# Predicting National Rates of Food Insecurity in the Absence of Official Data Collection

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According to the United States Department of Agriculture (USDA), more than 47 million people in the United States (14.3%) lived in a food insecure household in 2023, meaning that they "limited or uncertain access to adequate food." Their experiences of food insecurity put them at higher risk of several health problems and economic hardships in both the short and long term. Looking historically, food insecurity has also become more common over the past decades, rising by 17% between 2001 and 2023. Food insecurity is thus a vital measure of national economic well-being that is imperative to monitor given its rising prevalence. In September 2025, however, the USDA announced that it would no longer collect the data needed to measure food insecurity, and that the next food security report, scheduled for release on October 22, 2025 and based on 2024 data, would be the last. At the time of this writing, however, the ongoing federal government shutdown has delayed this final report release.

The permanent suspension of the food security data collection and postponement of the 2024 report leave a critical gap in our national data on economic well-being. While the 2024 data could eventually be released, the delay is a preview of the situation we will confront next year once this data is no longer available. This brief addresses this critical data gap by presenting a model predicting national food insecurity rates in the absence of the USDA food insecurity data. The model draws on secondary data measuring key correlates of food insecurity – specifically poverty, unemployment, and food-specific inflation – and predicts food insecurity rates at the population level, among children, and among adults. The model's accuracy is tested across several years, and its predictions align very closely with actual food insecurity rates. The model is also used to predict food insecurity rates for 2024. Predictions for 2024 indicate that food insecurity rates have not fallen, but continued to climb since pandemic-era lows. While continuing to measure food insecurity using the method employed by USDA since 1995 is the only way to guarantee consistent data on this critical indicator, the model presented here may prove useful in estimating food insecurity in future years when this USDA data is unavailable.

## KEY FINDINGS

- The cancellation of the USDA's food security survey from 2025 onwards, and the 2024 data delay, leaves a critical gap in national indicators of economic well-being.

- A model drawing on secondary data on poverty, unemployment, and food-specific inflation to predict food insecurity rates may prove useful in the absence of this data.

- An example model presented in this brief yields predictions that align closely with actual food insecurity rates in years for which such data exists.

- Predictions for 2024 suggest food insecurity did not decline between 2023 and 2024, but continued to climb since pandemic-era lows.

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## METHODOLOGY

This brief draws on a new model for estimating national food insecurity rates more comprehensively described in a recent October 2025 working paper.[1] As described in the paper, the model estimates the relationship between food insecurity and some of its key predictors (poverty, unemployment, and food inflation), and uses these associations to estimate rates of food insecurity in years when data on these predictors is available, but food insecurity data is not.[2] More specifically, the multivariate linear regression model predicts food insecurity based on national rates of poverty and pre-tax/transfer poverty, measured under the Supplemental Poverty Measure (SPM); the national unemployment rate; and the food-specific Consumer Price Index. When producing estimates for adults, predictors are adjusted to reflect poverty rates among adults. Similarly, when producing estimates for children, predictors are adjusted to reflect poverty rates among children, as well as unemployment rates of families with children.

Both in the paper and in this brief, the model's accuracy is assessed using all years for which there is available data on both these key predictors and food insecurity (2010 to 2023). When testing its accuracy in a given year, data for that year are removed, the model is re-estimated, and the predicted rate of food insecurity in that year is derived using that newly-estimated model and the value of the predictors in that year. For example, to estimate the food insecurity rate in 2023, the 2023 observations are removed from the data and the model is re-estimated. That newly estimated model and the 2023 poverty rates, unemployment rates, and food-specific CPI are then used to estimate food insecurity rates in 2023. The model's accuracy is evaluated by comparing these predicted rates of food insecurity to observed rates in each year.[3]

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**How the USDA Measures Food Insecurity in the United States**
Since 1995, the USDA has measured food insecurity in the United States through a supplemental survey—the Food Security Supplement (FSS)—administered as part of the Current Population Survey (CPS). The USDA developed the FSS in response to a congressional mandate for a national nutritional monitoring system.[4] The FSS describes a set of conditions characterizing food insecurity (e.g., running out of food without money for more, or not being able to afford balanced meals). Three of the questions are asked in reference to the household, seven are specific to adults, and eight are specific to children (asked only of households with children). Households are deemed food insecure if they report experiencing three or more of the food insecure conditions. Households reporting two or more of the child-specific conditions are identified as having food-insecure children. Households facing very low food security include those experiencing eight or more of the food-insecure conditions. Very low food security among children is defined as experiencing five or more child-specific conditions.

