The Need for An Index of Food Insecurity in Santa Cruz County

Food insecurity is a major public health issue in the United States, with an estimated 11.1% (14.3 million) U.S. households experiencing food insecurity in 2018 (U.S. Department of Agriculture, n.d.). Food insecurity refers to limited or uncertain access to nutritious, safe food necessary to lead a healthy, active life (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2018). Common indicators of food insecurity include the inability to access sufficient food for balanced, nutritious meals, fear of running out of food due to financial constraints, and skipping meals, cutting down on portions, or hunger experienced as a result of insufficient access to food (Coleman-Jensen et al., 2018). Experiences of food insecurity may be temporary or persist over long periods of time, and have been found to negatively impact health and well-being, child development, and academic performance (Gundersen, 2013; Jyoti, Frongillo, & Jones, 2005).

To gain a deeper understanding of these issues in our community, the Blum Center on Poverty, Social Enterprise, and Participatory Governance and Second Harvest Food Bank Santa Cruz County partnered to calculate an estimate or index of food insecurity in Santa Cruz County. Utilizing published data from the U.S. Census Bureau, the U.S. Bureau of Labor Statistics, and administrative records from California food assistance programs, the index provides a metric for estimating the extent of food insecurity experienced by county residents, for measuring food assistance provided by governmental and nonprofit sources, and for tracking both over time.

This report describes the methodology we used to calculate the index, presents findings related to food insecurity in Santa Cruz County for fiscal year 2017-18, and tracks trends in missed meals and food assistance provisions from 2014 through 2018. These findings, which deepen and expand our understanding of food insecurity in Santa Cruz County, provide a new resource for informing local nutritional assistance initiatives and assessing our county’s progress toward reducing food insecurity.

Methodology

Calculating Key Components of the Index

The index is based on a methodology that was developed by a research team at Santa Clara University (visit https://www.scu.edu/business/cfie/research/food-insecurity/). We adapted their methodology for Santa Cruz County. Four key components are used to calculate the index:

1. **total meals required** by the population at risk for food insecurity;
2. **number of meals purchased** by this population;
3. **amount of food assistance provided** by state agencies, the county food bank, and its community partners; and
4. **missing meals** or the gap between the total meals required and the number of meals acquired (either through purchase or food assistance provision) by the population at risk.
We describe in greater detail how each of these components was constructed.

**Total Meals Required and Purchased.** *Total meals required* is calculated by multiplying the number of individuals at risk for food insecurity multiplied by three meals a day for each day of the year. To estimate the total population at risk, we draw on estimates from the American Community Survey of the number of households in Santa Cruz County earning less than $50,000 annually, and multiply that number by the average household size in the county for a given year. Although income is only one of the characteristics associated with the likelihood of experiencing food insecurity (Coleman-Jensen et al., 2018), we believe that focusing on households in this income range provides a useful and conservative indicator of the population at risk of food insecurity, especially given high housing and living costs in Santa Cruz County.¹

Focusing on income groups to construct our population at risk also allows us to draw on data from the U.S. Bureau of Labor Statistics Consumer Expenditure Survey (BLS CEX)² to calculate the average amount spent on food by households in our focal income range (i.e., under $50,000 annually). By dividing the average food expenditure (in dollars) by the price of a low-cost meal, we arrive at the *total meals purchased* by the population at risk.

**Food Assistance Provided.** *Food assistance provided* is calculated by drawing on data published by state food assistance programs from the following programs: CalFresh; Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); School Nutrition Program (SNP); Child and Adult Care Food Program (CACFP); and Summer Meals. Data was also provided by the Second Harvest Food Bank of Santa Cruz County and its major community partners (i.e., Grey Bears, Community Bridges, and Valley Churches United Missions).

To make our calculations and comparison possible, all food assistance is converted into a common unit of analysis - *meals*. To do so, total expenditures by state assistance programs are divided by the estimated price of a low-cost meal.³ For Second Harvest Food Bank and its community partners, total meals provided is calculated by dividing the total poundage distributed by 1.2, the number of pounds in an average meal according to the U.S. Department of Agriculture (USDA).

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¹ Research indicates that a non-negligible portion of households reporting food insecurity fall into middle- or upper-income brackets (Nord & Brent, 2002).

