



Roadmap to Foodborne Illness Reduction via Healthy People 2030

January 7-9, 2020



Making a Difference

Focus on What Will Have the Greatest Impact in
Reducing Deaths, Long Term Disabilities, and Illnesses

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Added Benefits

Reducing Long Term Disabilities and Illnesses
Will Reduce:

- Health Care Costs
- Economic Impact on the Food Industry
 - E.g. Spinach
 - Tomatoes
 - Peanut Butter
 - Romaine
 - Recurring recalls, lawsuits, lost sales...



Why Is AFDO Having this Meeting?

- Illnesses are not decreasing
- Outbreaks keep occurring from same sources
- To make a major impact in reducing illnesses, a coordinated response is needed
 - Federal, state and local government
 - Professional associations
 - Consumer groups
 - Academia
 - Industry from farm to table
 - Scientists, People who can think out of the box,
Leaders who can make things happen



Why Use Health People 2030?

- Focuses efforts on the pathogens of greatest concern
- Foods and factors most often associated with illness
- Develop short, mid, and long term plan to achieve illness reduction
- Opportunity
 - Whole Genome Sequencing is a game changer
 - Baseline illnesses will be broken into numerous recurring illnesses from the same sources
 - Romaine, papayas, hard boiled eggs...



DRAFT Healthy People 2030 Objectives

- FS-2030-01 Reduce the incidence of laboratory-diagnosed, domestically-acquired *Campylobacter* infections
- FS-2030-02 ... Shiga toxin-producing *Escherichia coli* (STEC) infections
- FS-2030-03 ... *Listeria monocytogenes* infections
- FS-2030-04 ... *Salmonella* infections

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DRAFT Healthy People 2030 Objectives

- FS-2030-05 ... Prevent an increase in the proportion of nontyphoidal Salmonella infections in humans that are resistant to three or more drug classes
- FS-2030-06 Prevent an increase in the proportion of domestically-acquired *Campylobacter jejuni* infections in humans that are resistant to macrolides



DRAFT Healthy People 2030 Objectives

- FS-2030-09 Increase the proportion of retail food store delis where food employees practice proper handwashing
- FS-2030-10 food contact surfaces are properly cleaned and sanitized
- FS-2030-11 ... foods requiring refrigeration are held at the proper temperature
- FS-2030-12 ... foods displayed or stored hot are held at the proper temperature

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HP 2030 Developmental Objectives

- FS-2030-D01 Reduce the number of infections due to outbreaks of Shiga toxin-producing E. coli, or Campylobacter, Listeria or Salmonella species associated with beef
- FS-2030-D02 ... dairy
- FS-2030-D03 ... fruit and nuts
- FS-2030-D04 ... leafy greens
- FS-2030-D05 ... poultry

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HP 2030 Developmental Objectives

- FS-2030-D06 Reduce the number of outbreaks of infections caused by Norovirus
- FS-2030-D07 Reduce the number of food allergy reactions requiring emergency treatment


















Establishing Effective Policies

- Relative Risk – Where is the Threat to Public Health the Greatest?
 - Severity – Death vs. an upset stomach
 - Probability of occurrence
- Where can you have the greatest impact?
- Cost/Benefit
 - Pareto Principle (80/20 Rule)
 - One study: 80% of the crime from 20% of the criminals
 - Can often achieve 80% of the benefit with 20% of the effort
 - E.g. Beach Program – 85% of closures were from 15% of beaches
 - Focused efforts on these beaches and reduced closures by over 80%
 - Identify low effectiveness time and direct time to high impact activities



2015 FOOD SAFETY REPORT

Measuring progress toward Healthy People 2020 goals

| Pathogen | Healthy People 2020 Target Rate* | 2015 Rate† | Change Compared with 2006-2008‡ | |
|----------------------|--|------------|---|---|
| <i>Campylobacter</i> |  | 12.97 |  9% |  |
| <i>E. coli</i> O157§ |  | 0.95 |  30% |  |
| <i>Listeria</i> |  | 0.24 | No change |  |
| <i>Salmonella</i> |  | 15.89 | No change |  |
| <i>Vibrio</i> |  | 0.39 |  34% |  |
| <i>Yersinia</i> |  | 0.29 | No change |  |