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[1] Collyer, 2025, Predicting Rates of Food Insecurity in the United States in the Absence of Official Data Collection.
[2] Nord et al., 2014, Prevalence of U.S. Food Insecurity Is Related to Changes in Unemployment, Inflation, and the Price of Food, describe a similar model, but using unemployment, all-item inflation, and relative food prices as predictors. See Collyer, 2025, for more discussion. In a related analysis, Gundersen et al., 2014, Map the Meal Gap: Exploring Food Insecurity at the Local Level, describe a process for imputing local-level food insecurity rates using state-level determinants of food insecurity and county-level characteristics identified in the American Community Survey.
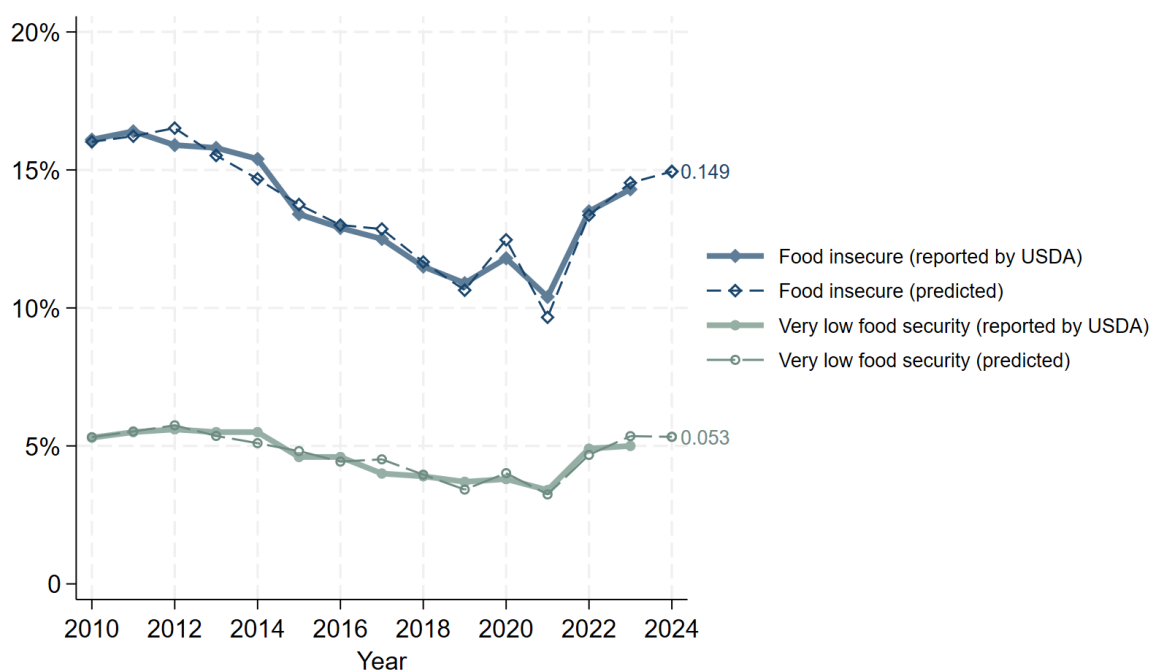[3] Additional discussion of other measures of the model's "goodness of fit" – including their R-squared, Adjusted R-squared, and Root Mean Square Error (RMSE) – are available in the working paper.
[4] The USDA developed the FSS with an inter-agency technical working group; see Rabbitt et al., 2023, Household Food Security in the United States in 2023. Arteaga & Wilde, 2023, Measuring Food Security in the United States for More Than 25 Years for more discussion of the FSS and construction of the food insecurity indicators.

## RESULTS

Figure 1 presents national food insecurity rates between 2010 and 2023 reported by the USDA and estimates produced by the prediction model in these years, as well as predicted rates for 2024. The estimates Figure 1 are at the individual level, showing the share of individuals in the United States living in households that experienced food insecurity or very low food security. The observed and predicted rates of food insecurity in Figure 1 are also presented in Table 1.

