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A National Census of Retail Food Inspector Standardization: Workforce Capacity, Training Practices, and Opportunities for Expansion in the United States

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Abstract

Retail food inspector standardization is central to the Food and Drug Administration's (FDA) Voluntary National Retail Food Regulatory Program Standards (VNRFRPS), specifically Standard 2 (Trained Regulatory Staff). No national data existed on standardization implementation across state, local, tribal, and territorial (SLTT) agencies, which constrained policy development and technical assistance. The National Environmental Health Association (NEHA), via a $36 million FDA partnership called the Retail Flexible Funding Model (RFFM) Grant Program, administered the Retail Food Regulatory Workforce Standardization Census. The 52-item web-based instrument was codeveloped over 19 months (May 2022–December 2023) and administered from July 2024 to January 2025 to approximately 3,000 SLTT agencies (response rate of 16.8%). Descriptive analyses characterized standardization models, workforce capacity, training requirements, performance criteria, and barriers.

Among 530 responding jurisdictions (in 45 states), 281 (53%) reported FDA-guided standardization, 61 (12%) reported non-FDA-guided standardization, and 188 (35%) reported no formal process. The census showed that FDA-guided jurisdictions regulate approximately 70% of U.S. retail food establishments, averaging 1,887 facilities per agency versus 690 for nonstandardized agencies. State-level adoption was 77%, compared with 49% adoption at the local level. Barriers included time constraints (48%), staffing (30%), and access to training (13%). Projected nationally, an estimated 1,545 jurisdictions and 9,340 inspectors remain outside FDA-guided standardization. Based on these projections, reaching 85% standardization would require approximately 7,940 additional inspectors. FDA-guided standardization is scalable, covering approximately 70% of the nation's retail food establishments, and improves inspector preparation. In this article, we present six strategic recommendations to address regional capacity, cross-jurisdictional collaboration, resource allocation, alternative delivery models, and a proposed standardization broker program to advance consistency in retail food safety inspection.

Keywords: retail food safety, retail food inspection, food safety regulatory workforce, inspector standardization, workforce capacity, workforce development, inspector training, Voluntary National Retail Food Regulatory Program Standards, regulatory program capacity building, food safety inspection consistency

Introduction

Foodborne illness remains one of the most pervasive and preventable public health challenges in the U.S. An estimated 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths occur annually, which represent an economic burden >$75 billion in 2023 USD (Centers for Disease Control and Prevention, 2025, 2026; Hoffmann et al., 2025). Retail food establishments, restaurants, grocery stores, institutional kitchens, and similar settings are frequently implicated in foodborne illness outbreaks, and retail food inspection is a primary mechanism for reducing that risk.

The quality and consistency of these inspections, however, are not uniform. Studies have reported meaningful variability among inspectors' detection of violations, inspection outcome bias due to scheduling, and divergent risk-factor assessment across jurisdictions (Ibanez & Toffel, 2019; Jones et al., 2004; Lee & Hedberg, 2016; Leinwand et al., 2017). These differences have consequences: Inconsistent inspection quality undermines the comparability of regulatory data, reduces public confidence, and can leave food safety risks undetected.

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The consequences of inspector inconsistency extend beyond routine regulatory gaps. In 2024, the U.S. experienced a notable increase in food recall-associated morbidity, including 1,400 reported illnesses, 487 hospitalizations, and 19 deaths (Food and Drug Administration [FDA], 2026b). These events, driven largely by pathogens such as *Listeria monocytogenes*, *Salmonella*, and Shiga toxin-producing *E. coli* (STEC), typically originate upstream in the food production and distribution system. These illnesses underscore the broader importance of a fully functional food safety system across all control points, including retail.

At the retail level, food inspector standardization is a foundational mechanism for ensuring consistent identification and control of well-established foodborne illness risk factors, including poor temperature control, inadequate cooking, and cross-contamination. Food inspectors who are trained in the Food and Drug Administration (FDA) *Food Code* and proficient in risk-factor identification, risk control plan development, and the principles of the hazard analysis critical control point (HACCP) plan are better equipped to detect and correct unsafe practices at the point of service, thereby interrupting transmission pathways that contribute to sporadic illness and localized outbreaks. A national census of the standardization landscape, therefore, serves as a measure of the regulatory system's capacity to deliver consistent, risk-based oversight at the final point of consumer exposure.

In response, FDA has sought to address this variability through inspector standardization, which stems from a structured, competency-based process formally defined as the process "whereby a candidate demonstrates the knowledge and skills to satisfy requirements for a standardized food safety inspection officer as stated in the procedure" (FDA, n.d., 2024, 2025, 2026c). Standardization serves four core purposes:

1. Public health protection: Improving inspection quality to reduce foodborne illness risk.
2. Consistency: Ensuring uniform interpretation and enforcement of the FDA *Food Code* across jurisdictions.
3. Competency: Ensuring regulatory staff possess adequate knowledge to perform accurate, thorough inspections.
4. Risk-based focus: Strengthening the ability of inspection personnel to prioritize efforts toward the greatest public health hazards.

