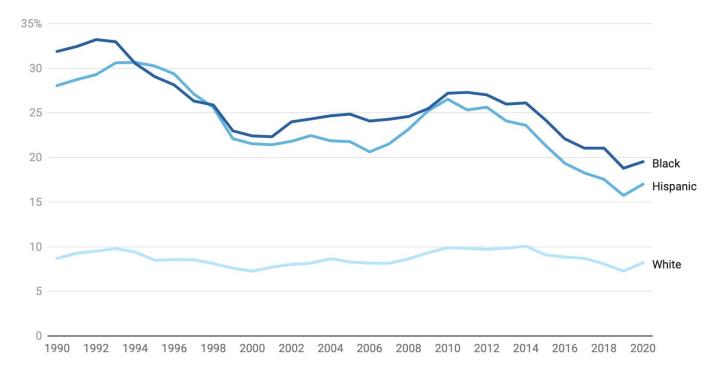
Important individual efforts by students, staff, and admin, but as an institution 'we' have are missing:

- 1. At least one full time staff dedicated to security.
- 2. An equity + sustainability to this challenge
- 3. An integrated approach across campus.

These challenges are systemic

The official poverty rate shows drastically wide racial disparities for the past two decades

Official poverty measure by race, 1990-2020



Hover over or click to see values.

Chart: Center for American Progress • Source: Authors' calculations based on the official poverty measure using the 1990–2020 Current Population Survey, Annual Social and Economic Supplement. See Steven Ruggles and others, "Integrated Public Use Microdata Series, 2019 Current Population Survey, Annual Social and Economic Supplement" (Minneapolis: Minnesota Population Center, 2020), available at https://doi.org/10.18128/D010.V10.0.

What are other campuses doing?



Basic Needs Center helps students when they need it most — Thirty-nine percent of undergraduates and 16 percent of graduate students report a lack of consistent access to healthy, affordable food. In this video, students and staff leaders share how the Basic Needs Center is connecting students to food, housing, financial, health, and other resources — helping them thrive when they need it most.

Student Equity and Inclusion Programs

Acknowledging Intersectionality | Creating a Sense of Belonging | Nurturing Wellbeing

Centers, Offices & Spaces v Initiatives v Data & Research v Partner with SEIP



The Student Basic Needs department fosters a culture of holistic well-being by helping to eliminate life barriers, such as food, housing, and economic injustice, that may jeopardize student academic and personal success.



COVID-19 RESOURCES

GET INVOLVED

LEARN

FAO

next steps for our action research team

- Continue the research
 - Fall 2021 survey and interviews in 2022
 - Analyzing and writing up existing data.
- Help develop an SCU approach student basic needs.
- Collaborate to use findings for action.



What could be done to address this challenge @ SCU?

Incremental Changes	-We recommend increased and permanent funding to the SCU Food Security Program -Campaign to increase student awareness of food assistance support -Food security and student basic needs statement on syllabi -Donate to food pantries and donate extra meal points -Yearly basic-needs assessments of this kind -Adjust contracts and support services to improve housing security
Transforma - tional Changes	- Create and resource a student equity and basic needs task force -Increase and adjust student financial aid -Reassess the University's relationship with Bon Appetit -Rewrite housing contracts to address housing insecurity concerns