### Figure 1. National rates of food insecurity reported by the USDA and predicted from model (share of all individuals living in food-insecure households)



**Source**: Center on Poverty and Social Policy at Columbia University, 2025. Food security rates reported by USDA reflect those reported in Rabbitt et al. (2025).
**Note**: Methodology for producing predicted rates of food security described in Collyer (2025).

Results in Figure 1 and Table 1 show that the model's predictions are very close to the official rates reported by the USDA. For rates of food insecurity, in all but four of the 14 years examined, the predicted rate is within 0.4 percentage points (p.p.) of the official rate (Table 1). The largest absolute difference between the official and predicted rate is 0.7 p.p. As for very low food security, in all but one year, predicted rates are within 0.4 p.p. of the official rates. The largest absolute difference is 0.5 p.p. The correspondence between the predictions and the official food insecurity rates suggests that the model produces a credible prediction of food insecurity at the individual level, and may prove useful in estimating food insecurity rate in the absence of data from USDA – including for 2024 as we await the release of the USDA's report on food insecurity.

The results in Figure 1 and Table 1 also suggest that the prevalence of food insecurity may have risen between 2023 and 2024 – increasing by 0.4 percentage points between these years, and approaching 15% in 2024. Rates of very low food security are predicted to have stayed relatively constant between these years, at roughly 5%. There is, of course, a prediction interval[5] around these predictions, which is presented in Appendix Figure A1.

### Table 1. National rates of food insecurity reported by the USDA and predicted from model (share of all individuals living in food-insecure households)

| | Food Insecure | | | Very Low Food Security | | |
|---|---|---|---|---|---|---|
| | Reported by USDA | Predicted from Model | Difference (p.p.) | Reported by USDA | Predicted from Model | Difference (p.p.) |
| 2010 | 16.1% | 16.0% | -0.1 | 5.3% | 5.3% | 0.0 |
| 2011 | 16.4% | 16.2% | -0.2 | 5.5% | 5.5% | 0.0 |
| 2012 | 15.9% | 16.5% | 0.6 | 5.6% | 5.7% | 0.1 |
| 2013 | 15.8% | 15.5% | -0.3 | 5.5% | 5.4% | -0.1 |
| 2014 | 15.4% | 14.7% | -0.7 | 5.5% | 5.1% | -0.4 |
| 2015 | 13.4% | 13.7% | 0.3 | 4.6% | 4.8% | 0.2 |
| 2016 | 12.9% | 13.0% | 0.1 | 4.6% | 4.4% | -0.2 |
| 2017 | 12.5% | 12.9% | 0.4 | 4.0% | 4.5% | 0.5 |
| 2018 | 11.5% | 11.7% | 0.2 | 3.9% | 4.0% | 0.1 |
| 2019 | 10.9% | 10.6% | -0.3 | 3.7% | 3.4% | -0.3 |
| 2020 | 11.8% | 12.5% | 0.7 | 3.8% | 4.0% | 0.2 |
| 2021 | 10.4% | 9.7% | -0.7 | 3.4% | 3.2% | -0.2 |
| 2022 | 13.5% | 13.4% | -0.1 | 4.9% | 4.7% | -0.2 |
| 2023 | 14.3% | 14.5% | 0.2 | 5.0% | 5.4% | 0.4 |
| 2024 | | 14.9% | | | 5.3% | |

