



# Food Insecurity and Blood Pressure in College Students

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## Introduction

- Food Insecurity**
- The prevalence of food insecurity is as high as 70% on some college campuses.<sup>1,2</sup>
  - FI can contribute to:
    - ↑ Coping strategies around food<sup>3</sup>
    - ↓ Diet quality<sup>4</sup>
- Blood Pressure**
- Optimal measurement:  $< \frac{120}{80}$  mmHg
  - In young adults, hypertension or elevated blood pressure leads to:
    - ↑ Risk for cardiovascular events and heart failure<sup>5,6</sup>
- Food Insecurity and Blood Pressure**
- Adults with food insecurity have:
    - 40-46% ↑ odds of having self-reported hypertension<sup>7,8</sup>
  - Adults with hypertension have:
    - 51% ↑ odds of having food insecurity<sup>7</sup>

## Study Objective

To assess the relationship between food security status and blood pressure in a sample of college students 18-24 years old living in on-campus apartments or off-campus.

## Methods

- Study Design**
- Data were collected between 2021 and 2023 from the College Health and Nutrition Assessment Survey (CHANAS) at a northeastern public university (UNH IRB #5524).<sup>9</sup>
  - Students were included if they were ≥18 years old, did not live in on-campus residence halls, completed all assessments, and provided informed consent.
- Data Collection**
- Food security status was obtained via online survey using the USDA Six-Item Short Form of the Food Security Survey Module.<sup>10</sup>
  - Participants were categorized as one of the following:
    - Food Secure (high or marginal food security)
    - Food Insecure (low or very low food security)
  - Blood pressure measurements were obtained twice, averaged, and categorized as one of the following:
    - Normal (<120 mmHg systolic and <80 mmHg diastolic)
    - Elevated (>120 mmHg systolic or >80 mmHg diastolic)
  - Dietary intake was assessed using 3-day food records and analysis software (Diet & Wellness Plus).
- Data Analysis**
- Chi-square analysis compared the prevalence of elevated blood pressure according to food security status.
  - ANCOVA evaluated the differences in blood pressure based on food security status using the following as covariates: gender, BMI, physical activity, saturated fat intake, sodium intake, and alcohol intake.
  - SPSS v. 29.0 was used for all statistical analyses and significance was set at  $p < .05$ .

## Results

### Participant Characteristics

	Food Secure	Food Insecure	All
<b>N</b>	144 - 196	50 - 69	194 - 265
<b>Female (n, %)</b>	126 (64.3)	41 (59.4)	167 (63.0)
<b>Age (years)</b>	19.7 ± .9	20.0 ± 1.1	19.8 ± .9
<b>BMI (kg/m<sup>2</sup>)</b>	23.6 ± 3.7	23.9 ± 3.6	23.7 ± 3.7
<b>Race</b>			
<b>White (n, %)</b>	190 (96.9)	61 (92.4)	251 (95.8)
<b>Other Race(s) (n, %)</b>	6 (3.0)	5 (7.5)	11 (4.2)
<b>Major</b>			
<b>Nutrition (n, %)</b>	7 (3.6)	2 (2.9)	9 (3.4)
<b>Allied Health (n, %)</b>	58 (29.6)	15 (21.7)	73 (27.5)
<b>Other Major (n, %)</b>	131 (66.8)	52 (75.4)	183 (69.1)
<b>Sodium Intake (mg/day)</b>	3091.7 ± 2136.0	3181.3 ± 1520.8	3115.4 ± 1988.5
<b>Saturated Fat Intake (g/day)</b>	25.6 ± 11.5	26.5 ± 13.4	25.8 ± 12.0
<b>Alcohol Use (n, %)</b>	131 (70.1)	53 (77.9)	184 (72.2)
<b>Moderate Physical Activity Guidelines Met (n, %)</b>	54 (39.4)	20 (44.4)	74 (40.7)

Continuous data are presented as mean ± SD. Categorical data are presented as n, %.

## USDA Six-Item Short Form<sup>10</sup>

- “The food that I bought just didn’t last, and I didn’t have money to get more.” Was that often, sometimes, or never true for you in the last 12 months?
- “I couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for you in the last 12 months?
- In the last 12 months, did you ever cut the size of your meals or skip meals because there wasn’t enough money for food?
- If yes, how often did this happen – almost every month, some months but not every month, or in only 1 or 2 months?
- In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food?
- In the last 12 months, were you ever hungry but didn’t eat because there wasn’t enough money for food?

