

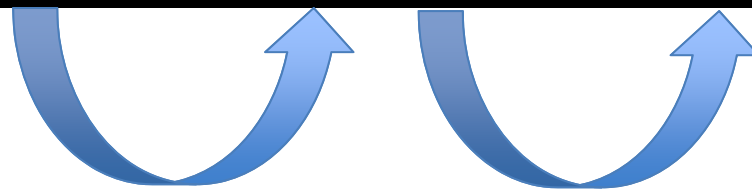
FDA'S RETAIL FOOD RISK FACTOR STUDY

FINDINGS FROM THE 2013-2014 RESTAURANT DATA COLLECTION PERIOD

2013-2014 Restaurant Data Collection Baseline to Assess Trends During 10-Year Study Period



Industry Segment	Facility Type	Initial Data Collection Period (Baseline Measurement)	2 ND Data Collection Period	3 RD Data Collection Period
Restaurants	Full-service Restaurants and Fast Food Restaurants	Nov. 15, 2013 to Sept. 30, 2014	Oct. 1, 2017 to Sept.30, 2018	Oct. 1, 2021 to Sept. 30, 2022



4 years

4 years

Study Design

The FDA logo consists of the letters "FDA" in white, sans-serif font, centered within a solid blue square.

Facility Type, Risk Categorization & Sample Size

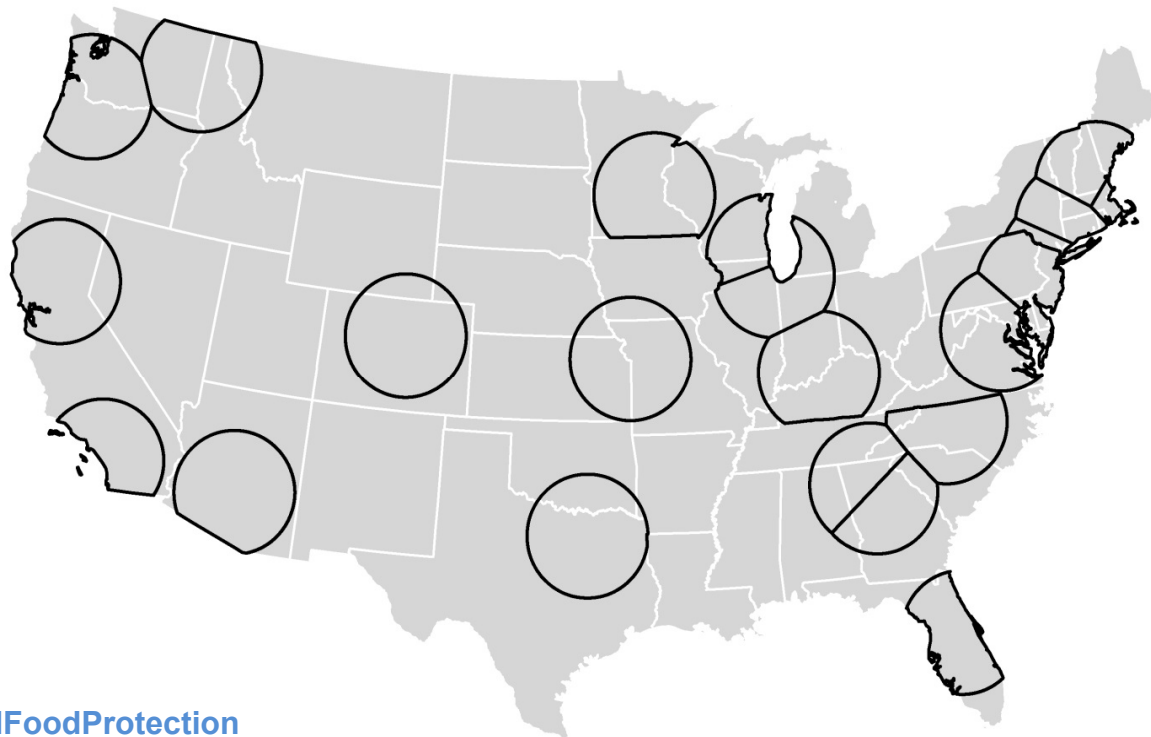
- Restaurant **types**: Full Service & Fast Food
- Restaurants **categorized as Risk 2 through 4** were eligible to be selected
 - Risk categorization of restaurants (4, Annex 5, 2013 *FDA Food Code*)
- **Sample Size**
 - 396 Full-service restaurants
 - 425 Fast food restaurants
- **95% Confidence (+ or - 5%)**
 - Minimum of 384 data collections needed for each restaurant facility

Study Design

Restaurant Selection



- Data collectors – 22 Standardized FDA Retail Food Specialists
- Restaurants randomly selected within 150 mile radius of the Specialist's home location.



Study Protocol & Methodology



- Verified eligibility of randomly selected restaurants
- Contacted regulatory authorities of selected restaurants
- Encouraged regulatory authority representative to accompany the Specialist
- Data collections – unannounced, non-regulatory visits
 - Introductory letter – explained purpose of visit
 - Industry participation is voluntary participation

Foodborne Illness Risk Factors and the Associated 10 Primary Data Items



Foodborne Illness Risk Factor	Associated Primary Data Item Numbers and Description
Poor Personal Hygiene	<ul style="list-style-type: none"> • Data Item #1 – Employees practice proper handwashing. • Data Item #2 – Employees do not contact ready-to-eat foods with bare hands.
Contaminated Equipment/Protection from Contamination	<ul style="list-style-type: none"> • Data Item #3 – Food is protected from cross contamination during storage, preparation, and display. • Data Item #4 – Food contact surfaces are properly cleaned and sanitized.
Improper Holding Time/Temperature	<ul style="list-style-type: none"> • Data Item #5 – Foods requiring refrigeration are held at the proper temperature. • Data Item #6 – Foods displayed or stored hot are held at the proper temperature. • Data Item #7 – Foods are cooled properly. • Data Item #8 – Refrigerated, ready-to-eat foods are properly date marked and discarded within 7 days of preparation or opening.
Inadequate Cooking	<ul style="list-style-type: none"> • Data Item #9 – Raw animal foods are cooked to required temperatures. • Data Item #10 – Cooked foods are reheated to required temperatures.

Data Item Supported by Information Statements



Data Item

IN	OUT	NO	NA	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. Raw animal foods are cooked to required temperatures

Information Statements

IN	OUT	NO	NA	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	A. Raw shell eggs broken for immediate service are cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	B. Pork; Fish; Beef; Commercially-raised Game Animals are cooked to 145°F (63°C) for 15 seconds
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C. Comminuted Fish, Meats, Commercially-raised Game Animals are cooked to 155°F (68°C) for 15 seconds
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	D. Poultry; stuffed fish; stuffed meat; stuffed pasta; stuffed poultry; stuffed ratite; or stuffing containing fish, meat, poultry, or ratites; wild game animals are cooked to 165°F (74°C) for 15 seconds
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	E. Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specifies and according to oven parameters per Chart <i>(NOTE: This data item includes beef roasts, corned beef roasts, pork roasts, and cured pork roasts such as ham).</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	F. Other Cooking Observations (describe in the Comment Section and Temperature Chart below)

Calculating Compliance Percentages for Data Items (Food Safety Practices/Behaviors)

Percent Out of Compliance =

$$\frac{\text{Total number of Out-of-Compliance observations for the data item}}{\text{Total number of observations (IN and OUT) for the data item}} \times 100\%$$