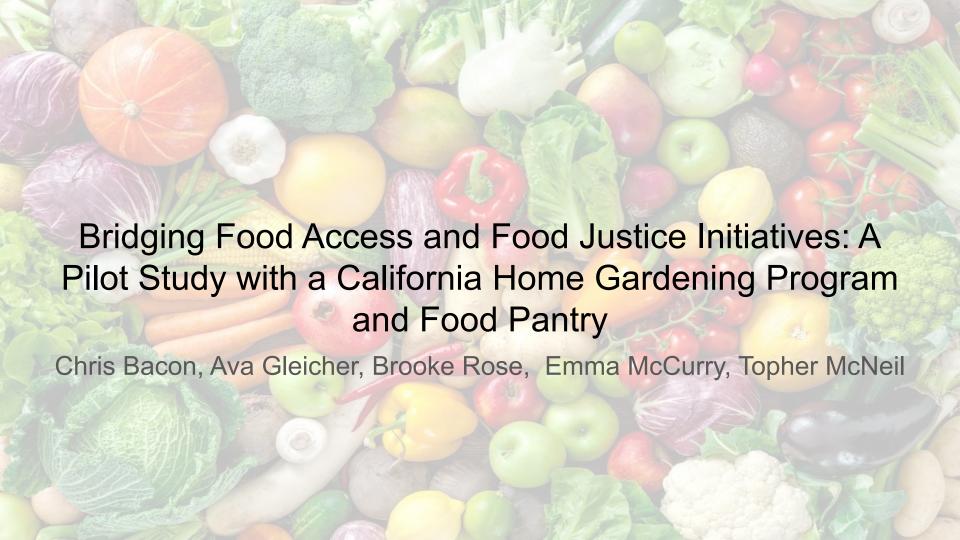
^{**}SCU Students! Contact pfelix@scu.edu to get involved with food security at SCU



Hungry to learn documentary:

Discussion Questions

- 1. Now that you're an SCU student, how are your food choices different than they were growing up, if at all?
- 2. To what extent do you feel like you have power/control/comfort around food?
- 3. If you could create your dream dining hall at SCU, what would that look like? (Where would food come from? Who works there? What are the options?)



The Pantry







La Mesa Verde Urban Gardening Program







Mixed methods for this preliminary analysis

- Qualitative research
 - Interviews
 - Developed and received feedback from SHCS on interview questions
 - Generated population with support from Sophia and Fernando
 - Recruited participants with support from SHCS
 - From July August interviews with
 - 9 LMV Pantry Members, 4 LMV Only Members,

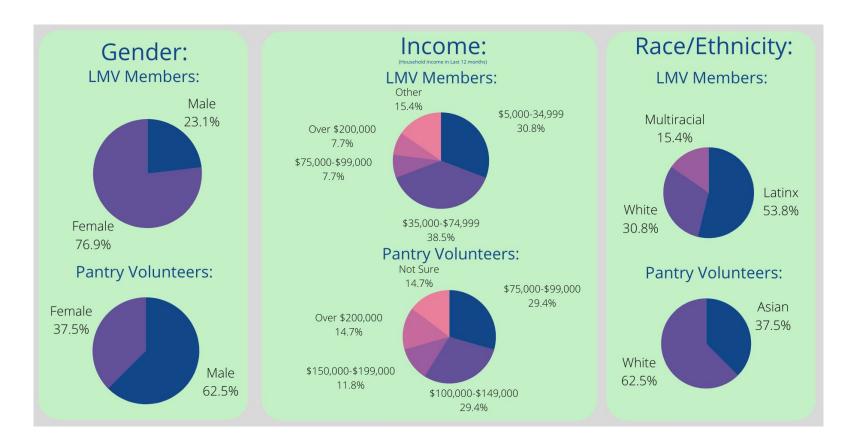
 - 8 Pantry Volunteers
 - Transcribe and translate interview responses
 - Coding interviews based on response to key questions
- Food Waste Data Tracking
- Pantry Client Survey



What do we hope to learn?

- 1. How can the Sacred Heart Community Services' Food Pantry and La Mesa Verde program collaborate to address issues of food security and food justice?
- 2. What are examples of how efforts to link food assistance and food justice initiatives have met this challenge prior to and during COVID-19?
 - **a.** What can be learned from previous transitions from food assistance focused programs to food justice oriented models?
 - **D.** Document existing instances of mutual aid amongst LMV and/or pantry members at SHCS
- 3. Determine the true quantity of food waste within the pantry and identify alternative opportunities to emphasize the sustainability and food justice missions of the organization.

Interview Demographics



Q1: How Would You Define Food Justice?

- Pantry Volunteers and LMV Members agree on access to good quality food
 - LMV Members more likely to consider food justice a right
- Pantry Volunteers (all but one) unclear/unfamiliar with food justice
- LMV Members' responses more nuanced and personal
 - Focus on space to grow food as a part of food justice, food as a right
- 2 Pantry Volunteers mentioned farm worker rights

"But, that doesn't necessarily mean that they have to have filet mignon every day, but it does mean they should have sufficient food to meet basic nutritional needs and hopefully have something that is enjoyable once in a while."