U.S. Department of
Health and Human Services
Centers for Disease
Control and Prevention

*Per 100,000 population
†Culture-confirmed infections per 100,000 population
‡2006-2008 were the baseline years used to establish Healthy People 2020 targets
§Shiga toxin-producing *Escherichia coli* O157

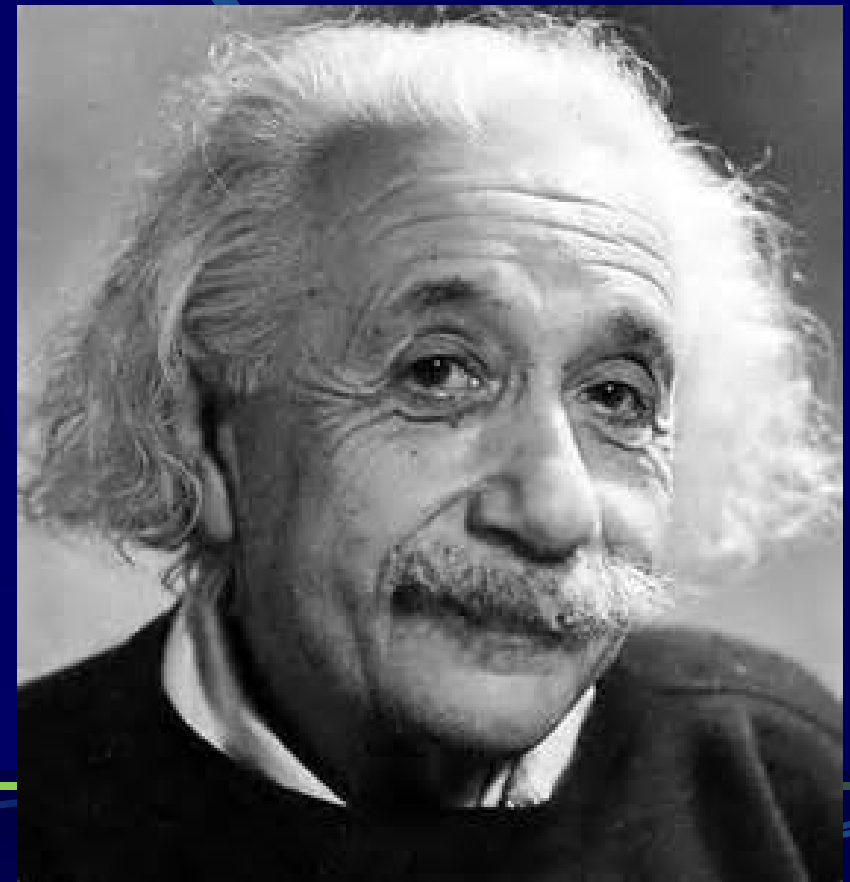
How Are We Doing Now?

- With Culture Independent Diagnostic Tests (CIDT), hard to evaluate trends
- Increases in
 - Campylobacter
 - Salmonella
 - E. coli
 - Yersinia
 - Cyclospora
 - Co-infections (e.g. Salmonella and Campy)
- To What Extent are Increases Due to Changes in Testing?



- Insanity: doing the same thing over and over again and expecting different results.

Albert Einstein



Find and Eliminate the Root Cause



- With food
 - Environment (irrigation water, manure...)
 - Facility – Listeria, Salmonella
 - Equipment – slicers, refrigeration...
 - Knowledge
 - Motivation – Food Safety Culture
 - Are preventive systems in place