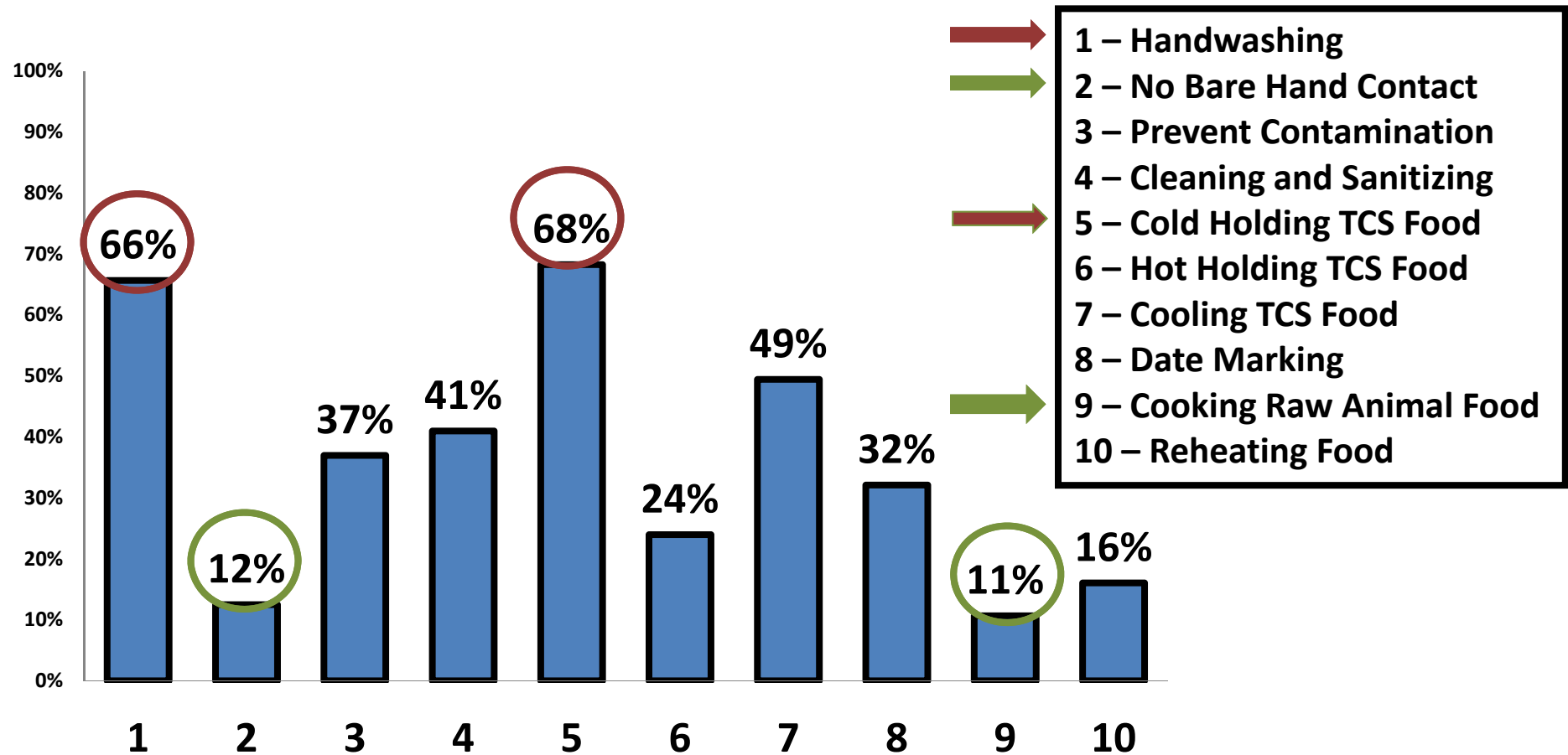
The percent out-of-compliance observations for each data item represent the **proportion of establishments where that data item was found out-of-compliance.**

If, for example, the data show 80% out-of-compliance for the proper cooling of foods, this percentage means that there was at least one observation of improper cooling of foods in eight out of 10 establishments where cooling of TCS food was observed. The 80% out-of-compliance should not be interpreted to mean that foods were not cooled properly 80% of the time.

Fast Food Restaurants

Data Items (Food Safety Practices/Behaviors)

% Out-of-Compliance

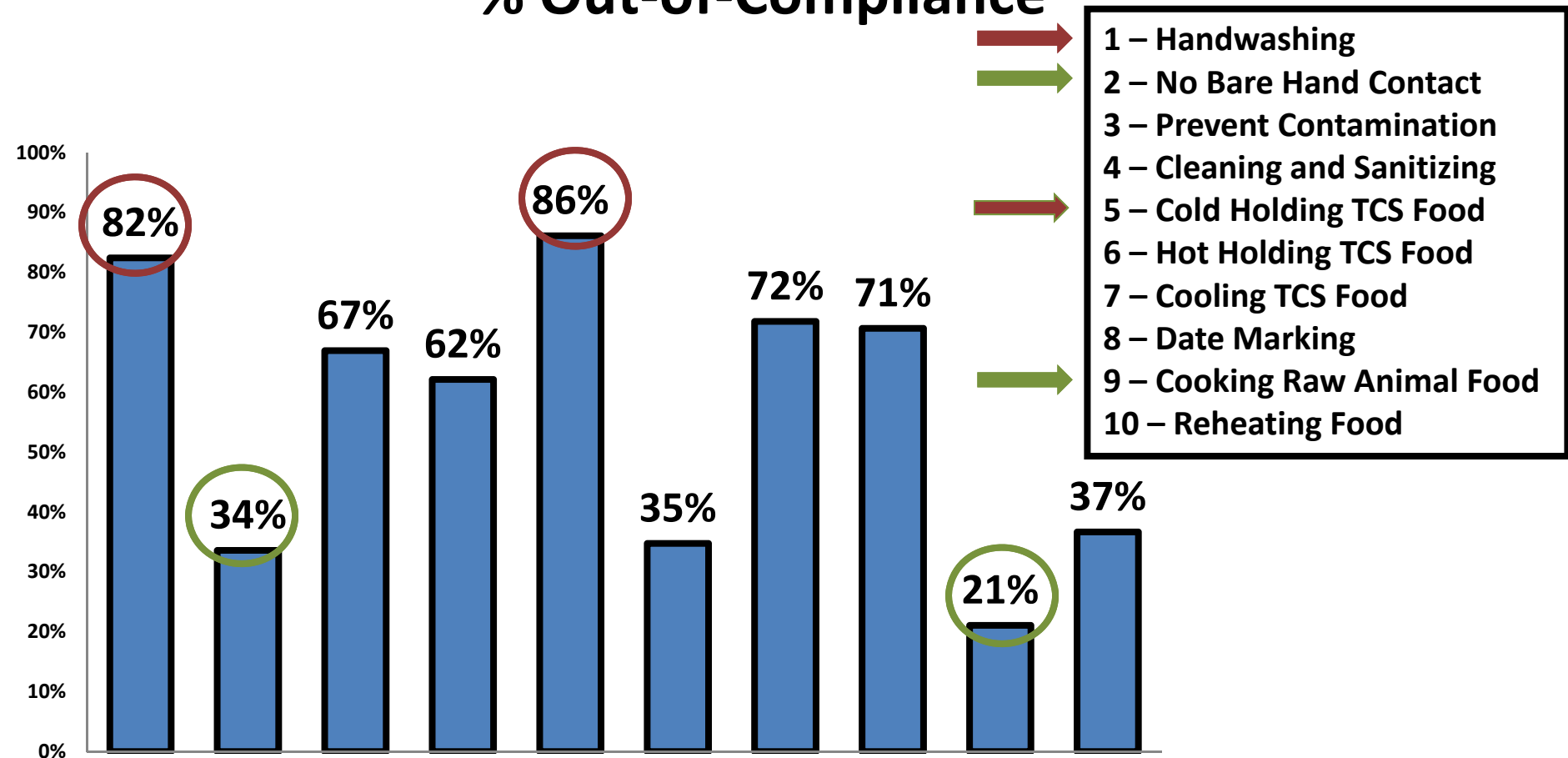


Total OUT	277	53	157	174	290	80	85	129	23	21
Total obs. (IN + OUT)	422	425	425	425	425	334	172	402	216	131

Full Service Restaurants

Data Items (Food Safety Practices/Behaviors)