- Pantry Volunteer

"Food justice would be [that] we could all have the opportunity to grow our own vegetables. That we wouldn't have to go hungry or lack vegetables at our table. If we have food justice, we would always have organic vegetables and fruits from our own gardens."

- LMV Member

Q2: From your perspective, how have you approached food waste as an individual or within your family? Have your views on this changed over time, and if so why?

- LMV Members: purchase the right amount of food and otherwise use food waste in compost/garden
 - Some Pantry Volunteers tried composting in the past and it didn't work out for them...
- Pantry Volunteers: purchase the right amount of food and eat everything
- LMV Members view waste as a structural issue whereas Pantry Volunteers view waste as a personal issue

"I remember that I told my daughter, when she was in elementary school, I said to her "Look, if they give you an apple and you don't want to eat it at that moment because you're already full, then put it in your lunch box, okay?" She told me "No Mom, because if I put it in my lunch box, they will scold me or punish me." So when she told me this, I said "Why are they going to punish you for keeping an apple that you are not going to eat right now? Or is it that you prefer-- would you rather go and put it in a trash can than save it and eat it later?" ...I couldn't understand ...and after this I started talking to the schools, I would say, "Why not save the food that the children do not want to eat?"

Q3: Do you think there are relationships between race/ethnicity/racism and food access/food waste (if any)? Do you think there are relationships between food justice and racial justice (if any)?

- LMV Members: confident talking about food as means of power and comfortable talking about race
 - Agree there is a relationship between racism and food justice
 - Diverse communities may lack access to culturally relevant food and/or knowledge about food,
 may consume more processed foods, and may treat food waste/leftovers differently
- Pantry Volunteers: less comfortable making the connection between racism and food justice--often considered culture/SES as a factor

"We are not taught to eat healthy and stay active so that we can avoid medications, surgeries, and hospitalizations... I think there needs to be more education about food as health, especially in more diverse, lower-income communities."

-LMV Member

Q4: What are the ways that you work to secure access to healthy food for your family? How has this changed during the pandemic?

- LMV Members: access healthy food via their gardens and organic produce
 - Some eat plant-based, utilize food pantries, utilize food knowledge
 - Some mentioned access to land as a limiting factor
 - Some note that the LMV model is better than access to free/cheap food
- Pantry Volunteers: focused on financial security; not impacted by COVID

"We've always had sufficient funds to be able to purchase things that were healthy..."

- Pantry Volunteer

"The way I have brought these resources to my family has been by growing my own food in my garden."

- LMV Member

"I work to secure access to healthy food... by studying in extreme depth food and herbs, which I've been doing all of my adult life, basically. I'm vegan and I know a tremendous amount about nutrition."

- LMV Member

Top 5 Preliminary Findings

- 1. Community Building is important to Pantry Volunteers & LMV Members.
- 2. LMV Members generally have more sophisticated understandings of food justice, including talking about power relations, right to food, race, and structural causes of hunger and food waste.
- 3. LMV Members want to see more communication and advertisement of LMV programming and Pantry resources.
- 4. Ideas for collaboration: donated produce, Kids' Club, workshops, compost
- 5. LMV Members, Pantry clients, and Pantry Volunteers prefer the choice model

Next Steps

- CalEPA Environmental Justice Small Grants Project
 - Co-develop a food justice approach to food waste reduction
 - Implement a community-led worm composting project
 - Monitor, manage, and produce compost for community members
 - Create a replicable resource guide accessible to 50 food pantries and local urban gardeners







Chris Bacon, Paige Whittaker, Brooke Rose, Kylie Griggs, Derek Hsu, and Ava Gleicher

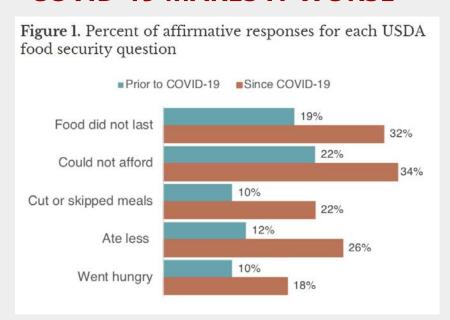
BAY AREA, CA

- High costs of housing and transit
- Silicon Valley's residents already struggling to meet their basic needs.
- Disproportionately affected some segments of the population,

Nearly 3 of all Silicon Valley households did not earn enough money in 2018 to meet their basic needs without public or private/informal assistance.