The standardization process is multistep, rigorous, and functionally tiered, and in this way extends beyond the initial FDA-led evaluation to a broader, cascading workforce development system. Inspector candidates must meet eligibility requirements outlined in the FDA Procedures for Standardization of Retail Food Safety Inspection Officers. Next, they must complete formal training, which includes coursework required under Standard 2 of the Voluntary National Retail Food Regulatory Program Standards (VNRFRPS) via trainings on the FDA's LearnED learning management system.

Candidates must also gain field experience and complete required joint and independent inspections. FDA Retail Food Specialists then evaluate each candidate's interpretation and science-based application of the FDA *Food Code*. Standardization confirms that the candidate can perform inspections across six performance areas: 1) identification of risk factors and interventions, 2) knowledge of good retail practices (GRPs), 3) application of HACCP principles and risk control plan development, 4) correct use of inspection equipment, 5) effective communication, and 6) demonstration of risk-based methodology. Candidates who demonstrate proficiency receive national recognition as an FDA-standardized Retail Food Safety Inspection Officer (FSIO).

This initial FDA standardization, however, represents only the first layer of the system. FSIOs are expected to apply the same procedures within their states or jurisdictions to evaluate and standardize additional inspection personnel, creating a distributed, scalable model in which most standardizations occur through FDA-standardized state or local officials rather than by direct FDA involvement. This cascading structure enables broader workforce coverage but also introduces dependence on local capacity and continuity of qualified standardized personnel.

To maintain competency and alignment with current regulatory expectations, standardized inspectors are required to undergo periodic restandardization (typically every 3 years) to ensure continued proficiency with the most recent version of the FDA *Food Code* and evolving inspection practices. Maintenance also requires that these inspectors

Article Summary

What is already known about this topic?

Foodborne illness remains a major public health burden in the U.S., and retail food inspections are a critical defense against preventable outbreaks. Studies have shown that inspection quality varies across jurisdictions, and that inspector training, experience, and interpretation can influence detection of violations and consistency in regulatory oversight. The Food and Drug Administration (FDA) Voluntary National Retail Food Regulatory Program Standards identify inspector standardization as a key workforce competency, yet no national assessment had quantified how widely inspector standardization has been implemented across retail food regulatory agencies at the state, local, tribal, and territorial levels.

What is added by this article?

This article provides the first national census of retail food inspector standardization practices across U.S. state, local, tribal, and territorial regulatory agencies. It quantifies the proportion of jurisdictions using FDA-guided, non-FDA-guided, or no formal standardization processes; identifies workforce, training, and implementation barriers; and estimates the number of jurisdictions and inspectors remaining outside FDA-guided standardization. The findings establish a national baseline for inspector standardization and define a measurable workforce development opportunity to improve consistency in retail food safety oversight.

What are the implications for the practice of environmental public health?

The findings indicate that inspector standardization should be treated as a national environmental health workforce infrastructure priority rather than as an isolated training activity. Expanding FDA-guided standardization via targeted funding, regional collaboration, and cross-jurisdictional support could strengthen inspection consistency, improve regulatory preparedness, and increase the capacity of smaller agencies to identify and control foodborne illness risk factors. Establishing scalable standardization delivery systems offers a practical pathway to more uniform retail food safety oversight and stronger public health protection nationwide.

attend annual seminars, accumulate food safety contact hours, conduct standardization exercises with other staff, conduct training courses, and/or develop risk control plans.

FDA's VNRFRPS provide the overarching framework for standardization (FDA, 2024, 2025, 2026c). The program encompasses nine standards that jurisdictions voluntarily adopt to strengthen their retail food regulatory programs. In general, standardization is most directly addressed by Standard 2 (Trained Regulatory Staff), with related reinforcement through Standard 3 (Inspection Program Based on HACCP Principles), Standard 4 (Uniform Inspection Program), and Standard 6 (Compliance and Enforcement).

As of December 2024, 980 jurisdictions were enrolled in VNRFRPS, encompassing 68 state or territorial agencies, 91 district-level agencies, 549 county-level jurisdictions, 245 city- or town-level jurisdictions, and 27 other agencies (FDA, 2026a). Further, the 980 jurisdictions enrolled are out of an estimated 3,000 total SLTT agencies that are responsible for regulating retail food establishments in the U.S. Approximately 2,020 agencies were not enrolled in VNRFRPS. Nonenrollment does not necessarily indicate an absence of food safety efforts, as nonenrolled jurisdictions could be operating under locally developed programs, following state-mandated guidelines, or simply lacking the capacity and infrastructure to formalize standardization processes.