% Out-of-Compliance



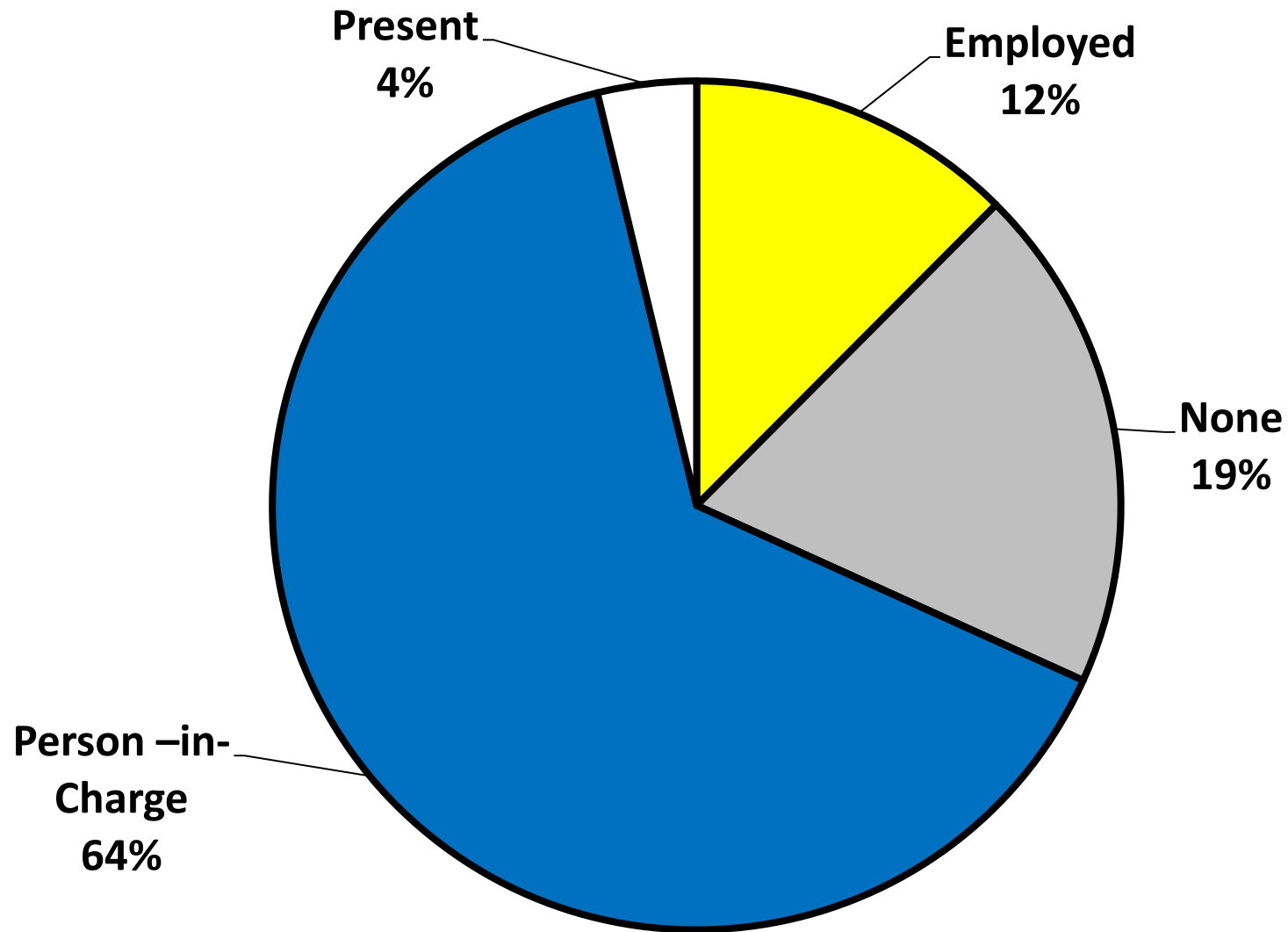
	1	2	3	4	5	6	7	8	9	10
Total OUT	323	133	265	246	341	116	196	272	64	48
Total obs. (IN + OUT)	392	396	396	396	396	334	273	385	304	131

Assessing Food Protection Manager Certification

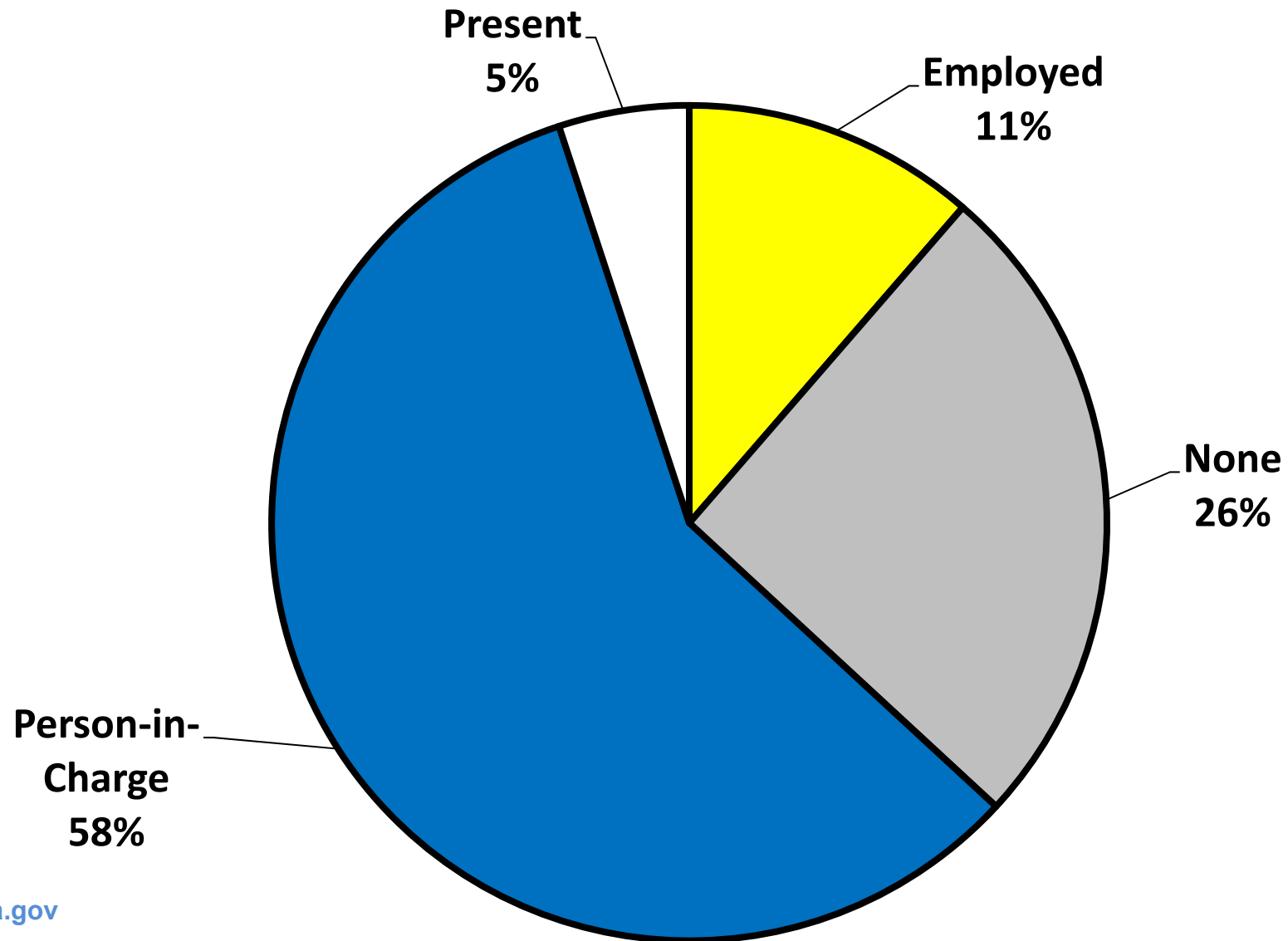


- **More than 70%** of the restaurants in this study operated in jurisdictions that required a Certified Food Protection Manager (CFPM)
- Most restaurants were found to have a **CFPM employed and present at the time of data collection**
- If **no other study variables** are taken into account, **restaurants that had a CFPM in charge and present at the time of the data collection performed better than those without a CFPM employed or present.**