Breakouts

- **E. coli**
- **Salmonella/Campy**
- **Listeria**
- **Norovirus**

- **Produce**
- **Beef/Dairy**
- **Poultry**
- **Retail/Food Service**



Priorities – Short, Mid and Long Term



- Prevent Recurring Outbreaks
 - Greatest Predictor of the Future is the Past
 - Those that Fail to Learn from History Are Doomed to Repeat it
- Whole Genome Sequencing (WGS)
 - Will Detect Small and Recurring Outbreaks in the Baseline
 - Find and Eliminate the Root Cause
 - Coordinated Actions and Sampling
 - Sample at Time of Recurring Outbreaks from Where Illnesses Occurred (e.g. Romaine in April from Yuma, Fall from Salinas)



Norovirus Prevention

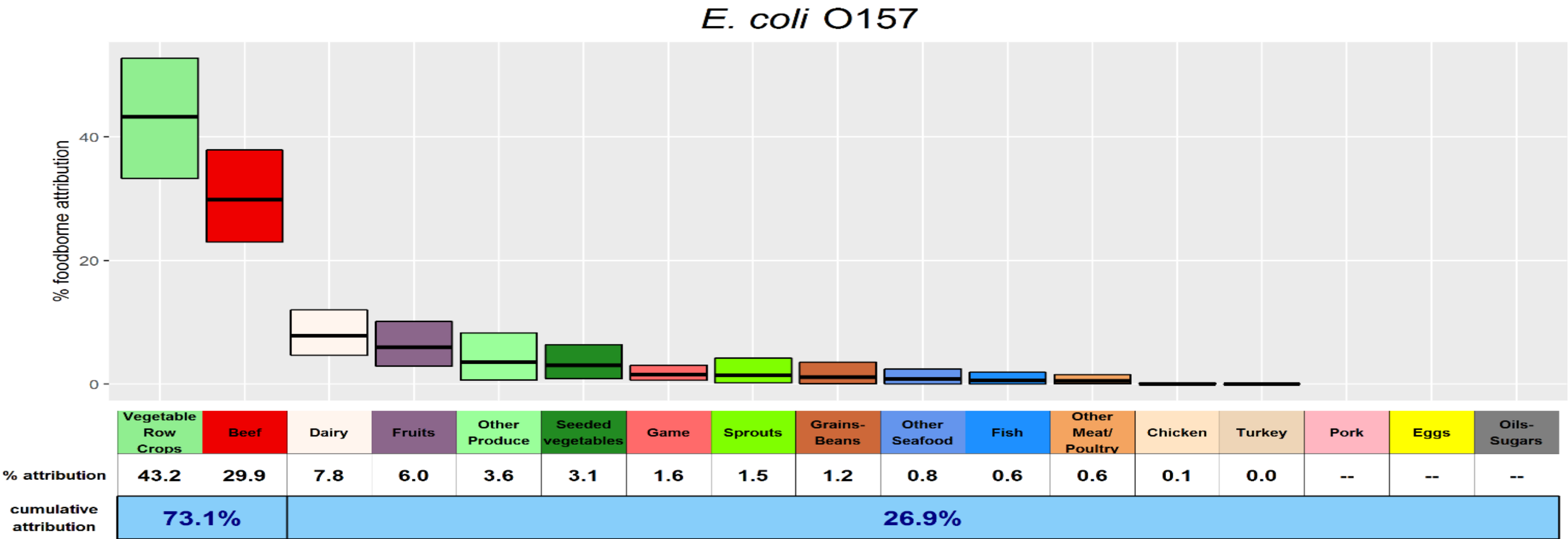
- Require Certified Managers
- Exclude food employees with Norovirus, vomiting, and diarrhea until 48 hours after symptoms stop
- Sick time for employees or can make up time
- Call in plan for ill employees
- No hand contact of ready-to-eat foods
- Excellent handwashing
- Vomitus cleanup procedures
 - Read the label to assure sanitizer effective against Norovirus
- Working on a vaccine

Priorities



- Prevent Recurring Outbreaks
 - Delmarva tomatoes
 - Salmonella was shown to go through soil, into plant, and into tomato
 - Reduction in outbreaks after chlorinating irrigation water
 - Leafy Greens – 30+ outbreaks since 2009
 - Contaminated irrigation water
 - Buyers demanding chlorinated irrigation water and other changes decreased illnesses from Yuma in 2019
 - Listeria or Salmonella from same processors
 - Restaurants with recurring outbreaks