² For the most part, our analysis relies on BLS CEX estimates for expenditures by residents of the western region of the U.S. Western residents tend to spend more on food annually than the U.S. population as a whole. Estimates based on U.S. average expenditures are only used when the USDA’s average cost of a meal is used to calculate low-end range estimates, presented in figures A1-A4 in the Appendix.

³ For assistance provided through School Nutrition Programs (SNP), meal types (breakfast, lunch, supper, and snack) are multiplied by state reimbursement rates to first calculate total program expenditures on food assistance.
Missing Meals. The total missing meals is the difference between the total meals required and the sum of meals received through either purchase or food assistance provision.

Understanding and Interpreting the Food Insecurity Index

The food insecurity index rating calculates the ratio of missing meals to the number of meals needed to bridge the gap between meals purchased and total meals required:

\[
\text{Food Insecurity Index} = \frac{\text{Missing Meals}}{\text{Total Meals Required} - \text{Meals Purchased}}
\]

The index rating for a particular year can be understood as the percentage of food assistance needed that goes unmet. For example, an index rating of 0.5 indicates that food assistance programs covered 50% of the meals the population at risk needed but could not afford to purchase. An index rating of 0 would indicate that food assistance programs completely filled the gap between the meals that could be purchased and the meals needed for a nutritious, healthy diet, while an index rating of 1 would indicate that no assistance was provided and 100% of this gap remained.

California state agencies report expenditures on food assistance by fiscal year. To align with this approach, we also base the index on fiscal year estimates, spanning July through June for any given year. Census numbers and other data calculated by calendar year are drawn from the year in which the fiscal year begins. A complete list of data sources can be found in the Appendix.

Calculating the Cost of a Meal (and Why it Matters)

The assumed “cost of a meal” plays a pivotal role in calculating this food insecurity index. Even a small change in estimated meal cost can substantially impact estimates of the number of meals that low-income households can purchase with their own funds or with assistance from CalFresh or WIC. Further, governmental assistance (e.g., CalFresh benefits) is calculated by converting dollars into meals, whereas assistance from nongovernmental sources (e.g., food banks) is calculated by converting pounds into meals. This means that shifts in the assumed cost of a meal influences our estimates of the proportion of food assistance provided by each source. For these reasons, choosing an appropriate meal cost is important to the accuracy of the index.

In constructing the index, we considered several different options. Using the cost of a meal designated by one of the U.S. Department of Agriculture’s (USDA) food plans is one option.\(^4\) For example, the USDA’s “low-cost meal plan” for a family of four with two children, estimated the price of a meal in June 2017 at $2.32. The major problem with using USDA meal plan costs is that these estimates are based on the national averages and do not take into account the substantial regional variation in food costs (Leibtag & Kumcu, 2011; Todd, Mancino, Leibtag, & Tripodo, 2010).

\(^4\) The USDA’s four plans - thrifty, low cost, moderate cost, and liberal - vary by meal cost.
Other estimates of average meal costs take regional variability in food prices into account. *Map the Meal Gap*, calculated by Feeding America in collaboration with the data analytics firm Nielsen, is one such example. Using national sales data derived from price scans of a basket of food items linked to Universal Product Codes (UPCs), Feeding American and Nielsen calculated multipliers at both the state- and county-levels to assess regional variation in the average cost of a meal. For 2017 (the most recent year for which data is available), the national average meal cost was estimated at $3.02, while average meal cost in California was $3.16. For Santa Cruz County, the estimated average meal cost was $3.89, or 1.28 times the national average. According to Feeding America’s estimates, Santa Cruz County ranks among the most expensive counties in the nation, with average meal costs that were more expensive than 98% of all U.S. counties in 2017 (Gundersen, Dewey, Kato, Crumbaugh, & Strayer, 2019).

Drawing on both the USDA and Feeding America estimates, we adopted a moderate approach that we believe affords an accurate but likely conservative estimate of meal costs in Santa Cruz County. For each year included in the analysis, we begin with the price of a meal for one member of a family of four following the USDA’s “low-cost meal plan.” We then multiply this amount by the multiplier for Santa Cruz County derived from Feeding America’s *Map the Meal Gap* analysis (the average cost of a meal in Santa Cruz County divided by the national average meal cost) for the respective year.

\[
\text{Estimated meal cost} = \text{USDA low cost meal} \times \text{Santa Cruz County multiplier}
\]

Since the meal cost used in index calculations exerts considerable influence over the index’s major components, it is informative to consider the range of estimates possible based on minimum and maximum meal costs. Based on alternate meal costs, Figures A1 through A4 in the Appendix present the range of estimates for (1) meals purchased; (2) food assistance provided; (3) missing meals; and (4) the resulting index ratings for each year. For these figures, the price of a meal according to the USDA’s low-cost meal plan for a family of four (national average) serves as the low-end meal cost, while Feeding America’s estimate for average meal cost in Santa Cruz County serves as the upper-end meal cost. The range of potential estimates is included within the shaded zones in the charts.