Fast Food Restaurants Certified Food Protection Manager Status



Full Service Restaurants Certified Food Protection Manager Status



Assessing Food Safety Management Systems (FSMS)



- **Procedures (P):** A defined set of actions for accomplishing a task in way that minimizes food safety risks
- **Training (T):** The process of management's informing employees of the food safety procedures & teaching them how to carry them out
- **Monitoring (M):** Routine observations and measurements conducted to determine if food safety procedures are being followed and maintained

Food Safety Management System Assessment

Random Selection of One Risk Factor Area



Foodborne Illness Risk Factor	Associated Primary Data Item Numbers and Description
<p>Poor Personal Hygiene</p>	<ul style="list-style-type: none"> • Data Item #1 – Employees practice proper handwashing. • Data Item #2 – Employees do not contact ready-to-eat foods with bare hands.
<p>Contaminated Equipment/Protection from Contamination</p>	<ul style="list-style-type: none"> • Data Item #3 – Food is protected from cross contamination during storage, preparation, and display. • Data Item #4 – Food contact surfaces are properly cleaned and sanitized.
<p>Improper Holding Time/Temperature</p>	<ul style="list-style-type: none"> • Data Item #5 – Foods requiring refrigeration are held at the proper temperature. • Data Item #6 – Foods displayed or stored hot are held at the proper temperature. • Data Item #7 – Foods are cooled properly. • Data Item #8 – Refrigerated, ready-to-eat foods are properly date marked and discarded within 7 days of preparation or opening.
<p>Inadequate Cooking</p>	<ul style="list-style-type: none"> • Data Item #9 – Raw animal foods are cooked to required temperatures. • Data Item #10 – Cooked foods are reheated to required temperatures.



Food Safety Management System Procedures (P), Training (T), Monitoring (M) Rating

- 1 Nonexistent**
- 2 Underdeveloped**
- 3 Well-developed**
- 4 Well-developed and Documented**

Calculating the “Score” Food Safety Management System (FSMS)



EXAMPLE – Poor Personal Hygiene Risk Factor

Data Item	Procedures	Training	Monitoring
#1 – Employees practice proper handwashing	2	3	3
#2 – Employees do not contact ready-to-eat foods with bare hands	2	2	3

The score is calculated as the sum of all the PTM ratings divided by the number of ratings given:

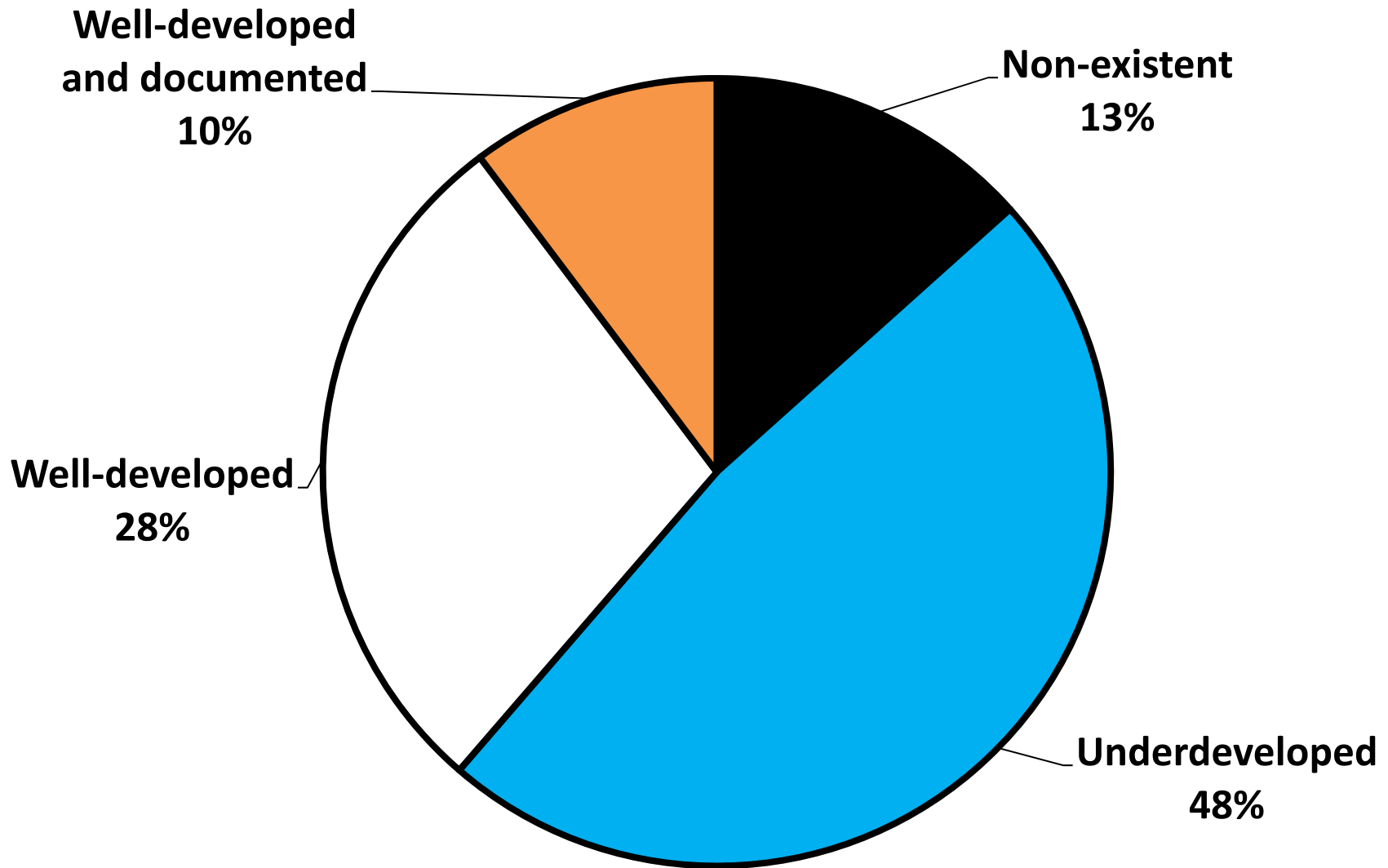
$$2+3+3+2+2+3 = 15/6 = \underline{2.5}$$

FSMS Description	FSMS Calculated Score
Non-Existent	1.0
Underdeveloped	>1.0 and <3.0
Well Developed	≥3.0 and <4.0
Well Developed & Documented	4.0