Figure 3: Estimated percentage of foodborne *Escherichia coli* O157 illnesses (with 90% credibility intervals) for 2016, in descending order, attributed to each of 17 food categories, based on multi-year outbreak data,* United States



E. coli O157:H7

- Over 90% associated with cattle or produce
 - Water contaminated with manure and use of manure are major sources of contamination
- Prevent Recurring outbreaks from the same sources
 - Require water treatment if an outbreak from contaminated water
 - IAFP - Survival in manure for over 120 days at cooler temperatures



What You Can Do – Regulators



- Mandate Food Manager Certification
 - CDC EHS-Net found association between not having a manager certified and having outbreaks
 - FDA found association with lack of a certified manager and presence of certain foodborne illness risk factors
 - Reduce frequency of targeted risk factor violations
- Improve Rapid Traceability
 - Mandate leafy green source labeling
 - Food Code “Approved” source
 - Production of shopper card/product purchase info during illness investigation
- “Go After Bad Guys” (Highest risk of causing illness)
 - Chain/corporation evaluations and coordinated inspections and enforcement
 - A few hurt the entire Romaine industry



What You Can Do – Food Service

- Certified Managers
- Trained staff
- Sick time for employees or can make up time so no economic incentive to work while ill
- No bare hand contact of ready-to-eat foods
- Purchase from safe sources
- Have a system in place to assure food safety and verify it works



What You Can Do - Farmers

- Irrigation and processing water for ready-to-eat foods must be safe
- Manure use of major concern
 - Composting often not done properly
 - Long pathogen survival at cooler temperatures
 - Increases in pathogens after rain
- Vaccinate animals long term?



Congress/State Legislatures

- Improve produce safety
 - Reduce contamination from cow and poultry manure and improve safety of irrigation and wash water – involve EPA
- Vaccine research to reduce salmonella and campylobacter from poultry and STEC from cattle
- Sick time for employees or employees can make up time to prevent Norovirus and other illnesses
- CIDTs and WGS detecting more illnesses and more clusters
 - Increased funding needed to test, investigate, and find and eliminate the root causes



Evaluation

- Choose metrics for evaluation carefully as some metrics can make a program ineffective
 - Inspection numbers and frequency can drive not doing follow-up inspections to eliminate critical hazards in order to meet targets
 - **Reducing illnesses, disposals, the frequency of foodborne illness risk factors, and putting systems in place to prevent recurring outbreaks and serious hazards needs to be the clear priority**
 - Evaluate the number ill after you learn of illnesses/hazard to improve effectiveness and response time
 - If acting quickly and effectively, the number ill/outbreak and the number of recurring outbreaks should decrease

Common Themes from the Breakouts

- Collaboration
 - Integrated Food Safety System
- Action
 - Implement immediate effective controls to prevent additional illnesses
 - Follow-up is essential to keep it from happening again
 - Much higher priority than routine inspections
- Data Sharing

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Common Themes

Make Data Available to Drive Action

- Link Epi and Environmental Data to find and eliminate sources of illness
 - Take immediate action to prevent additional illnesses when the links occur
- Promote awareness of FDA, USDA and state and local inspection data for industry and consumer buyers to drive corrective actions

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Common Themes

WGS is a Game Changer

- More resources are needed at lab, epi and food regulatory level to find and investigate clusters and eliminate sources
 - Test Campylobacter
 - (Divert inspection resources at present for field investigations)

Recurring Produce Outbreaks

- Manure contaminated irrigation water is a major source of contamination
- Assure water safety where outbreaks have occurred
- Research is needed as to best irrigation and treatment practices

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2020 Priority Objectives

Improve Traceback

- Require labeling now of Romaine and other high risk products as to place and date of harvest
 - Food Code Interpretation
 - “Approved” means acceptable to the REGULATORY AUTHORITY based on a determination of conformity with principles, practices, and generally recognized standards that protect public health.”
 - If not properly labeled, it can’t be sold
- Issue Food Code Interpretation to require production of food purchase info during outbreak investigations based on 8.3 and 8.4 of the Food Code
 - Support Food Code change to improve wording to require production of records at CFP