Source: Silicon Valley Institute for Regional Studies, 2020

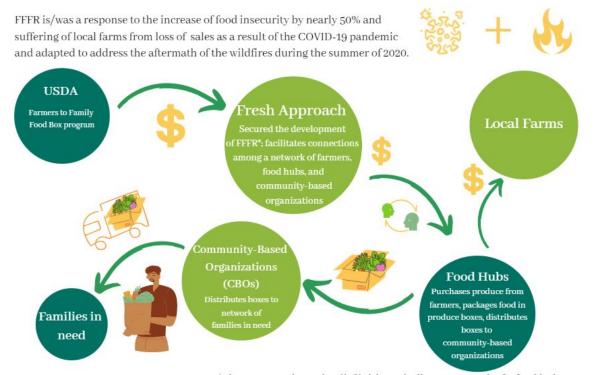
COVID-19 MAKES IT WORSE



63% increase in food insecurity since the pandemic started, with Hispanics, households with children, and those experiencing any job disruption most disproportionately affected.

Pignotti, G., Dougan, M., Tablas-Mejia, I., Telias, A., Gounden, A. (2021) "Food Insecurity and Food Access during COVID-19 in the San Francisco Bay Area." College of Health and Human Sciences, San Jose State University

Farm Fresh Food Relief and Food Hub Model



*The Farm Fresh Food Relief initiatve, built on a network of 9 food hubs, over 44 CBOs, and over 57 farms, delivered 56,438 fresh produce boxes and received a total reimbursement of \$1,696,165 from the USDA.

So...what did we do?

A research team of four students and a faculty member affiliated with Santa Clara University as well as staff from Fresh Approach have developed a participatory assessment of the Farm Fresh Food Relief (FFFR) Initiative, a project established by Fresh Approach and the food hub Pie Ranch. The evaluation of the FFFR model includes individual case studies of Pie Ranch and the other food hubs involved. To complete the case study of Pie Ranch, the team conducted:

- surveys and interviews with stakeholders
- data analysis of cash flow and farm demographics
- a content analysis of pieranch.org and the websites of five of their food distribution organizations: Ecumenical Hunger Project, Homey, Pescadero Elementary School, Project Open Hand, and Puente de la Costa Sur

Pie Ranch Case Study





Figure 1. Summary of food distributions and purchases from May to September 2020. Source: Fresh Approach data.



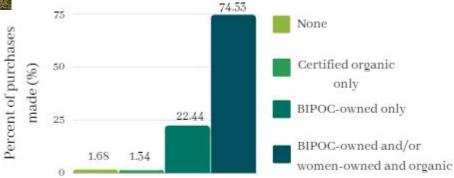
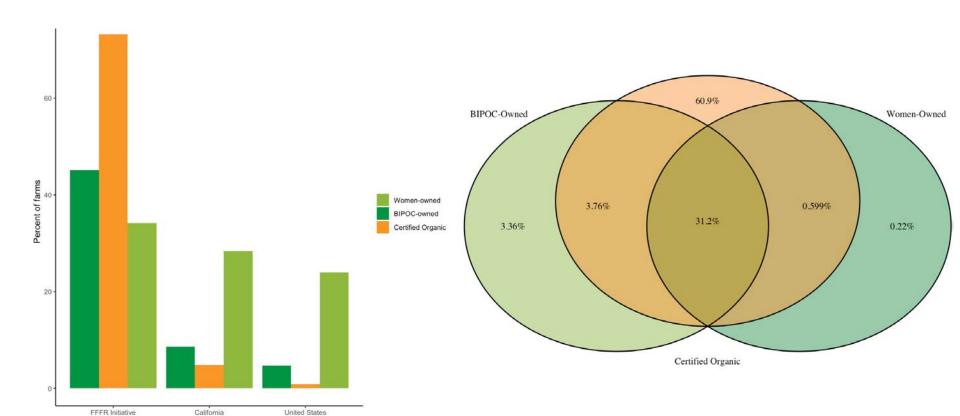


Figure 5. Percentage of Pie Ranch food purchases of \$2,000 or more from farms that are certified organic, women-owned, and or owned by a Black, Indigenous, Person of Color (BIPOC). Data sourced from Fresh Approach and cleaned by members of the student research team. The team also performed a crosscheck of the data.