**Source**: Center on Poverty and Social Policy at Columbia University, 2025. Food security rates reported by USDA reflect those reported in Rabbitt et al. (2025).
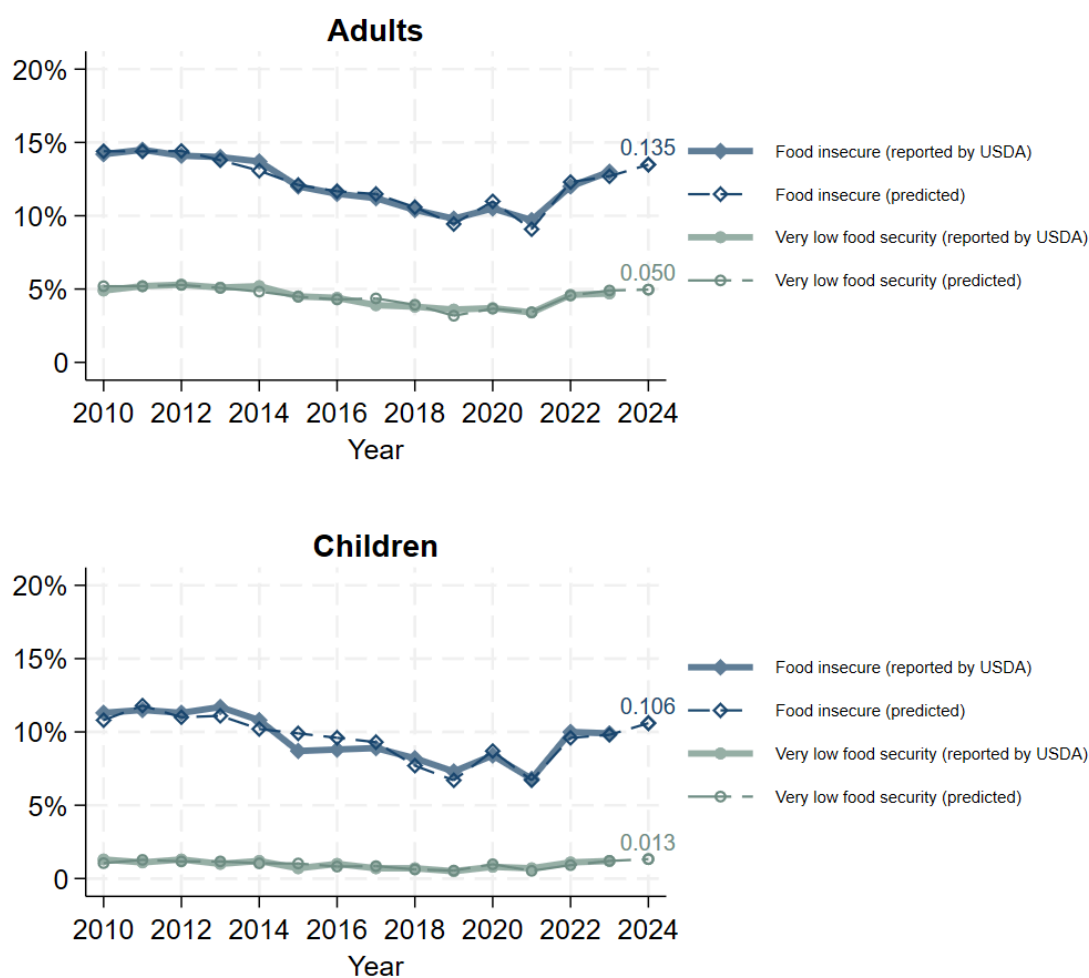
**Note:** Methodology for producing predicted rates of food security described in Collyer (2025). Gray boxes in 2024 represent the data not yet available from the USDA food security report that was due to be released on October 22, 2025 and as of the time of writing, is still forthcoming. P.p. stands for percentage point.

Figure 2 and Appendix Tables A1 and A2 present results similar to those above, but examining the share of adults and children in the United States that experienced food insecurity or very low food security. Like the previous results, Figure 2 and Table A1 show that the prediction model produces credible estimates of the rate of food insecurity and very low food security among both adults and children. Among predictions for adults, in all but three of the 14 years examined, the absolute difference between the official and predicted rates of food insecurity is 0.4 p.p. or less; predicted rates of very low food security are within this range in all but one of the years examined. For children, predicted rates of food insecurity are within 0.4 p.p. of reported

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[5] The prediction interval expresses the uncertainty around the model's predicted value. It is based on the estimated relationships between the predictors and the outcome, as well as the unexplained (residual) variation in the model. For example, a 95% prediction interval represents the range within which the true outcome is expected to fall, given the model and data, about 95% of the time.

estimates in half of the years, and all predicted rates of very low food security are within this range (Table A2). The largest difference between the model prediction and the official rate of food insecurity among children is 1.2 p.p. Relative to predictions across all individuals (Figure 1) and adults, predictions for children should be interpreted with more caution as they are further from reported rates on average: the average difference between the reported and predicted estimates is 0.5 p.p., and this is the typical difference between the actual rates of food insecurity and those predicted by the model.[6]

## Figure 2. National rates of food insecurity reported by the USDA and predicted from model (adults and children)

**Adults**

0.135

0.050

- ◆ Food insecure (reported by USDA)
- ◇ Food insecure (predicted)
- ● Very low food security (reported by USDA)
- ○ Very low food security (predicted)

**Children**

0.106

0.013

- ◆ Food insecure (reported by USDA)
- ◇ Food insecure (predicted)
- ● Very low food security (reported by USDA)
- ○ Very low food security (predicted)

**Source**: Center on Poverty and Social Policy at Columbia University, 2025. Food security rates reported by USDA reflect those reported in Rabbitt et al. (2025).