Despite the long-standing existence of the standardization program and its integration into VNRFRPS, the national landscape of inspector standardization had never been comprehensively characterized. Crucial questions remained unanswered:

- How many agencies—regardless of VNRFRPS enrollment—implement FDA-guided standardization?
- What is the scale of the workforce that remains outside FDA-guided processes?
- What barriers prevent adoption of the standards?
- What is a realistic scope for the engagement opportunity if resources were deployed strategically?

To address these questions, FDA engaged the National Environmental Health Association (NEHA) through the NEHA-FDA Retail Flexible Funding Model (RFFM) Grant Program, which is a $36 million partnership fully funded by FDA to design and administer a national census under Objective 3 of the grant program. From May 2022 to December 2023, NEHA collaborated with FDA leadership, subject matter experts in standardization protocols and VNRFRPS, and staff from the RFFM Grant Program to codevelop a 52-item census instrument (see supplemental file).

The census instrument was designed to capture standardization practices across three distinct program pathways. A comprehensive, verified directory of more than 3,000 SLTT agencies was assembled, and a custom secure web portal was built to support multisession data entry and real-time engagement monitoring. The scope of this development effort reflects the priority NEHA and FDA placed on the census (National Association of County and City Health Officials [NACCHO], 2014; Shah et al., 2022).

This article reports findings from this census, which we call the Retail Food Regulatory Workforce Standardization (RFRWS) Census. Along with documenting the current national landscape of standardization, it quantifies the scope of the remaining engagement opportunities. It estimates the number of jurisdictions and inspection personnel that potentially could be brought into FDA-guided standardization. Lastly, this instrument enabled the formation of six data-grounded strategic recommendations to advance consistency in retail food safety oversight.

Methods

Study Design and Census Population

A cross-sectional census design was used to enumerate standardization practices across all identifiable SLTT retail food regulatory agencies in the U.S. and its territories. The census population comprised approximately 3,000 local jurisdictions and 65 state or territorial agencies, totaling 3,065 agencies. Participation was voluntary, responses were deidentified prior to analysis, and ethical clearance was granted by the institutional review board at California Baptist University (IRB #037-2327-EXM) in accordance with the *Declaration of Helsinki* (World Medical Association, 2013).

Instrument Development

The census instrument was codeveloped over approximately 19 months (May 2022–December 2023) through iterative collaborative consultation with leadership at FDA, subject matter experts in standardization protocols and VNRFRPS, and staff from the RFFM Grant Program. The final census instrument consisted of 52 items organized around two qualifier questions: 1) Do your jurisdiction's training requirements include a standardization process for retail food safety inspection staff? (Q5) and 2) Does your jurisdiction's standardization process follow the FDA Procedures for Standardization of Retail Food Safety Inspection Officers? (Q6).

Based on responses, participants were routed to one of three tailored sections:

1. FDA-Guided Standardization (Q7–Q26): Examining alignment with FDA benchmarks, restandardization frequency, performance areas, and recordkeeping.
2. Non-FDA-Guided Standardization (Q27–Q45): Assessing internally developed models and deviations from FDA standards.
3. No Standardization (Q46–Q52): Capturing reasons for absence of standardization, interest in future engagement, and substitutes for standard-aligned training.

Items captured workforce size and workload, training and eligibility criteria, performance evaluation areas, maintenance and restandardization practices, and barriers to implementation. Additionally, items had optional open-text fields for contextual detail.

Data Collection

A comprehensive directory of more than 3,000 verified SLTT agency contacts was compiled between January 2024 and June 2024. Participating jurisdictions received personalized email invitations with unique login credentials. The census was administered from July 2024 to January 2025 via a secure, interactive web portal that allowed multisession participation, enabling respondents to save progress and revise entries before final submission. An administrative dashboard enabled real-time monitoring of response rates, participation by jurisdiction, and downloading of datasets for ongoing programmatic planning. A total of 530 jurisdictions submitted completed responses (overall response rate: 16.8%).