Fast Food Restaurants



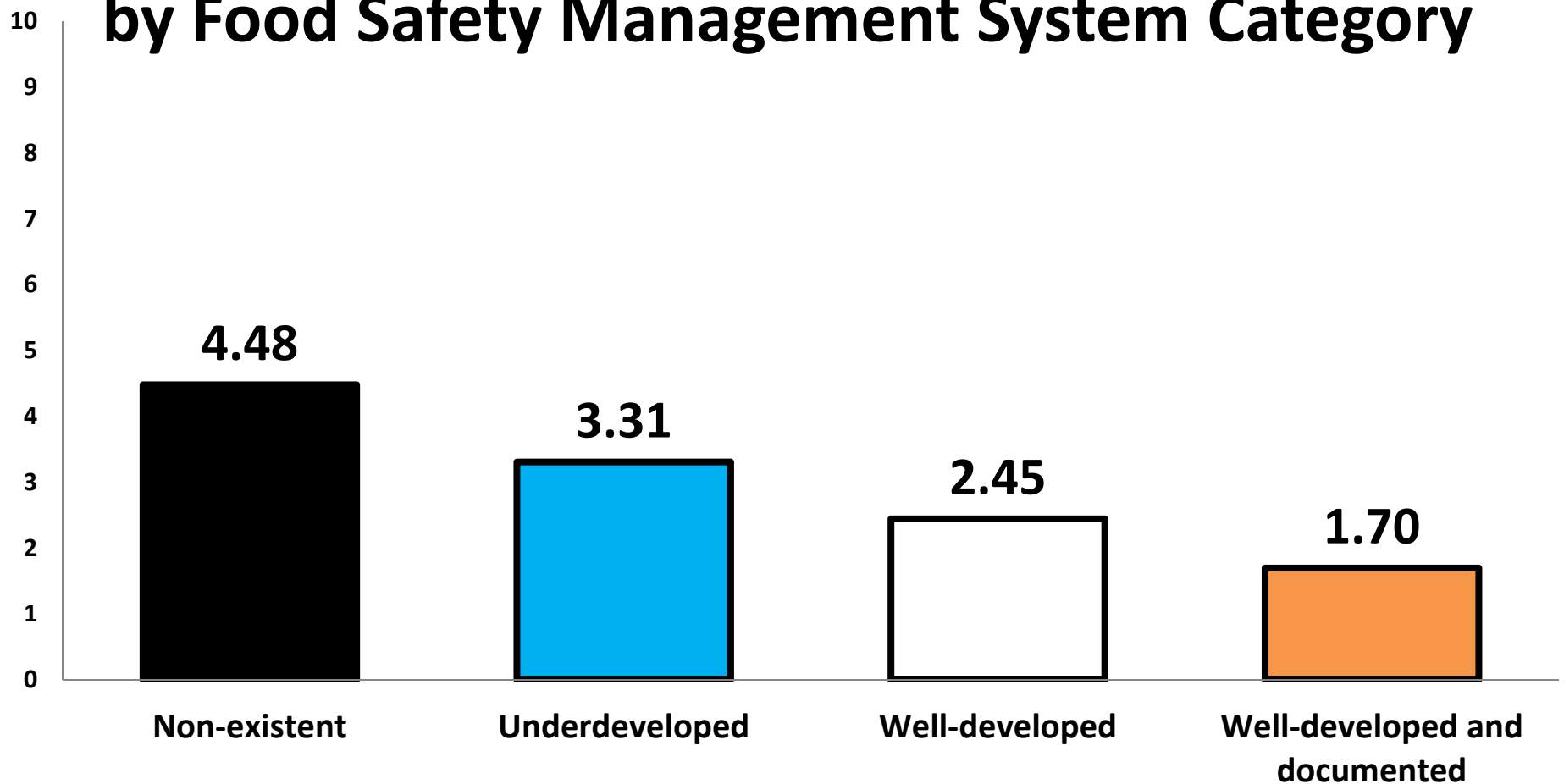
Food Safety Management Systems (FSMSs)



Fast Food Restaurants



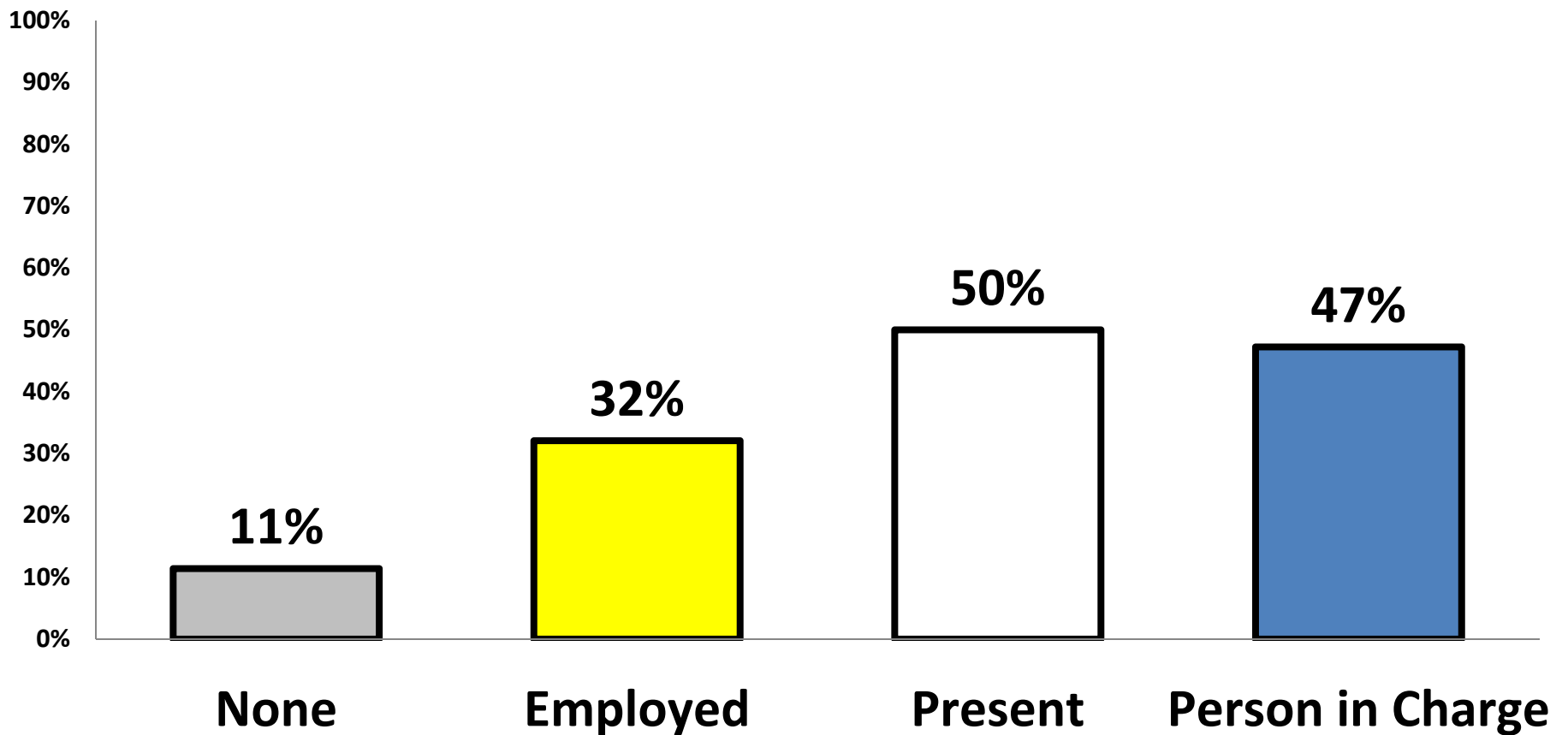
Average Number Primary 10 Data Items Out-of-Compliance by Food Safety Management System Category



Fast Food Restaurants



Percent of Establishments with Well Developed or Well Developed and Documented Food Safety Management Systems by Certified Food Protection Manager Status