**Note**: Methodology for producing predicted rates of food security described in Collyer (2025).

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[6] See Collyer, 2025, for more detailed discussion of the RMSE, which is the square root of the average squared difference between the observed and predicted values, and is a commonly used measure for evaluating the accuracy of a prediction model. The RMSE is particularly valuable because it is expressed in the same units as the outcome variable and reflects the typical size or magnitude of the difference between the predicted and observed values.

Predictions for 2024 in Figure 2 also suggest that food insecurity among adults and children have not been falling, but have continued to rise since their pandemic-era lows (albeit at a lower magnitude than the increase observed between 2021 and 2022). It is predicted that 13.5% of adults and 10.6% of children experienced food insecurity in 2024. As with the population-wide results, there is an interval around these predictions, which is presented in Appendix Figures A2 and A3.

## CONCLUSION

The USDA recently announced that it would discontinue collecting data on food insecurity in the United States beginning in 2025, and that the report on food insecurity in 2024 – scheduled for release on October 22, 2025 – would be the last. At the time of this writing, the ongoing federal government shutdown has delayed its release. This research brief presents a model for estimating national rates of food insecurity in the absence of this official data from the USDA. The model predicts rates of food insecurity based on its key correlates, and its predictions align remarkably closely with official rates in years where such data is available. Predicted food insecurity rates for 2024 also suggest that the prevalence of food insecurity is not falling, but continuing on its upward rise as it has since reaching a historic low in 2021. This prediction model will continue to be refined and tested,[7] but its accuracy as assessed here and in a recent working paper suggest that it produces credible estimates of food insecurity, and it may prove useful when official data is unavailable.

## SUGGESTED CITATION

Collyer, Sophie. 2025. Predicting national rates of food insecurity in the absence of official data collection. Poverty and Social Policy Brief, vol. 9, no.18. New York: Center on Poverty and Social Policy, Columbia University.

## DATA SOURCE

This analysis relies on a dataset that brings together annual estimates of food insecurity drawn from the USDA's annual report,[8] SPM poverty rates drawn from the U.S. Census Bureau's annual report on poverty in the United States,[9] and estimates of Pre-Tax/Transfer SPM poverty calculated in the CPS-ASEC microdata,[10] as well as national estimates of the unemployment rate[11] and the food-specific Consumer Price Index.[12] See recent working paper for additional details.

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[7] The working paper which more completely describes the model used in this brief also includes various sensitivity tests, including ones where poverty is measured using the Official Poverty Measure (OPM) and where all-item inflation is used instead of food-specific inflation. The model's predictions are less accurate in these instances.

[8] Rabbit et al., 2024, Household Food Insecurity in the United States in 2023.

[9] Shrider and Bijou, 2023, Poverty in the United States: 2024.

[10] Where available, these estimates come from Wimer et al., 2024, 2024 Poverty Rates in Historical Perspective; they are otherwise calculated in the CPS-ASEC microdata retrieved from Flood et al., 2025, IPUMS CPS.

[11] United States Bureau of Labor Statistics, 2025, Unemployment Rate; United States Bureau of Labor Statistics, 2025, Employment Characteristics of Families Summary.

[12] United States Bureau of Labor Statistics, 2025, Consumer Price Index for All Urban Consumers: Food in U.S. City Average.

## ACKNOWLEDGMENTS

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## APPENDIX

### Food Security Supplement

The questions included in the food security supplement are listed below and were drawn from Rabbitt et al. (2025).

1. "We worried whether our food would run out before we got money to buy more." Was that often, sometimes, or never true for you in the last 12 months?

2. "The food that we bought just didn't last and we didn't have money to get more." Was that often, sometimes, or never true for you in the last 12 months?

3. "We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for you in the last 12 months?