Statistical Power and Sample Size Justification

Although the census was designed as a population-level instrument targeting all of the approximately 3,065 identifiable SLTT

TABLE **1**

Standardization Status by Jurisdiction Type Among Respondents to the Retail Food Regulatory Workforce Standardization Census (*N* = 530)

Jurisdiction Type	FDA-Guided # (%)	Non-FDA-Guided # (%)	No Standardization # (%)	# of Total Jurisdictions
State	50 (77)	5 (8)	10 (15)	65
Local	221 (49)	55 (12)	175 (39)	451
Territorial	1 (50)	0 (0)	1 (50)	2
Tribal	3 (60)	0 (0)	2 (40)	5
Other	6 (86)	1 (14)	0 (0)	7
Total	281 (53)	61 (12)	188 (35)	530

Note. FDA = Food and Drug Administration.

agencies, sample size adequacy was assessed against conventional survey power standards. Using the Raosoft sample size calculator with a 95% confidence level, 5% margin of error, and a population of 3,065, the minimum required sample was calculated to be 343 responses (Raosoft, 2026). The 530 completed responses exceeded this threshold by 54.5%, yielding a statistical power of 0.97, which is substantially above conventional thresholds of 0.80–0.90.

These parameters confirm that the achieved sample provides sufficient precision for the descriptive estimates reported here. The email-based administration methodology is consistent with established survey practices. Fincham (2008) reported that email-based survey response rates typically range from 25–30% in the absence of reinforcement strategies. The observed 16.8% rate that we report, while below this range, is consistent with multiagency governmental surveys in which respondent burden and competing institutional priorities affect participation rates. The adequacy of the sample is further supported by the disproportionate establishment coverage of respondents: jurisdictions that completed the census collectively regulate approximately 70% of all reported retail food establishments in the U.S., thus providing a meaningful representation of the system's inspection capacity regardless of response rate.

Analysis

Descriptive statistics were used to characterize jurisdiction standardization status and practices overall as well as by standardization category and jurisdiction type. Continuous variables are summarized as means and standard deviations; categorical variables are presented as frequencies and percentages. Where informative, 95% confidence intervals were calculated for key proportions using nonmissing denominators. Open-text barrier responses were analyzed using qualitative content analysis to identify recurring themes with associated counts and percentages (Galura et al., 2022; Hsieh & Shannon, 2005; O'Cathain & Thomas, 2004).

Participation was voluntary and subject to nonresponse bias; therefore, results are presented descriptively and were not weighted. Projections to the full national SLTT population applied respondent-observed rates by jurisdiction type to estimated total agency counts (65 state/territorial; 3,000 local) from census enrollment data (FDA, 2026a), with average inspector workforce sizes from respondent data used to estimate total inspection personnel in each category.

Results

Respondent Characteristics

A total of 530 jurisdictions from 45 states completed the RFRWS Census; five states (Delaware, Louisiana, South Dakota, Rhode Island, and Vermont) were not represented. Local-level agencies represented 85.1% of respondents (n = 451), state-level agencies 12.3% (n = 65), and the remainder represented tribal (n = 5), territorial (n = 2), and other (n = 7) jurisdictions. The resulting dataset represents one of the most comprehensive national cross sections of the retail food regulatory workforce standardization landscape ever assembled.

Standardization Status

Overall, 281 jurisdictions (53%) reported FDA-guided standardization, 61 (12%) reported non-FDA-guided standardization, and 188 (35%) reported no formal standardization process (Table 1). Standardization status varied markedly by jurisdiction type. Among state-level agencies, 77% (50 of 65) reported FDA-guided procedures, reflecting strong institutional alignment with federal guidance at the policymaking tier. Local agencies showed the lowest FDA-guided adoption at 49% (221 of 451), with 39% of local agencies reporting no formal standardization process at all, thus representing the largest remaining engagement opportunity in the system.

Among local and state jurisdictions with a standardization process, mandate rates were high: 85% of FDA-guided (231 of 271) and 83% of non-FDA-guided jurisdictions (50 of 60) reported standardization as a mandatory requirement for inspection staff. This finding indicates a shared institutional commitment to inspector competency across both standardization models. FDA-guided jurisdictions adhere closely to the FDA's recommended 3-year restandardization cycle (M = 3.0, SD = 1.3), while non-FDA-guided jurisdictions show greater variability and a longer average renewal period (M = 5.0, SD = 7.0).

Workforce Capacity and Establishment Coverage

Workforce capacity differed substantially and consistently across standardization categories (Table 2). FDA-guided jurisdictions reported a mean of 11 employees and 10 full-time employees (FTEs) engaged in retail food inspection, more than double the averages of 5 employees and 4 FTEs reported by non-standardized jurisdictions. Most significantly, each FDA-guided jurisdiction regulated an average of 1,887 retail food establishments and collectively accounted for approximately 70% of all reported establishments (494,394 of 705,878 facilities).

By contrast, nonstandardized agencies averaged 690 facilities, which is approximately

63% fewer than FDA-aligned agencies. This disproportionate coverage is a defining feature of the FDA-guided model: Adopting agencies tend to be the larger, more complex programs overseeing the largest share of the regulated food supply.