FFFR Results



Veggielution Capstone



Research Questions

- To what extent has Veggielution's food box program contributed to increased food security and food sovereignty of recipients in San Jose?
- How efficient and equitable is Veggielution's response to COVID-19?
- How can Veggielution's program be translated into a scalable food justice model within the Bay Area or in other regions?

Methods

- Surveys
- Interviews
- Quantitative data analysis
- Case studies

Breakout Group Questions

SHCS:

- How would you define food justice?
- How do you think about food waste and how do you mitigate your own waste?
- Do you think there are relationships between race/ethnicity/racism and food access/food waste (if any)? Do you think there are relationships between food justice and racial justice (if any)?

Farm Fresh Food Relief:

- How have your community partners had to shift their operations during COVID? How did they ensure that they were still meeting the needs of their beneficiaries equitably and efficiently?
- When you make decisions about what you eat, how often do you think about its position in the food system?
 - For example: Who made it? How was it grown or produced? How did it get you?



Our lab group.....

Agroecology, Climate Resilience, & Food Justice



Student Food Security

Search

An interdisciplinary research lab at Santa Clara University

How to get involved:

- 1. Come to our events.
- 2. Apply to student RA positions forthcoming.
- 3. Volunteer with partner organizations.
- Advocate across, campus, in the community & elsewhere



No More Superficial Approaches to Resilience



"Stop calling me resilient, Boundary Way, Belfast, Northern Ireland." © llan Leonard

Identifying patterns in vulnerability

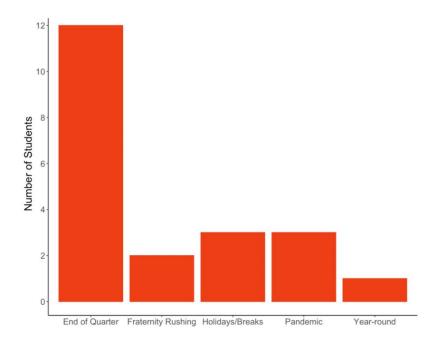
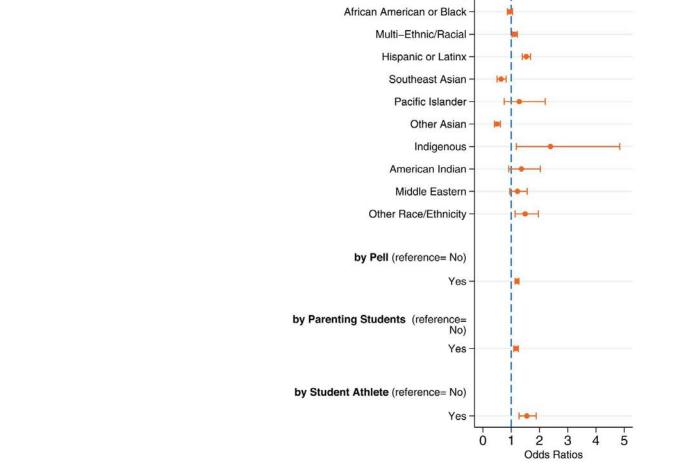


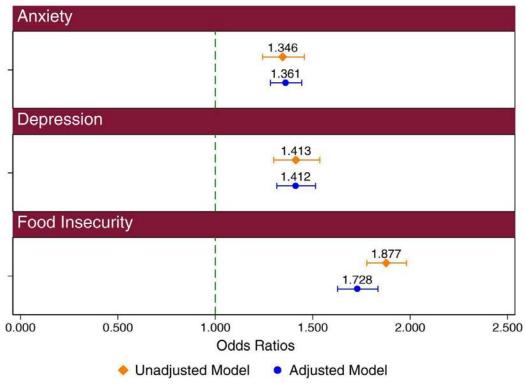
Figure 7. Peak times for student food insecurity as reported by the interviewed students (n=23)



by Race/Ethnicity (reference= White or Caucasian)

Proceedings of the National Academy of Sciences Feb 2022, 119 (7) e2111787119; DOI: 10.1073/pnas.2111787119

Unadjusted and adjusted odds of anxiety, depression, and food insecurity by self-reported COVID-19 contraction (n = 100,488).