4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food? (Yes/No)

5. (If yes to question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

6. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? (Yes/No)

7. In the last 12 months, were you ever hungry, but didn't eat, because there wasn't enough money for food? (Yes/No)

8. In the last 12 months, did you lose weight because there wasn't enough money for food? (Yes/No)

9. In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

10. (If yes to question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

(Questions 11–18 were only asked if the household included children ages 0–17)

11. "We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food." Was that often, sometimes, or never true for you in the last 12 months?

12. "We couldn't feed our children a balanced meal, because we couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?

13. "The children were not eating enough because there wasn't enough money for food." Was that often, sometimes, or never true for you in the last 12 months?

14. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food? (Yes/No)

15. In the last 12 months, were the children ever hungry because there wasn't enough money for food? (Yes/No)

16. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food? (Yes/No)

17. (If yes to question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

18. In the last 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

## Table A1. National food insecurity among adults, USDA rates and predicted from model

| | Food Insecure | | | Very Low Food Security | | |
|---|---|---|---|---|---|---|
| | Reported by USDA | Predicted from Model | Difference (p.p.) | Reported by USDA | Predicted from Model | Difference (p.p.) |
| 2010 | 14.2% | 14.4% | 0.2 | 4.9% | 5.2% | 0.3 |
| 2011 | 14.5% | 14.4% | -0.1 | 5.2% | 5.2% | 0.0 |
| 2012 | 14.1% | 14.4% | 0.3 | 5.3% | 5.3% | 0.0 |
| 2013 | 14.0% | 13.8% | -0.2 | 5.1% | 5.1% | 0.0 |
| 2014 | 13.7% | 13.1% | -0.6 | 5.2% | 4.8% | -0.4 |
| 2015 | 12.0% | 12.1% | 0.1 | 4.5% | 4.5% | 0.0 |
| 2016 | 11.5% | 11.7% | 0.2 | 4.4% | 4.3% | -0.1 |
| 2017 | 11.2% | 11.5% | 0.3 | 3.9% | 4.4% | 0.5 |
| 2018 | 10.4% | 10.6% | 0.2 | 3.8% | 3.9% | 0.1 |
| 2019 | 9.8% | 9.4% | -0.4 | 3.6% | 3.2% | -0.4 |
| 2020 | 10.5% | 11.0% | 0.5 | 3.7% | 3.7% | 0.0 |
| 2021 | 9.7% | 9.1% | -0.6 | 3.4% | 3.4% | 0.0 |
| 2022 | 12.0% | 12.3% | 0.3 | 4.6% | 4.6% | 0.0 |
| 2023 | 13.0% | 12.7% | -0.3 | 4.7% | 4.9% | 0.2 |
| 2024 | . | 13.5% | | . | 5.0% | |

**Source**: Center on Poverty and Social Policy at Columbia University, 2025. Food security rates reported by USDA reflect those reported in Rabbitt et al. (2025).

**Note**: Methodology for producing predicted rates of food security described in Collyer (2025). Gray boxes in 2024 represent the data not yet available from the USDA food security report that was due to be released on October 22, 2025 and as of the time of writing, is still forthcoming. P.p. stands for percentage point.
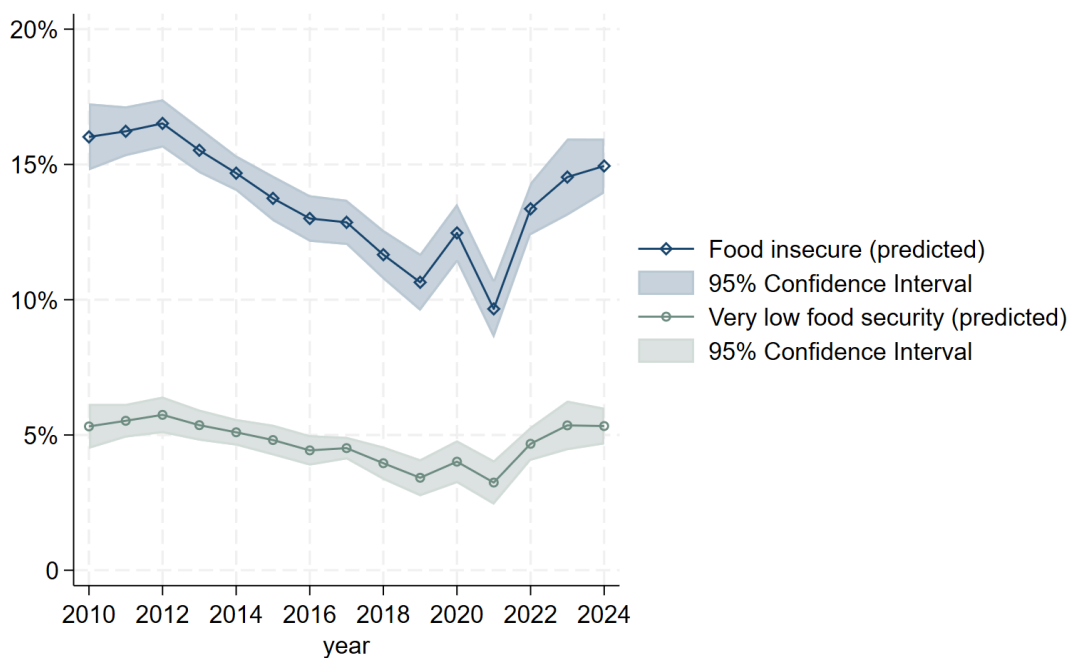
## Table A2. National food insecurity among children, USDA rates and predicted from model