Training, Eligibility, and Performance Criteria

FDA-guided jurisdictions demonstrated consistently stronger adherence to inspector training and eligibility criteria compared with non-FDA-guided jurisdictions across every measured dimension (Table 3). Completion of the FDA's LearnED curriculum was required by 84% of FDA-guided programs versus 56% of non-FDA-guided programs. Joint and independent prestandardization field inspection requirements were met at rates of 82–84% in FDA-guided programs compared with rates of 56–62% in non-FDA counterparts. Timely standardization within 24 months of hire was achieved by 64% of FDA-guided programs compared with 39% of non-FDA-guided programs, and the requirement for ≥100 inspections in the prior 3 years was present in 38% of FDA-guided programs compared with only 16% of non-FDA-guided programs.

Performance evaluation practices during initial standardization reinforced this pattern (Table 4). HACCP-related competencies, which are central to risk-based food safety oversight, showed the largest gaps between the two groups. Verification of existing HACCP plans was evaluated by 88% of FDA-guided programs but by only 62% of non-FDA-guided programs.

Written risk control plan development was assessed in 79% of FDA-guided programs versus 38% of non-FDA-guided programs, and written process flowcharts were evaluated in 75% versus 38%, respectively. Communication skills and equipment knowledge were assessed at similarly high rates in both groups.

Standardization Maintenance Practices

Standardization maintenance practices further distinguished the two models. The most common maintenance requirement was continuing education: 77% of FDA-guided jurisdictions required completion of 20 contact hours of continuing education every 36 months, compared with 48% of non-FDA-guided programs. Attendance at annual retail food protection seminars was required in 34% of FDA-guided jurisdictions compared with 21% of non-FDA-guided programs.

Moreover, non-FDA-guided jurisdictions were more likely to report "other" maintenance practices (46%), reflecting the diversity and variability in their approaches. Some respondents in both categories reported no formal maintenance protocols, noting that policy development was still in progress.

TABLE **2**

Workforce Capacity and Establishment Coverage by Standardization Category

Standardization Category	Average # of Employees	Average # of Full-Time Employees	Average # of Facilities Inspected	Estimated % of National Coverage
FDA-guided	11	10	1,887	70
Non-FDA-guided	8	7	1,456	12
No standardization	5	4	690	18
National total	9	8	1,403	–

Note. FDA = Food and Drug Administration.

TABLE **3**

Minimum Eligibility and Training Criteria: FDA-Guided Versus Non-FDA-Guided Standardization

Eligibility/Training Criterion	FDA-Guided %	Non-FDA-Guided %
Completed FDA LearnED curriculum coursework	84	56
25 joint field inspections prior to standardization	82	62
25 independent inspections prior to standardization	84	56
Standardized within 24 months of hire/assignment	64	39
≥1-year full-time retail food inspection experience in past 3 years	56	28
≥100 inspections in the past 3 years	38	16

Note. FDA = Food and Drug Administration.

Barriers to Standardization

More than one half of FDA-guided jurisdictions (53%) reported at least one barrier to implementing or maintaining inspector standardization. Time constraints were the most frequently cited barrier overall (48% of all mentions), followed by staffing limitations (30%), training access (13%), funding and budget constraints (7%), and administrative or procedural challenges (2%) (Table 5).

Notably, barriers were reported across all three standardization categories, including among FDA-guided jurisdictions, indicating that achieving and maintaining standardization is an active, ongoing challenge even for programs that have adopted the model. The concentration of time and staffing barriers among FDA-guided agencies suggests that expansion efforts must account for the program's maintenance burden and go beyond onboarding only.

Awareness of the NEHA-FDA RFFM Grant Program

Among all 530 surveyed jurisdictions, 68% reported awareness of the NEHA-FDA RFFM Grant Program. Among the 168 jurisdictions

TABLE **4**

Performance Areas Evaluated During Initial Inspector Standardization

Performance Area	FDA-Guided %	Non-FDA-Guided %
Effective communication	94	98
Knowledge and use of required inspection equipment	94	93
Verification of existing HACCP plan	88	62
Written RCP development	79	38
Written process flowcharts	75	38
Oral communication of the seven HACCP principles	76	52

Note. FDA = Food and Drug Administration; HACCP = hazard analysis critical control point; RCP = risk control plan.

TABLE **5**

Barriers to Implementing or Maintaining Inspector Standardization, by Category

Barrier Domain	FDA-Guided #	Non-FDA-Guided #	No Standardization #	Total # (%)
Time constraints	32	5	21	58 (48)
Staffing limitations	18	6	12	36 (30)
Training access	8	4	4	16 (13)
Funding/budget	2	2	5	9 (7)
Administrative/procedural	1	1	0	2 (2)
Total mentions	61	18	42	121 (100)

Note. FDA = Food and Drug Administration.

not currently participating in the program, 73% expressed interest in learning more. In aggregate, 84% of surveyed jurisdictions were already aware of or interested in the RFFM Grant Program. This finding points to a substantial reservoir of programmatic engagement readiness across the system—jurisdictions that are already interested and potentially positioned for outreach and onboarding.