## Main Takeaways

- There is a high prevalence of food insecurity (26%) and elevated blood pressure (33.2%) among students not living in residence halls at this university.
- Mean blood pressure measurements did not differ between students with food security and food insecurity.
- As food insecurity continues to be prevalent on college campuses, it is important that policies are in place to provide students with access to nutritious foods.

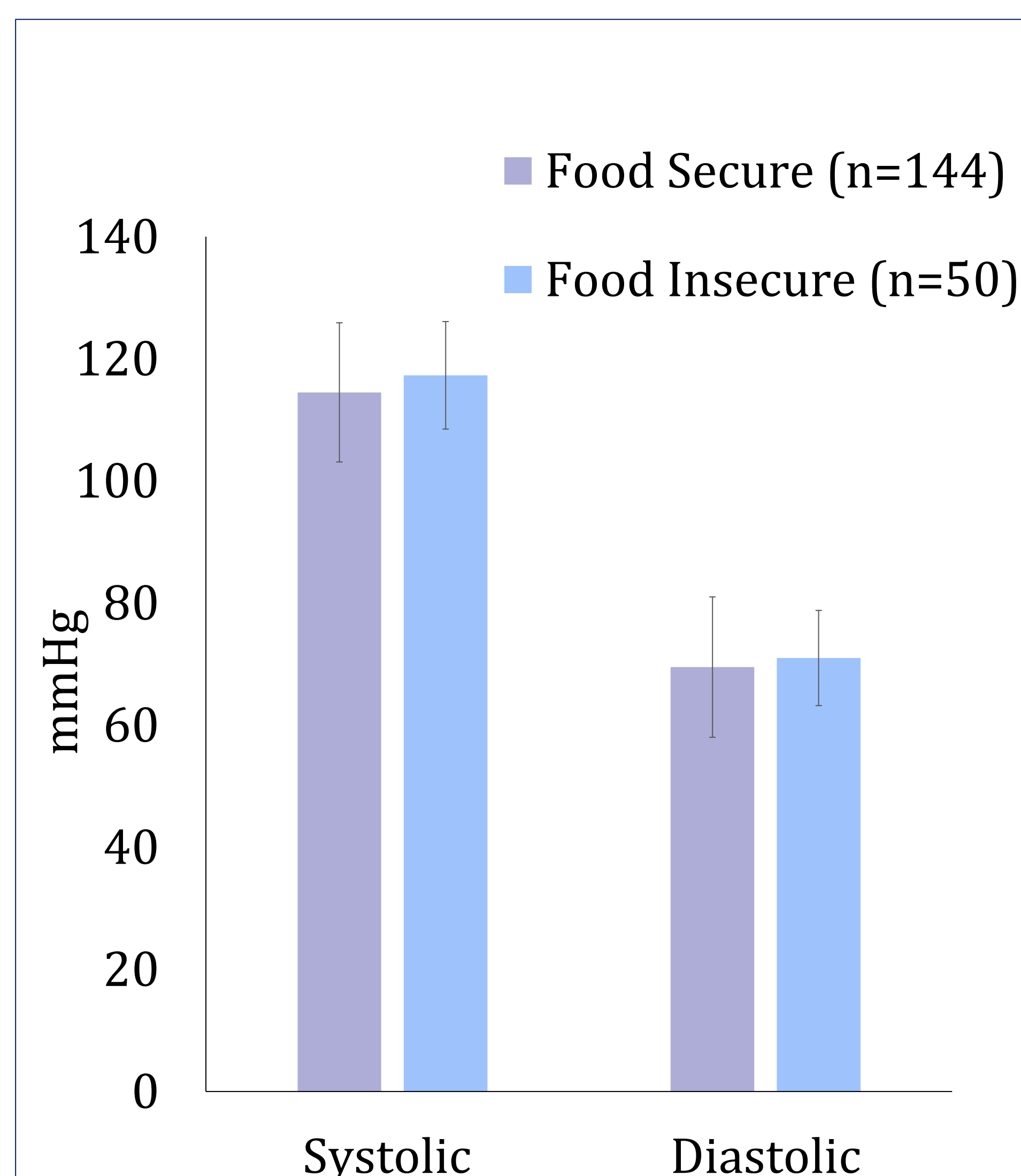
## Acknowledgements

This project was funded by the New Hampshire Agriculture Experiment Station, USDA National Institute of Food and Agriculture Project 1010738, and the state of New Hampshire.