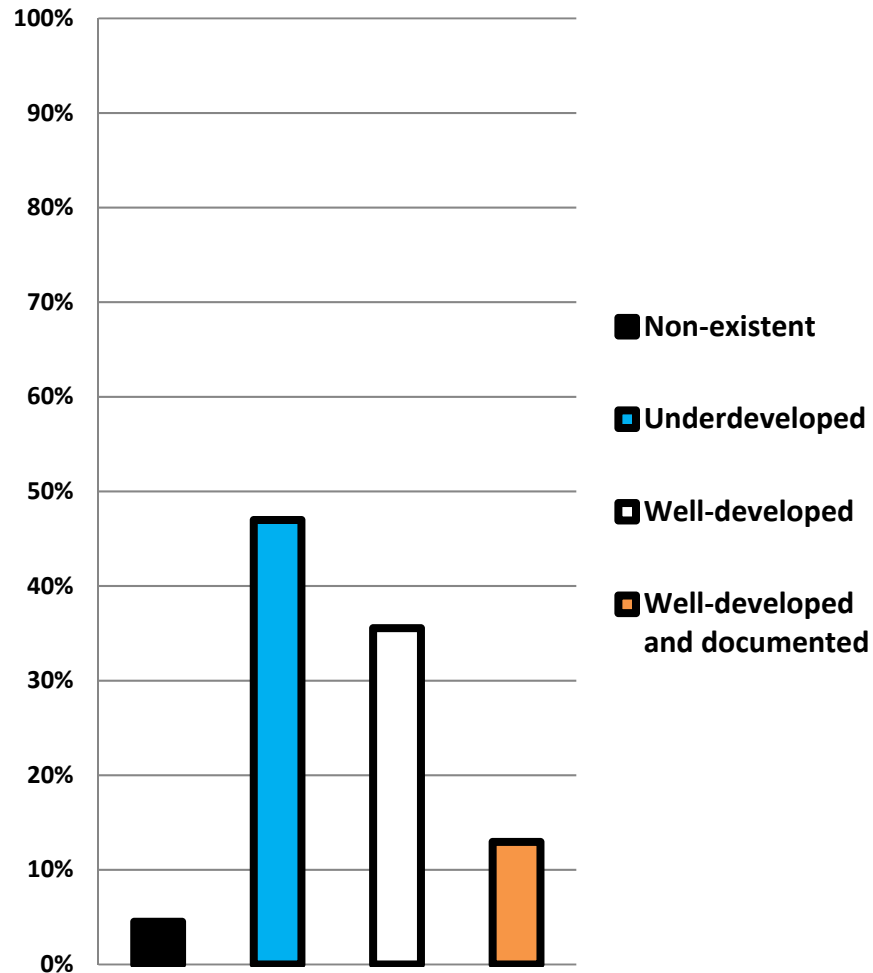


Fast Food Restaurants

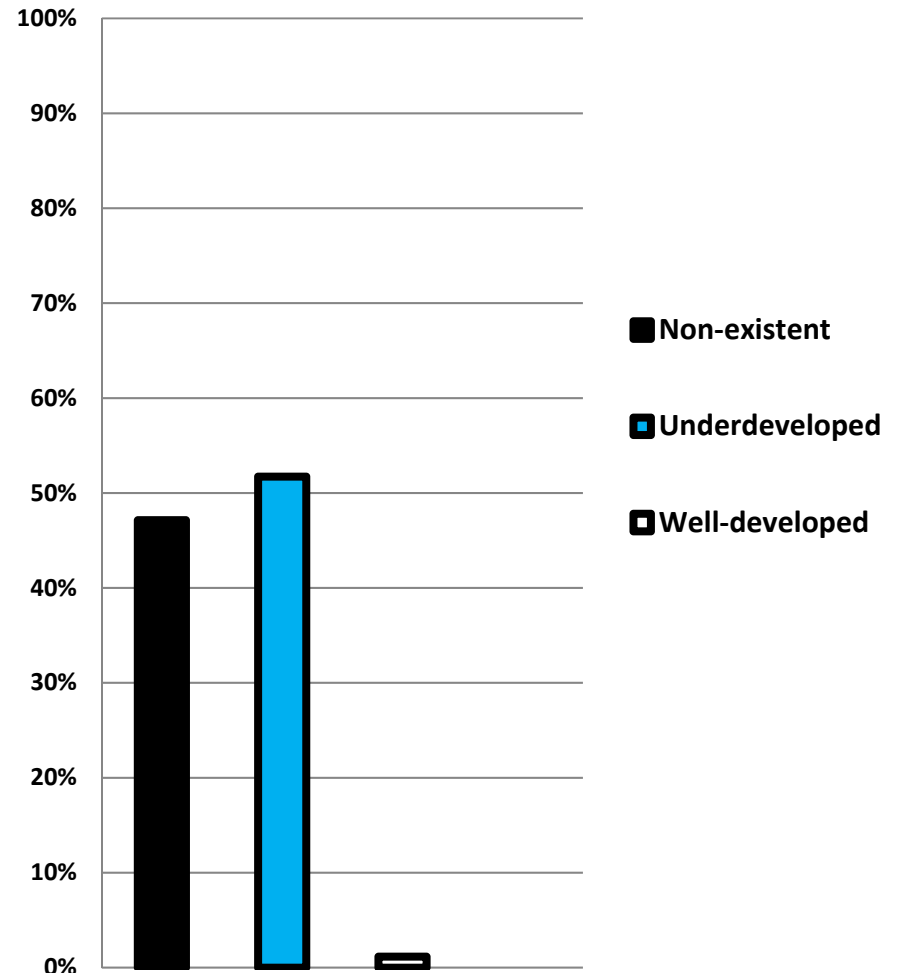
FSMS by Multi-Unit Status



Multiple unit establishments



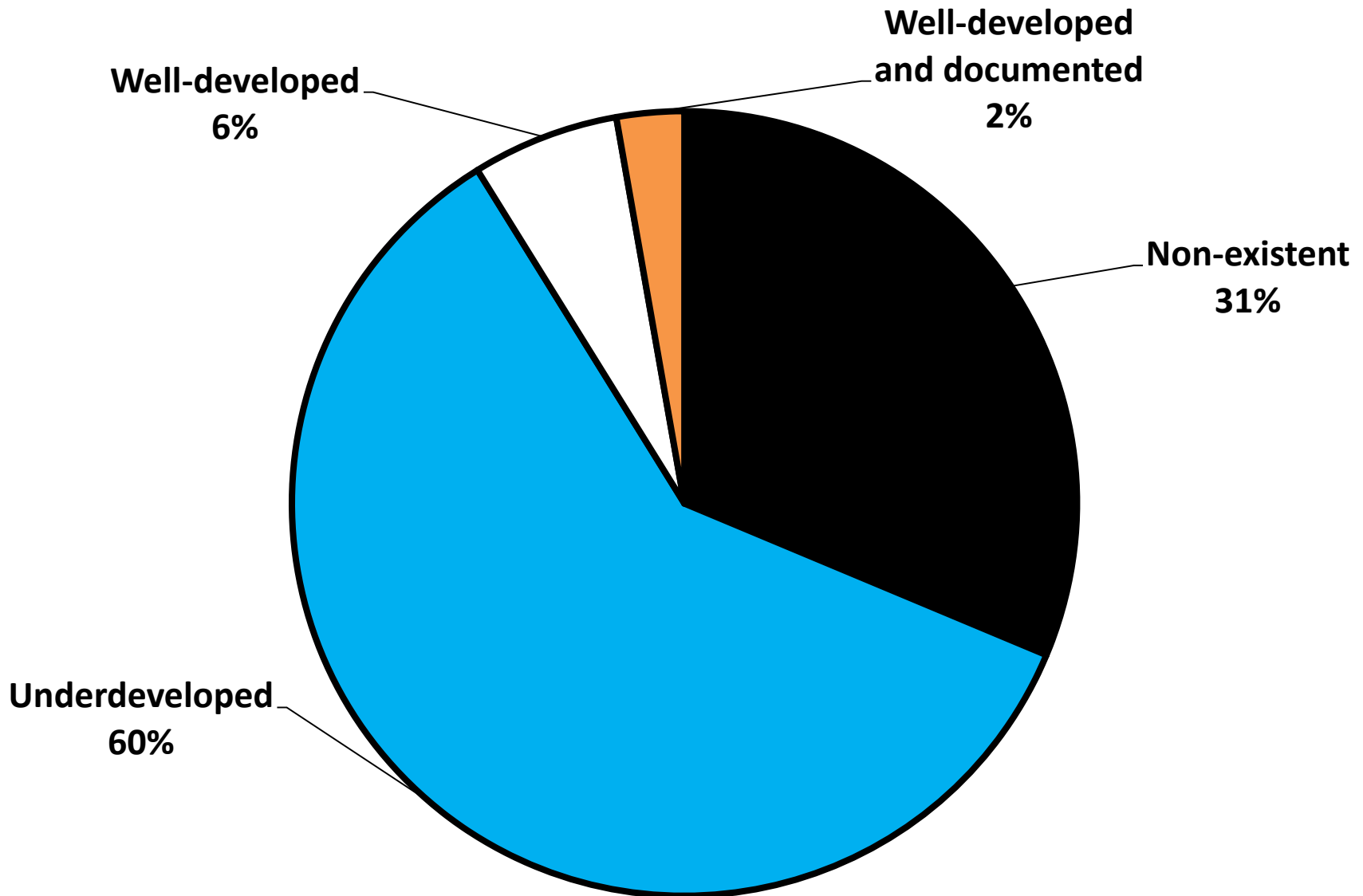
Single unit establishments



Full Service Restaurants