| | Food Insecure | | | Very Low Food Security | | |
|---|---|---|---|---|---|---|
| | Reported by USDA | Predicted from Model | Difference (p.p.) | Reported by USDA | Predicted from Model | Difference (p.p.) |
| 2010 | 11.3% | 10.8% | -0.5 | 1.3% | 1.1% | -0.2 |
| 2011 | 11.5% | 11.8% | 0.3 | 1.1% | 1.3% | 0.2 |
| 2012 | 11.3% | 11.0% | -0.3 | 1.3% | 1.2% | -0.1 |
| 2013 | 11.7% | 11.1% | -0.6 | 1.0% | 1.2% | 0.2 |
| 2014 | 10.8% | 10.2% | -0.6 | 1.2% | 1.0% | -0.2 |
| 2015 | 8.7% | 9.9% | 1.2 | 0.7% | 1.0% | 0.3 |
| 2016 | 8.8% | 9.6% | 0.8 | 1.0% | 0.8% | -0.2 |
| 2017 | 8.9% | 9.3% | 0.4 | 0.7% | 0.8% | 0.1 |
| 2018 | 8.2% | 7.7% | -0.5 | 0.7% | 0.6% | -0.1 |
| 2019 | 7.3% | 6.7% | -0.6 | 0.5% | 0.5% | 0.0 |
| 2020 | 8.4% | 8.7% | 0.3 | 0.8% | 1.0% | 0.2 |
| 2021 | 6.8% | 6.7% | -0.1 | 0.7% | 0.5% | -0.2 |
| 2022 | 10.0% | 9.6% | -0.4 | 1.1% | 0.9% | -0.2 |
| 2023 | 9.9% | 9.8% | -0.1 | 1.2% | 1.2% | 0.0 |
| 2024 | . | 10.6% | | . | 1.3% | |

**Source**: Center on Poverty and Social Policy at Columbia University, 2025. Food security rates reported by USDA reflect those reported in Rabbitt et al. (2025).