## References

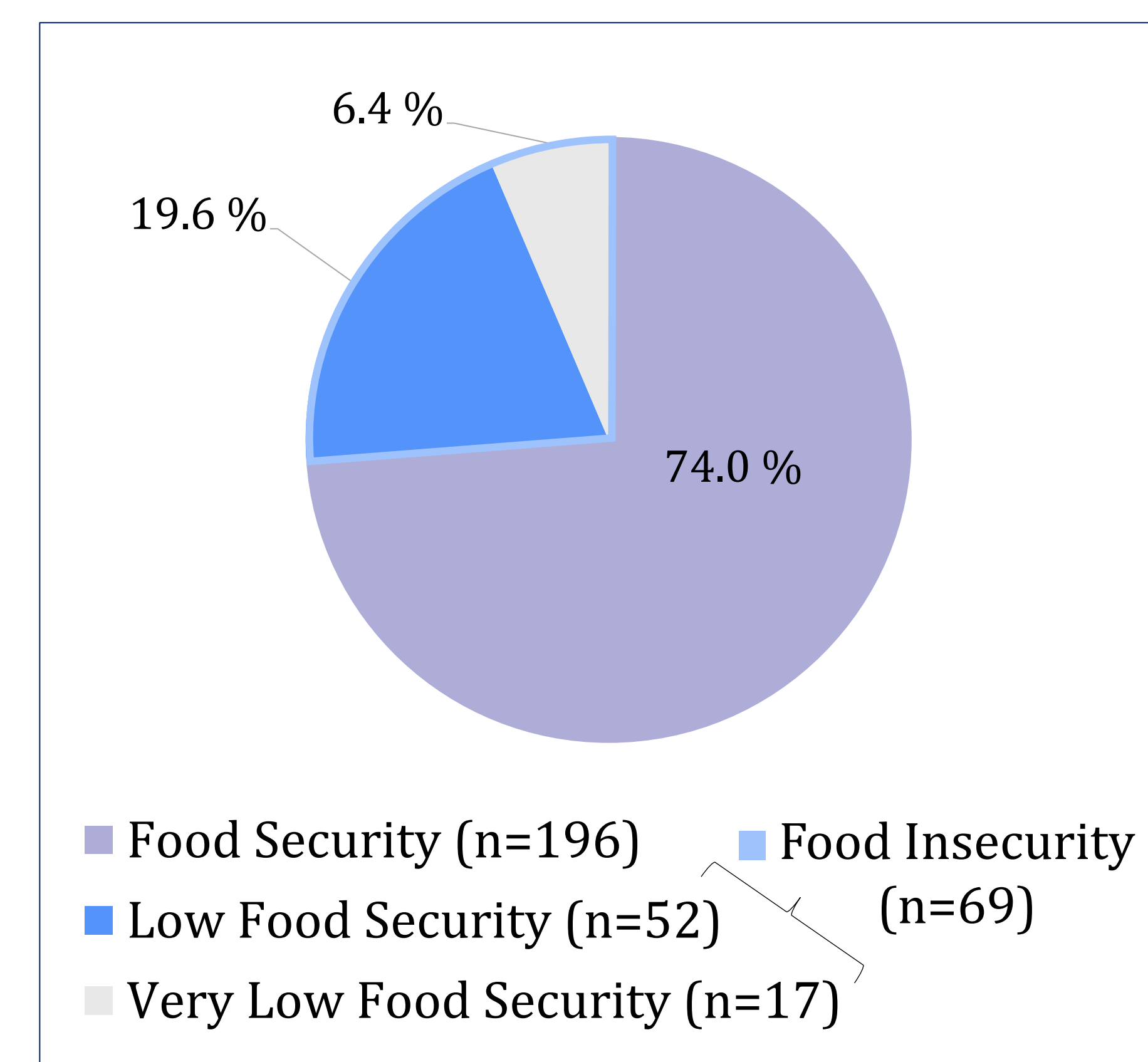
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### Blood Pressure Measurements



Values are presented as means with standard deviation bars. \* indicates  $p < .05$ .

### Food Security Status



### Prevalence of Elevated Blood Pressure

Food Secure (n=196)	Food Insecure (n=69)
32.1%	36.2%

Values are presented as percentages. \* indicates  $p < .05$ .