Discussion

Although our study did not directly evaluate inspection outcomes or foodborne illness incidence, previous research has documented variation in violation detection among inspectors and associations between regulatory program characteristics, inspection findings, and foodborne illness outcomes (Baker et al., 2026; Jones et al., 2004). Inspector standardization, therefore, represents a structural intervention with potential downstream effects on food safety performance.

Progress: A Majority-Adoption Model Anchored in High-Coverage Jurisdictions

The RFRWS Census highlights measurable progress in FDA-guided inspector standardization. More than one half of responding jurisdictions have adopted FDA-guided procedures, and these jurisdictions collectively regulate approximately 70% of all retail food establishments. This pattern is not coincidental: Larger, more complex programs with greater workforce capacity are both more likely to implement FDA-guided procedures and more capable of sustaining them. State-level adoption remains at 77%, reflecting strong institutional alignment at the governance tier most directly linked to federal guidance. Together, these findings document a working model that reaches a substantial share of the regulated food supply.

Additionally, FDA-guided jurisdictions show consistent performance advantages across every measured dimension of inspector preparation. Compared with non-FDA-guided counterparts, FDA-guided programs show higher rates of LearnED curriculum completion (by 28 percentage points), greater adherence to joint and independent field inspection requirements (by 20–28 percentage points), higher rates of timely standardization within 24 months of hire (by 25 percentage points), and greater inclusion of a written risk control plan assessment in performance evaluation (by 41 percentage points).

These gaps reflect substantive differences in how thoroughly inspectors are prepared for fieldwork. Research shows that inspector-level variation directly affects violation detection rates and inspection comparability (Ibanez & Toffel, 2019; Jones et al., 2004; Lee & Hedberg, 2016; Ma et al., 2017). The FDA-guided model addresses this variation at its root.

Opportunity: A Quantifiable, Achievable Expansion Pathway

The RFRWS Census also illuminates the full scale of the remaining opportunity with a precision that has not previously been available. Among respondents, 249 jurisdictions (47%) operated without FDA-guided standardization, either using alternative approaches (12%) or no formal process at all (35%). Local agencies, which conduct most retail food inspections and serve as the principal line of defense against foodborne illness at the point of consumer exposure, showed the lowest FDA-guided adoption (49%) and the lowest workforce capacity.

Moreover, the census showed that non-standardized local agencies averaged only 5 inspectors and 4 FTEs per jurisdiction but regulate an average of 690 facilities, which is well below the 1,887-facility average for FDA-guided programs. This capacity gap has implications for both inspection frequency and depth: Smaller agencies with no formal standardization are likely also the programs

TABLE **6**

National Standardization Opportunity Analysis: Estimated Jurisdictions and Inspectors by Category (Projected to Full SLTT Population)

Metric	Level	FDA-Guided # (%)	Non-FDA-Guided # (%)	No Standardization #	Total #
Estimated total jurisdictions	State	50	5	10	65
	Local	1,470	360	1,170	3,000
Estimated total inspectors with RFI duties	State	1,100	130	120	1,350
	Local	11,760	3,240	5,850	20,850
Inspectors requiring standardization (85% target)	State	935	111	102	1,148
	Local	9,996	2,754	4,973	17,723
Directly standardized by an FDA FSIO	State	365 (39)	56 (50)	–	–
	Local	1,300 (13)	193 (7)	–	–
Standardized by an FDA-standardized individual	State	473 (43)	37 (33)	–	–
	Local	6,997 (70)	799 (29)	–	–

Note. Dashes (–) indicate categories where this metric is not applicable (i.e., no formal standardization process). FDA = Food and Drug Administration; FSIO = Food Safety Inspection Officer; RFI = retail food inspection; SLTT = state, local, tribal, and territorial.

least equipped to consistently apply risk-based principles.

Projecting the RFRWS Census findings to the full SLTT population provides a concrete picture of the engagement opportunity (Table 6). Applying the respondent-observed distribution to all registered SLTT jurisdictions yields an estimated 1,545 agencies currently outside FDA-guided standardization, approximately 1,530 local agencies using non-FDA-guided models (360) and with no formal processes (1,170), and 15 state-level agencies.

Based on the average inspector workforce sizes observed across census respondents in each category, we calculated that an estimated 9,340 inspection personnel work in those agencies. Applying the 85% standardization mandate reported by standardized jurisdictions, we found that approximately 7,940 additional inspectors (7,727 at the local level and 213 at the state level) would require standardization to achieve full alignment. These numbers represent a defined, achievable target that is not an abstract aspiration but a concrete workforce development goal.