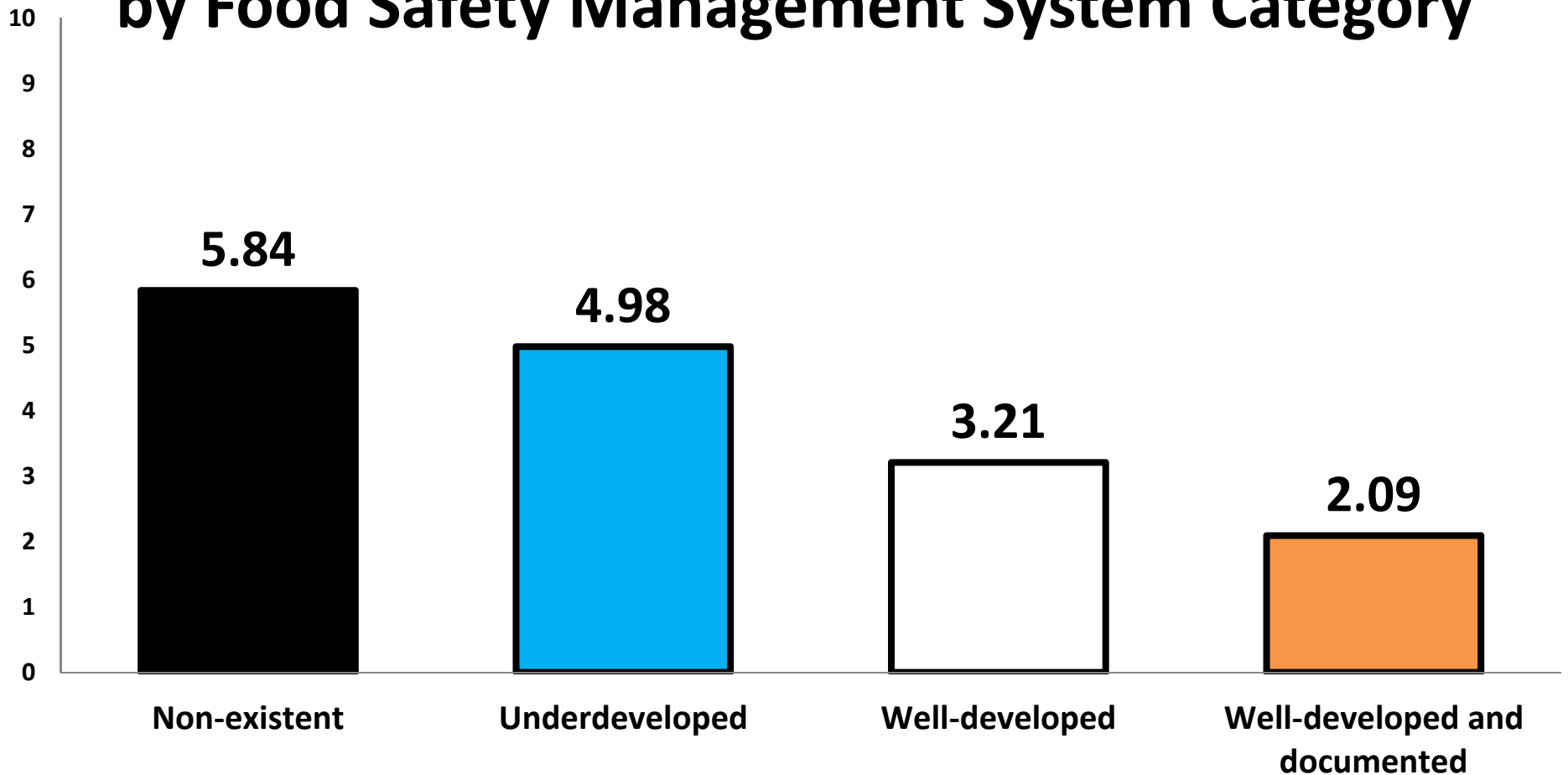
Food Safety Management Systems (FSMSs)



Full Service Restaurants



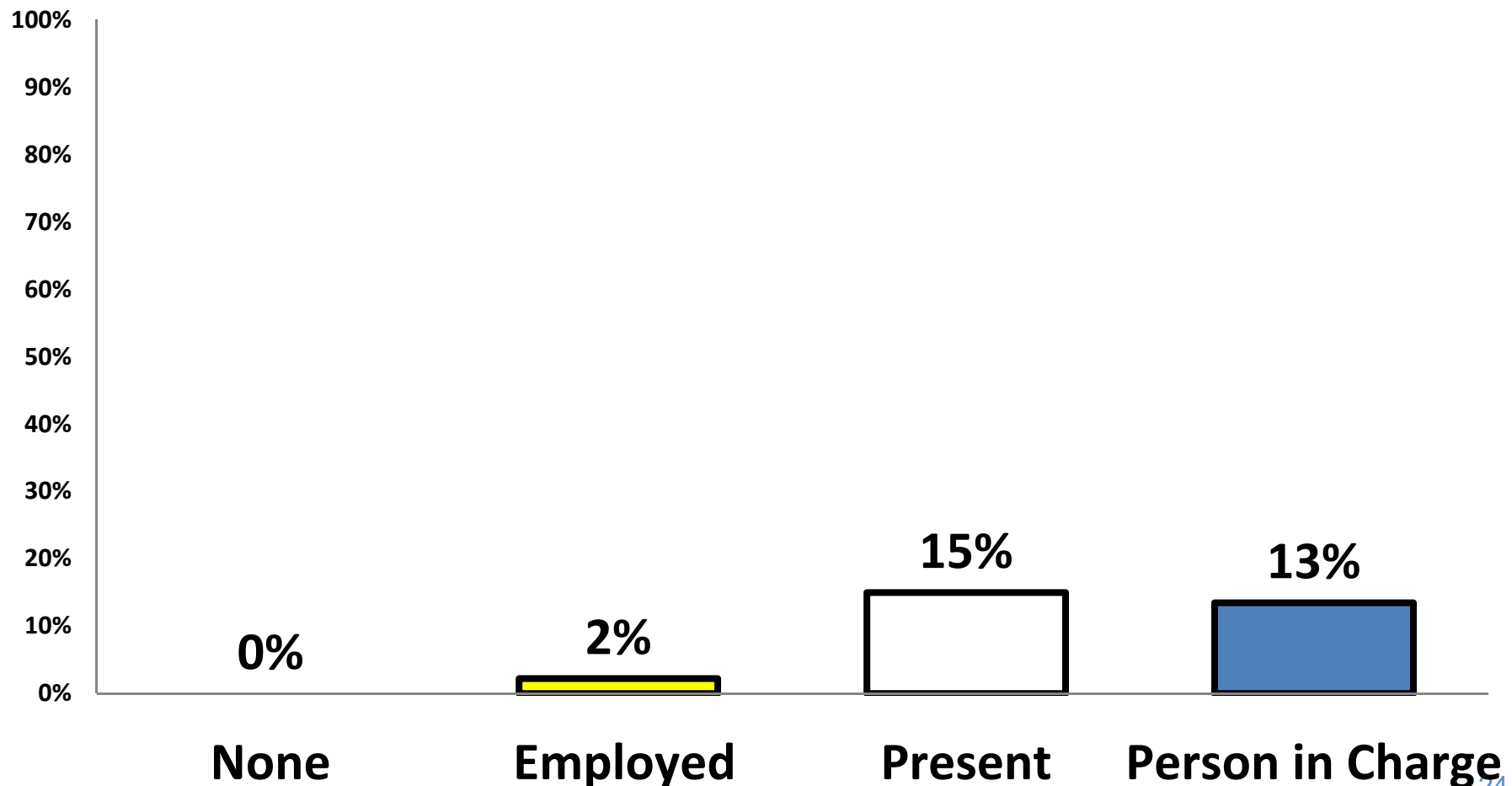
Average Number Primary 10 Data Items Out-of-Compliance by Food Safety Management System Category