**Findings**

**Food Insecurity In Santa Cruz County, 2017-18**

In the most recent year analyzed (the fiscal year spanning 2017-18), approximately 83,000 Santa Cruz County residents lived in households earning under $50,000 per year. This group – considered the population at risk of food insecurity for our analysis – represented approximately 30% of the county’s population. Based on spending trends reported by the U.S. Bureau of Labor Statistics for residents of the western region of the United States, these households purchased an estimated 45% of the meals they required for a low-cost nutritious diet. An additional 31% of required meals were provided through food assistance programs.
Figure 1. Average Annual Food Expenditures by Household Income Groups (Western region), 2017

Source: Bureau of Labor Statistics Consumer Expenditure Survey, Table 3133

Figure 2. Total Meals Required by Population at Risk in 2017-18: 91,341,133

- Missing Meals: 21,532,591 (24%)
- Meals Purchased: 41,599,948 (45%)
- Food Assistance Provided: 28,208,595 (31%)
CalFresh (California’s implementation of the federal Supplemental Nutrition Assistance Program or SNAP) and Second Harvest Food Bank were the largest individual sources of food assistance provided to Santa Cruz County residents. CalFresh provided nearly half of all food assistance in the county, with funds from the program allowing residents to purchase over 13 million meals. Second Harvest Food Bank was responsible for providing roughly 20% of all county food assistance, distributing the equivalent of an additional 5.8 million meals to county residents. Collectively, government programs provided about 72% of food assistance, while the food bank and community partners provided the remaining 28% of food assistance.

Figure 3. Food Assistance Provided in 2017-18

Despite over 28 million meals being distributed through food assistance efforts, we estimate that there remained over 21 million “missing meals” during 2017-18. If these missed meals were distributed equally among the population at risk of food insecurity, this would mean that each person missed approximately five meals per week, and was likely forced to seek less expensive, less nutritious options.

The food insecurity index for 2017-18 measured 0.43, indicating that 43% of the meal gap – the difference between the number of meals that could be purchased and the number of meals required for a low-cost nutritious diet – remained even after accounting for all food assistance provided in the county. Food assistance provisions would need to nearly double in order to meet current needs in the county.
Within Santa Cruz County, there is considerable regional variation in the concentrations of residents at risk for food insecurity and participation in food assistance programs such as CalFresh. Figure 4 displays the varying densities of households with annual incomes under $50,000, while Figure 5 displays regional variation of CalFresh (SNAP) participation. Figure 6 depicts regional distribution of the “SNAP-gap,” the difference between the percent of the population qualifying for SNAP and the percent reporting participation in the program. Neighborhoods characterized by high “SNAP-gap” rates may be priority areas for advocacy efforts aimed at increasing CalFresh enrollment.

Figure 4. Percent of Households with Annual Income Under $50,000

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5 All data are drawn from the 2017 American Community Survey (5-year) estimates at the block group level.

6 More detailed maps of “SNAP-gap” block groups are available upon request from the Blum Center. Contact: blumcenter@ucsc.edu
Figure 5. Percent of Households Reporting Participation in SNAP
To identify food insecurity trends in the county, we calculated index estimates for the three years prior to the most recent year for which data is available. Over these years, the index rating declined from a high of 0.53 (or 53%) in 2015-16 to its lowest level of 0.43 (or 43%) in 2017-2018, the most recent year analyzed. This indicates that a larger percentage of the gap between the meals residents purchase and the meals they need is being filled by food assistance programs. Before reaching this conclusion, it is important to take a closer look at the individual components used to calculate the index.