Infrastructure Challenges: A System Reliant on People

Census findings reveal an important structural characteristic of the standardization pathway that has strategic implications for any expansion effort. Among local FDA-guided jurisdictions, only 13% of inspectors are directly standardized by FSIOs. The vast majority (70%) of inspectors are standardized by an FDA-standardized individual within their jurisdiction or state agency, meaning that the system relies on people.

This person-training-another-person model has enabled the program to reach its current scale, but the reliance on people also creates fragility in that retirements, staff turnover, or departures of key standardized personnel can disrupt the capacity of entire jurisdictions to maintain or expand standardization (Newman et al., 2014). At the state level, states including Connecticut, Indiana, Minnesota, Texas, and Utah have developed robust internal capacity via FDA-standardized state officers who certify local inspectors, but this model has not been replicated uniformly. Furthermore, we found many jurisdictions noted that FDA lacks sufficient capacity to directly standardize personnel across all areas under its oversight, which means that local and regional standardization capacity is essential.

The disconnect between FDA-guided and non-FDA-guided agencies on cross-jurisdictional support compounds this challenge. Based on the census findings, 80% of non-FDA-guided jurisdictions report that they rely on external support for standardization. By contrast, nearly 70% of FDA-standardized jurisdictions report limiting standardization efforts to within their own agency boundaries, thereby providing little spillover benefit to neighboring programs or resource-constrained programs.

This structural mismatch between where capacity resides and where it is needed is central to any scalable expansion strategy. Addressing the mismatch will require deliberate incentives, formal recognition programs, and interagency sharing agreements that make external standardization support both feasible and implementable for capacity-holding jurisdictions.

Engagement Readiness: A Moment for Action

Perhaps the most actionable finding from the RFRWS Census is the system's programmatic engagement readiness. The majority of surveyed jurisdictions are already aware of the NEHA-FDA RFFM Grant Program or are actively interested in learning more. Among nonparticipating jurisdictions, nearly three quarters (75%) expressed interest in program engagement. These jurisdictions are not passive actors waiting to be discovered; they are agencies that have self-identified as interested but have not yet engaged with the RFFM Grant Program. The primary barriers

to engagement are logistical and resource-related (e.g., time, staffing, training access), not attitudinal. That distinction matters: It means that targeted outreach and flexible delivery can move these agencies—and the infrastructure to do so already exists.

Alignment With Existing Literature

The findings of the RFRWS Census extend and contextualize a substantive body of prior research on retail food inspection quality. Studies have documented that inspector characteristics and preparation are associated with meaningful differences in violation detection rates (Firestone et al., 2020; Ibanez & Toffel, 2019; Jones et al., 2004); inspection scheduling can introduce systematic bias into assessment outcomes (Ibanez & Toffel, 2019); and inconsistent interpretation of risk factors across jurisdictions undermines the comparability of regulatory data and its downstream utility for outbreak prevention (Irwin et al., 1989; Lee & Hedberg, 2016; Leinwand et al., 2017).

The census adds a structural dimension to this evidence base. It moves the conversation beyond documenting that variability exists to quantifying the extent to which the workforce has access to a standardized, evidence-based preparation process. The 26-percentage-point gap in HACCP plan verification between FDA-guided and non-FDA-guided jurisdictions, the 28-point gap in LearnED curriculum completion, and the 41-point gap in a written risk control plan assessment are not random variations—rather, they are the product of structural differences in inspector preparation.

Our study provides the first national-scale quantification of that structural gap and, crucially, links the gap directly to a concrete, achievable intervention pathway. Prior qualitative assessments of local health department engagement with FDA program standards (NACCHO, 2014; Shah et al., 2022) and investigations into regulatory program variation across jurisdictions (Idjagboro et al., 2020; Kambhampati et al., 2016) identified similar themes of resource constraints and structural capacity disparities. The RFRWS Census provides the quantitative evidence base that those assessments called for. Taken together, the literature frames inspector standardization not as a procedural requirement but as a public health infrastructure investment with measurable, scalable returns.

Limitations

Several limitations should be noted. Although participation was voluntary and the overall response rate was 16.8%, the responding jurisdictions collectively regulate approximately 70% of all retail food establishments in the U.S., thus providing a meaningful representation of national food safety oversight capacity. This disproportionate coverage of establishment-level programs reflects greater participation in larger, more complex regulatory programs and supports the generalizability of key findings regarding FDA-guided standardization. Nonrespondents are more likely to represent smaller, lower-resourced local agencies. To the extent that these agencies are also less likely to be standardized, the adoption rates observed in this census could modestly overestimate national rates.