**Note**: Methodology for producing predicted rates of food security described in Collyer (2025). Gray boxes in 2024 represent the data not yet available from the USDA food security report that was due to be released on October 22, 2025 and as of the time of writing, is still forthcoming. P.p. stands for percentage point.
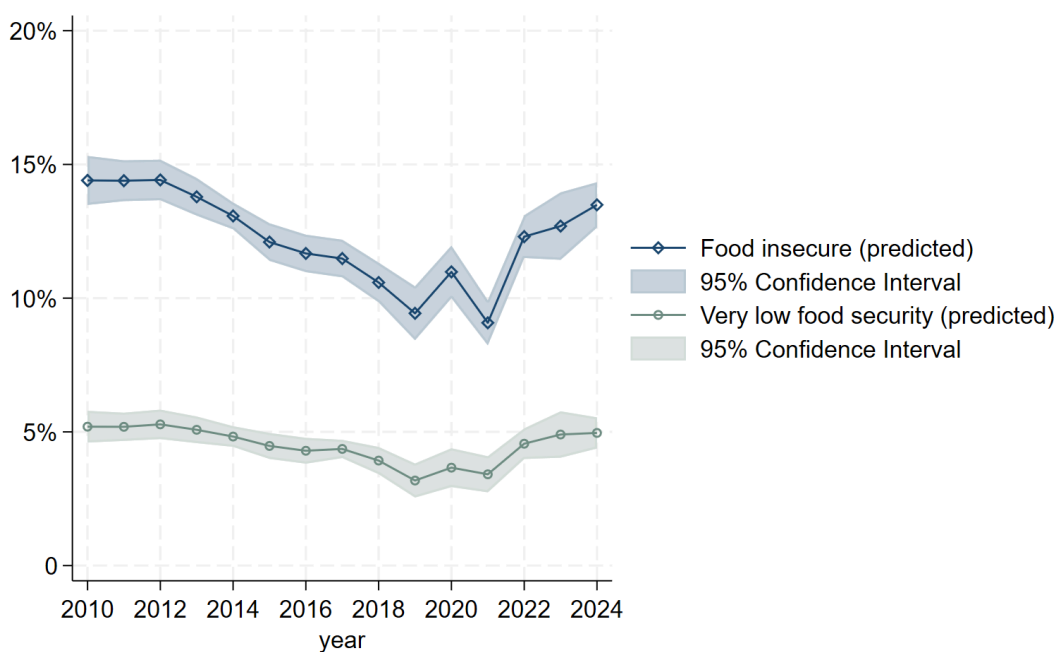
## Figure A1. Predicted national rates of food insecurity with 95% confidence interval (share of individuals in food insecure households)



**Source:** Center on Poverty and Social Policy at Columbia University, 2025.

**Note**: Methodology for producing predicted rates of food security described in Collyer (2025).
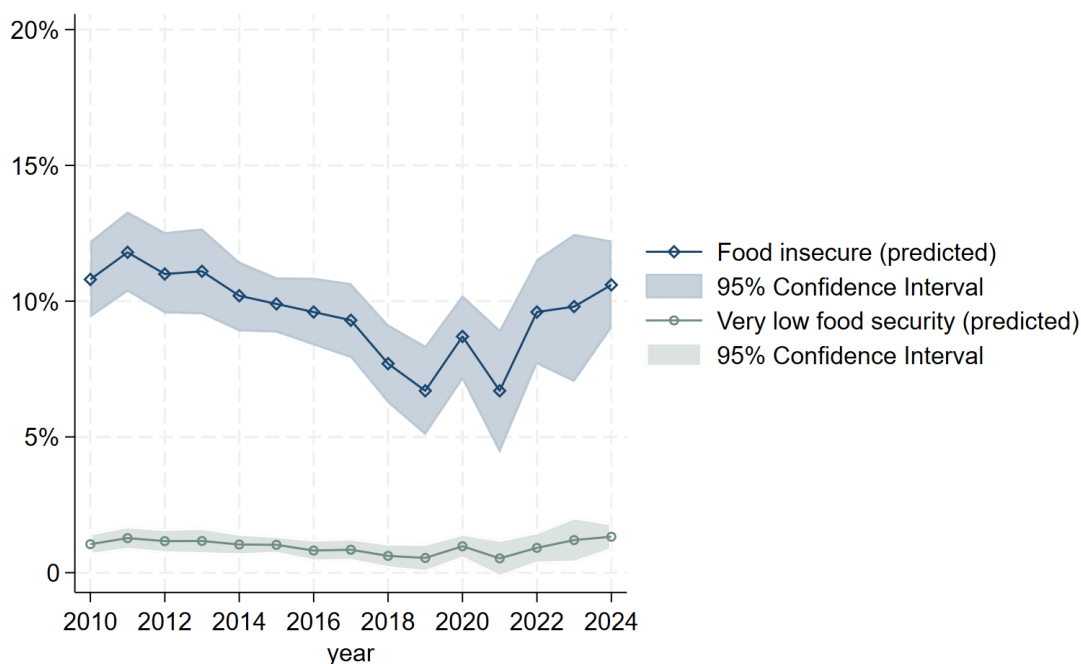
## Figure A2. Predicted national rates of food insecurity among adults with 95% confidence interval



**Source:** Center on Poverty and Social Policy at Columbia University, 2025.

**Note**: Methodology for producing predicted rates of food security described in Collyer (2025).

## Figure A3. Predicted national rates of food insecurity among children with 95% confidence interval



Source: Center on Poverty and Social Policy at Columbia University, 2025.

Note: Methodology for producing predicted rates of food security described in Collyer (2025).

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