Most notably, during this time period, the total meals required by the population at risk for food insecurity decreased substantially from over 115 million meals in 2014-15 to 91 million meals in 2017-18 (a 20% drop in meals required). This decline appears to be primarily due to changing demographics in the county. In 2014, an estimated 38,985 households in Santa Cruz County earned under $50,000 per year; by 2017, that number dropped to 30,444 households.
Because the index defines the population at risk of food insecurity purely in terms of household income, when the number of households in this income bracket declines, so too does the population at risk and the number of meals required.

Figure 7. Food Insecurity Trends, 2014-2018

Over the four years analyzed, the number of meals purchased by this population declined just as quickly, dropping by 22% over the four years analyzed. Those at risk of food insecurity in 2018 were able to purchase no larger a share of the meals required to sustain a nutritious diet than they were four years earlier.

Total food assistance provided, however, has remained relatively stable despite the decreasing population at risk. Importantly, food assistance provided by government programs and by the food bank and its community partners is covering an increasingly larger portion of the total meals required by the population at risk, providing nearly 31% of total meals required in 2017-18, up from 26% in 2014-15. While the sum total of assistance in the county has declined by approximately 7% over the years analyzed, this change is markedly slower than the reduction in households earning under $50,000. As the population at risk of food insecurity has dropped, relatively stable food assistance has met a greater portion of the county’s need. The proportions of food assistance provided by various sources has remained stable over the years analyzed, with CalFresh consistently providing roughly half of all food assistance, while Second Harvest Food Bank provided approximately 20% of all assistance in each of the four years analyzed.
Explaining the underlying causes of such significant and rapid demographic shifts in the county is beyond the scope of this report. Still, it is illuminating to consider these trends in greater detail. The number of households residing in Santa Cruz County has remained fairly stable over the years included in the analysis. However, during this time period, the proportion of households earning under $50,000 dropped from over 40% to about 32%.

Interestingly, the number of households earning under $15,000 has not declined (in fact, it has increased slightly). The number of county households earning $15,000 to $50,000, on the other hand, has decreased rapidly over the years analyzed. In 2014, over 29,000 households, roughly 30% of all households in the county, were in this income range. By 2017, there were approximately 19,000 households with incomes in this range, amounting to only 20% of households in the county. During these same years, the proportion of households earning over $100,000 rose from 33% to nearly 42%, and the median income rose from about $93,000 to over $110,000. Rising income has been accompanied by rising housing costs: the average monthly rent in the city of Santa Cruz increased from an estimated $1,910 in December 2014 to $2,405 in December 2017 (Rent Jungle, n.d.). In October 2019, the average monthly rent in Santa Cruz was $3,130 (Rent Jungle, n.d.). This represents an increase of 64% in average rent over the last five years, from $22,920 to $37,560 annually. For families with annual earnings of $50,000 who are paying the average rental cost and have no housing or other assistance, rental costs would shift from spending 46% of their income on rent to 75%. An increase of this magnitude ($14,640) would profoundly strain renters in our community.

Figure 8. Population at Risk of Food Insecurity, 2014-2017
While it is possible that those earning under $50,000 in 2014 have moved into higher household income brackets, it is more likely that these households have moved out of the county due to rising housing costs. For this reason, we caution against interpreting the change in the indices from 2014-15 to 2017-2018 as reflecting reduced food insecurity in Santa Cruz County. Rather, demographic changes raise the possibility that food insecurity is not being alleviated, but is instead being redistributed to other counties by the relocation of low-income residents. 

**Summary and Recommendations**

We calculated this food insecurity index to estimate need in Santa Cruz County and to track trends in both insecurity and efforts to alleviate it. By considering amounts and sources of food assistance provided in the county, our approach offers a more fine-grained portrait of food insecurity in Santa Cruz County than nation-wide models based only on county-level demographics. Our analysis indicates that low-income households in the county currently miss fewer meals than they did several years ago due to the relative stability of food assistance provided by state programs, the county food bank, and other nutrition resources. Nevertheless, approximately 20% of county residents remained at risk of food insecurity in fiscal year 2017-18.

It is clear that substantial need for supplemental nutrition assistance remains. Increasing enrollment in the CalFresh program is an important strategy for expanding access to nutritious food in our county. California’s SNAP enrollment is among the lowest in the United States, prompting recent legislative efforts to increase enrollment levels (Botts, 2019). According to the California Food Policy Advocates (2019), if all eligible residents of Santa Cruz County were enrolled in CalFresh, an additional $14.9 million in federal nutritional assistance would be distributed in the county. According to our estimates, this would help county residents access an additional five million meals, reducing missing meals by about a fifth. 