Full Service Restaurants



Percent of Establishments with Well Developed or Well Developed and Documented Food Safety Management Systems by Certified Food Protection Manager Status

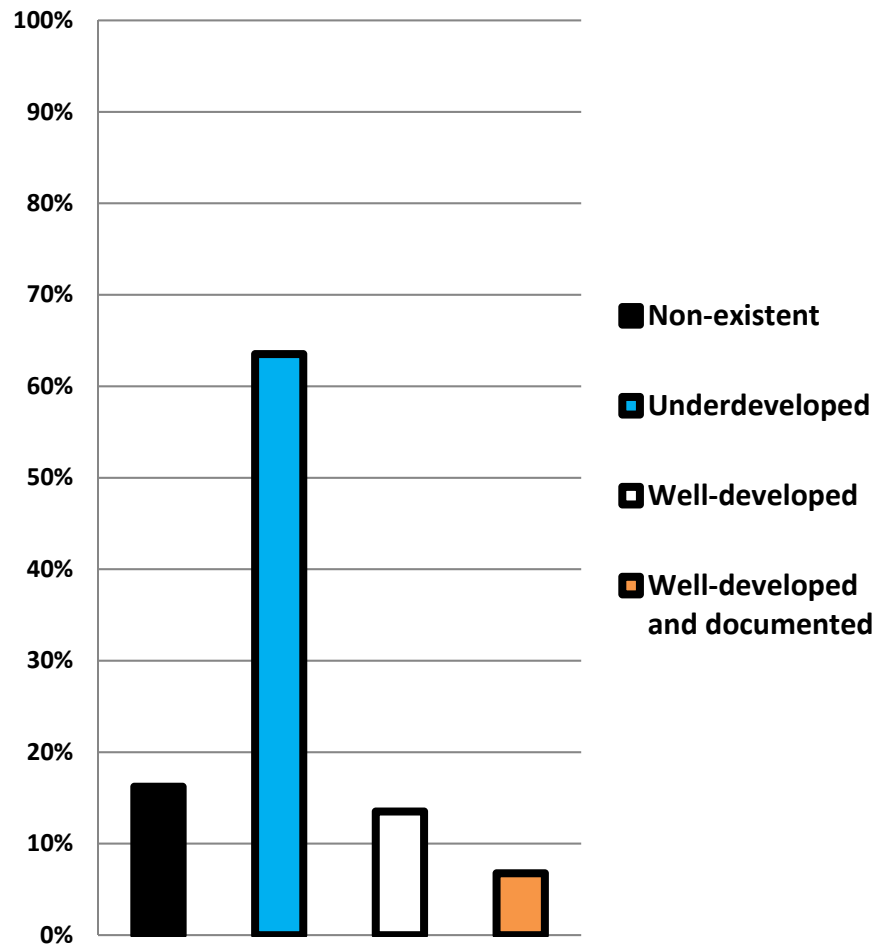


Full Service Restaurants

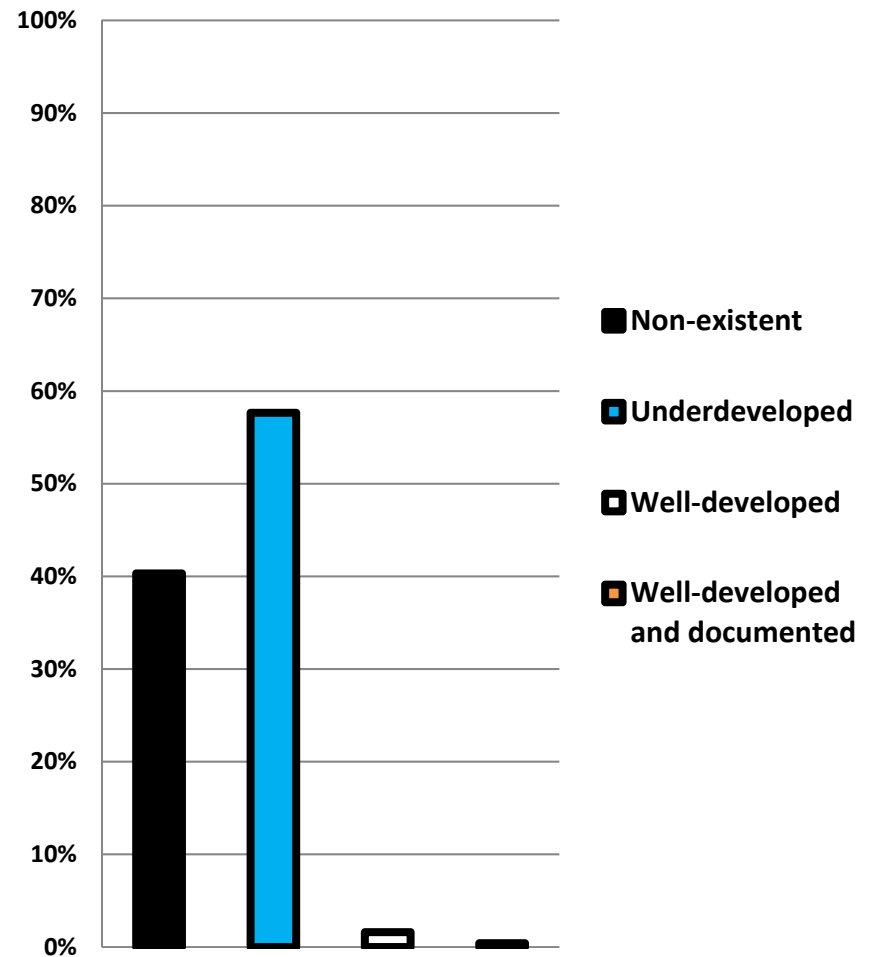
FSMS by Multi-Unit Status



Multiple unit establishments



Single unit establishments



SUMMARY

Occurrence of Foodborne Illness Risk Factors

- Restaurants had the **best control over**
 - **inadequate cooking**
- Restaurant had the **least control of:**
 - **Poor Personal Hygiene**
 - **Improper Holding/Time and Temperature**

SUMMARY

Occurrence of Out-of-Compliance Data Items (Food Safety Practices/Behaviors)

- Restaurants had the **best control over**:
 - **Ensuring no bare hand contact with ready-to-eat foods**
 - **Cooking raw animal foods to their required temperatures**
- Restaurants had the **least control of**:
 - **Employee handwashing** (includes both when to wash and how to wash properly)
 - **Cold holding of foods requiring refrigeration**

SUMMARY



Food Safety Management Systems (FSMSs) and Out-of-Compliance Data Items (Food Safety Practices/Behaviors)

- **Food Safety Management Systems were the strongest predictor** of data item being Out-of-Compliance in both fast food and full service restaurants
- Restaurants with well-developed FSMSs have significantly fewer food safety practices/behaviors Out-of-Compliance than did those with “less developed” FSMSs



SUMMARY

Certified Food Protection Managers (CFPMs) and Food Safety Management Systems

- Restaurants that had a CFPM who was the person in charge at the time of the data collection had significantly better food safety management system scores than those restaurants that did not have a CFPM present or employed.



www.fda.gov/RetailFoodProtection