This pattern reinforces, rather than undermines, the case for expanded outreach and engagement. Furthermore, data were self-reported and not independently verified. The cross-sectional design precludes assessment of trends or causal inference, and our study findings were not linked to inspection performance metrics or foodborne illness outcomes. Lastly, population projections apply respondent-observed rates uniformly across jurisdiction types and might not capture regional variations.

Conclusion and Recommendations

The RFRWS Census establishes the first national baseline of inspector standardization and a precisely quantified expansion target. We found that FDA-guided standardization covers approximately 70% of the nation's retail food establishments and demonstrably prepares inspectors more thoroughly across all measured dimensions. Approximately 1,545 jurisdictions and 9,340 inspectors remain outside FDA-guided processes; however, achieving an 85% standardization mandate would require standardizing approximately 7,940 additional personnel.

Six recommendations, derived directly from the RFRWS Census findings, provide the strategic framework for action.

1. **Enhance Resource Allocation for Compliance With Standard 2**: Workforce capacity disparities among non-FDA-guided and nonstandardized jurisdictions signal an urgent need for focused investment. Federal and state agencies should fund training, staffing, and technical assistance to support Standard 2 adoption, leveraging flexible models such as the RFFM Grant Program. The large number of nonparticipating jurisdictions (73%) that expressed interest in the RFFM Grant Program represents an identified group interested in engagement.
2. **Develop Regional Standardization Networks**: Most local jurisdictions lack internal capacity to conduct standardizations. Networks of FDA or state-standardized professionals serving as mobile or remote standardizers would extend program reach, and regional collaboration hubs connecting contiguous SLTT agencies could support jurisdictions that are unable to sustain the process independently.
3. **Promote and Incentivize Cross-Jurisdictional Standardization Support**: A structural paradox exists: non-FDA-guided jurisdictions (80%) seek external standardization support, whereas FDA-guided jurisdictions (70%) limit efforts to within their own agency. Formal incentives and interagency sharing agreements could redirect existing capacity toward underserved neighboring programs.
4. **Reinforce Full and Consistent Implementation of Standard 2**: Programs omitting crucial Standard 2 elements, including HACCP verification (FDA-guided: 88% versus non-FDA-guided: 62%), risk control plan development (79% versus 38%, respectively), and process flow chart evaluation (75% versus 38%, respectively), should be supported through compliance checklists and targeted guidance to ensure full protocol fidelity.
5. **Explore and Formalize Alternative Standardization Delivery Models**: Accredited third-party organizations, virtual standardization components, and train-the-trainer frameworks should be included to reduce dependence on limited FDA or state staff and lower participation thresholds for low-capacity jurisdictions.
6. **Establish a Dedicated Standardization Grant or Broker Program**: A grant-supported broker program could systematically connect jurisdictions seeking inspector standardization with qualified providers. This approach would replace reliance on informal, individual arrangements with a coordinated, sustainable

system that supports expanded access to standardization and tracks progress over time toward the national targets identified in the census.

What Was Learned, What Remains

The RFRWS Census makes three major contributions to the food safety evidence base, in that it:

1. Establishes the first national baseline of standardization status across all SLTT jurisdictions, replacing assumptions with verifiable population-level data.
2. Translates that baseline into a concrete expansion target: a defined count of jurisdictions, inspectors, and required standardizations disaggregated by level and category.
3. Demonstrates that barriers to reaching that target are structural and surmountable, not attitudinal. The agencies are interested, the program infrastructure exists, and the missing ingredient is a coordinated deployment strategy at the scale the data now justify.

What remains is a 6-part implementation pathway: 1) activating interested nonparticipating jurisdictions via RFFM Grant Program infrastructure, 2) building regional standardization networks, 3) reinforcing full Standard 2 implementation, 4) formalizing alternative delivery models, 5) establishing a broker program, and 6) creating a longitudinal tracking system.

Every FDA-guided agency is simultaneously a beneficiary of standardization and a potential training resource for individuals outside it; deliberately activating that latent capacity across agency boundaries is the most direct route to national alignment. Future research should link standardization status to inspection performance indicators and foodborne illness outcomes, assess equity in access across jurisdictions by size and geography, and establish benchmarks for measuring progress. The data are strong, the institutional will is in place, and coordinated action is now required.

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Did You Know?

The NEHA-FDA Retail Flexible Funding Model Grant Program provides funding to state, local, tribal, and territorial retail food regulatory agencies as they advance conformance with FDA's Voluntary National Retail Food Regulatory Program Standards. We are excited to announce that the portal for Grant Year 2027–2028 will open on December 9, 2026. The portal will close on January 27, 2027. Learn more at www.neha.org/retail-grants.

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