Outreach efforts that raise awareness of food assistance programs and assist with the application process have been found to increase participation among eligible individuals and families (Finkelstein & Notowidigdo, 2019). Reducing the stigma associated with food assistance programs is also crucial (Schanzenbach, 2009). Missed meals in Santa Cruz County could be reduced by initiatives that educate residents about available programs, assist with the application process, and de-stigmatize nutrition assistance. Focusing on increasing CalFresh enrollment in high “SNAP-gap” neighborhoods should be a priority.

7 Research by UC Berkeley’s Urban Displacement Project (www.urbandisplacement.org) finds numerous census tracts in Santa Cruz, Capitola, and Watsonville that are at risk of or are experiencing ongoing gentrification. This trend is also the focus of extensive media coverage. As Levin (2016) observes, “Santa Cruz has increasingly become unaffordable and inhospitable to many longtime low-income workers and middle-class families, and experts say the tech boom and housing crunch in nearby Silicon Valley is exacerbating the displacement.”

8 Additionally, Hanson’s (2010) analysis indicates that federal food assistance programs benefit local economies, with each SNAP dollar translating into $1.79 of economic activity.

9 Research by Gundersen and Oliveira (2001, p. 884) finds that “households associating stigma with the receipt of food stamps are less likely to participate [in the program] than households not associating stigma with food stamp receipt.”
In the years analyzed, Second Harvest Food Bank and its network of nonprofit and community partners distributed over a quarter of all food assistance provided in the county. These providers play an invaluable role in alleviating food insecurity in Santa Cruz County and must be fully supported. Additionally, receiving assistance from food pantries may encourage participation in other nutrition assistance programs such as SNAP (Bhattarai, Duffy, & Raymond, 2005). Importantly, government and community-based assistance programs should be viewed as complementary partners in reducing food insecurity.

We plan to update the index annually and continue tracking the factors that contribute to food insecurity in Santa Cruz County. Our intent is to provide useful, actionable information that will inform, strengthen, and mobilize initiatives to reduce food insecurity in Santa Cruz County.
Appendix

Estimate Ranges Based on Different Meal Costs

The following four charts depict our index estimates for Meals Purchased, Food Assistance Provided, Missing Meals, and the resulting Food Insecurity Indices based on the range of possible meal costs. In each figure, the low-end meal cost is drawn from the USDA’s low-cost meal plan for a family of four, while the high-end meal cost adopts Feeding America’s estimate for the average cost of a meal in Santa Cruz County.

Figure A1. Estimated range of Meals Purchased
Figure A2. Estimated Range of Food Assistance Provided

Figure A3. Estimated Range of Missing Meals
Figure A4. Estimated Range of Food Insecurity Index Ratings
Detail of Nongovernmental Food Assistance Provided

Figure A5. Percent of Nongovernmental Food Assistance Provided, by Organization, 2017-18
Data Sources

American Community Survey (1-year and 5-year estimates), U.S. Census Bureau. Tables B01003, S1101, B19001.


Map the Meal Gap, Feeding America. https://map.feedingamerica.org

California Women, Infants and Children (WIC) Program Redemption by County, CA Department of Public Health.

Food Stamp Program Participation and Benefit Issuance Reports (DFA 256), CA Department of Social Services.

Child and Adult Care Food Program (CACFP) County Profiles, California Department of Education.

Child Nutrition Program Reimbursement Rates, California Department of Education.

School Nutrition Program County Profiles, California Department of Education.

Summer Meal Programs County Profile, California Department of Education.

For Food Assistance Provided by county nonprofit organizations, provision estimates provided directly by Second Harvest Food Bank, Grey Bears, Community Bridges, and Valley Churches United Missions.
References


Acknowledgements

This report would not be possible without the data sharing and support of a committed network of nutrition assistance providers across Santa Cruz County. We wish to thank the Grey Bears, Community Bridges, Second Harvest Food Bank, Valley Churches United Missions, as well as many other nutrition assistance programs in our county for their generosity and support. We also thank Doug Bonett for his statistical consultation. We are deeply grateful to Michael Enos for sharing his expertise and experience calculating food insecurity indices.