Sara Goldrick-Rab et al. PNAS 2022;119:7:e2111787119





Looking for that Inner Resilience



ENCYCLICAL LETTER

LAUDATO SI'

OF THE HOLY FATHER

FRANCIS
ON CARE FOR OUR COMMON HOME

(1) gratitude for the beauty of nature as creation (§220); (2) rejection of the dominant "culture of consumerism, which prioritizes short-term gain and private interest" over the long-term interests of the poor and planet (§184); and (3) a conversion that reconciles individuals with themselves, others, and creation (§217–218).

Brancatelli, R. 2016. Laudato si' and a spirituality of resiliency. Journal of Management for Global

Sustainability: 1-14.DOI: 10.13185/JM2016.04101

https://www.bread.org/report/2019-hunger-report

Concluding Takeaways

Incremental

- Donate gift cards and meal points to SCU food insecurity program
- 2. Add food security statement to syllabi
- Provide food education and present resources during orientation sessions
- 4

Transformational

- Set up a student basic needs center at SCU (see examples @ UC Berkeley, USC)
- 2. Donate and volunteer with food justice organizations that support racial justice and aim to change the system
- 3. Support the Advocacy with Workers on Campus movement
- 4. Advocate for increased financial aid for students.
- 5. Advocate for year-long housing contracts

^{**}SCU Students! Contact pfelix@scu.edu to get involved with food security at SCU

Action 1: Be a conscious eater & consumer

Incremental





- a. Organic, Regenerative
- b. Local
- c. Fair Trade
- Choose plant-forward or plant-based diets



Transformational



- 1. Combine a reflexive approach to plant-forward or plant-based diets with food justice
- 2. Support orgs who are growing food justice and food sovereignty
- 3. Campaign & vote for political systems that support agroecolgoical food systems change efforts



Action 2: Act collectively to change norms and policies

Incremental

- Advocate for more climate adaptation finance to developing countries.
- Source more organic and fair trade foods at Santa Clara U, at home, and beyond.

Transformational

- Form PAR partnerships w/ co-ops using agroecology for diversification & food sovereignty
- 2. Learn about and practice transformational agroecology (not the reductionist version)
- Start a co-op and/or join up an agroecology / food justice group (e.g., Valley Verde, La Mesa Verde, Community Agroecology Network)

^{**}SCU Students! Contact Gabi Ballardo <gballardo@scu.edu> to get more info to get involved with this work.

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Share your thoughts!

Given what we've shared thus far and your own experience...

Which of the following can you imagine yourself doing to support sustainable,

ethical food systems? Share in the chat!!







- Purchase organic, fair trade, or humanely ("Real") certified food from your local grocery store
- Replace selected your animal-based proteins with plant-based products
- Purchase in-season produce from your local farmer's market or CSA
- Involve yourself in local food systems-based advocacy











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Key links:

- [1] https://www.realfoodchallenge.org/
- [2] https://unhsimap.org/home
- [3] The Center for Sustainability, Santa Clara University, https://www.scu.edu/sustainability/
- [4] Center for Food Innovation and Entrepreneurship, Santa Clara University, https://www.scu.edu/business/cfie/

Nitrogen vs Carbon Emissions

- Nitrogen footprint ≠ Carbon footprint
- Nitrogen footprint: "Reactive nitrogen"
 - o **nitrous oxide** (N₂O), nitrogen oxides (NO_x), nitrate (NO₃⁻⁻), nitrite (NO₂⁻⁻), and ammonia (NH₄)
- Consequences: water eutrophication, ocean acidification, and biodiversity loss
- Agriculture is overwhelming the largest contributor