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Traceback

Protect public health by improving traceability, to allow identification of sources and facilitate root cause analyses, leading to effective removal of product from the marketplace

- **Blockchain...**
- **Through increased conformance with the grinding log requirements in the retail environment...**

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Congress/Legislatures

- Reduce health care cost
- Best time to meet? (election year)
 - Deadline for submission of bills?
- Consensus of consumer groups, industry, academia, professional associations and government representatives that the following need to be done.
- Who to meet with Congress:
 - AFDO, FMI, Consumer Groups, ASTHO, CSTE, APHL Others?

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Congress/Legislatures

Who to meet with/send report to

- DeLauro – CT
- Energy and Commerce - call earlier in year
- GAO – call earlier in year
- Farm Bill/FSMA sponsors?
- Other food safety advocates?
 - Leadership in House?
 - Leadership in Senate?
 - Appropriate Committee Chairs

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Congress/Legislatures

WGS is a game changer

- Funding needed at lab, epi and food regulatory level to investigate clusters and find and eliminate sources of illness
- Fund Metagenomics

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Congress/Legislatures

- Authority needed in order to find the source of outbreaks, reduce illnesses and prevent recurrence:
 - Access to farms and potential sources of contamination...
- Need to communicate about outbreaks – number of events, what happened, what we can do, etc.

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Congress/Legislatures

Changes in laws needed in order to eliminate barriers to reducing and preventing illnesses:

- Provide greater latitude on releasing info needed by industry and others to research causes and prevent additional outbreaks
- Highest Priority for Inspection Resources
 - Immediately respond to outbreaks to find and eliminate the source in order to prevent deaths, long term disabilities and additional illnesses
 - Prioritize follow-up to eliminate imminent hazards to health, and foodborne illness risk factors, over conducting lower risk routine inspections
- Need a better way to tell our story than frequency and number of inspections
 - Need better metrics effective at reducing illnesses

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Congress/Legislatures

Fund Research

- Best irrigation and water treatment practices (effectiveness of LGMA) in order to prevent illnesses, and repeated harm to the food industry (e.g. reducing STEC illnesses from Romaine)...
- Allow CDC funds to Centers for Excellence to also be used for research
- “Establish a National Policy for paid sick leave for food workers” or the facility allows them to make up the hours so there is not an economic incentive to work while ill

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2020 Research Action Items

- Safe irrigation and water treatment practices
- Evaluate and develop effective micro kill steps for produce (chlorine, ozone, irradiation...)
- How Antibiotic resistant organisms get into livestock
- ID top Salmonella serotypes of concern for vaccine development
- Develop vaccines to reduce human illnesses
 - Norovirus for people: Salmonella, Campy, STEC for animals
- Campy causation
- Cyclospora
- Raw milk
- Virulence

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2020 Research Action Items

- Behavior change and root cause analysis.
- Need a place to publish research because it is currently all over the place – need 1 single place to go to find this research info.
- Salmonella – Ability to distinguish and characterize which are more pathogenic than others in a rapid format so industry can make a better decision.
- Effective interventions at retail.

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Education

- Need education to prevent outbreaks.
- Increase educational materials to industry.
- Consumer education is very important
 - How food is handled in the homes.
- Include education in the funding we request and receive.
- Instill culture of prevention

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Conference for Food Protection

Issues to address at March Meeting

- Increase # of establishments with well-developed and implemented food safety management systems
 - Includes well-documented employee health program
- Increase establishments with a certified food protection manager
- Increase number of establishments with trained food handlers.
- Access to consumer food product purchase information

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2020 Retail Action Items

Promote adoption of updated Food Code

Increase implementation of food management systems

- Templates for food safety management systems to industry

Increase number of establishments with certified manager

- Promote adoption in 14 states with manager certification not in place

Increase number of establishments with trained workers

- Disseminate CDC info

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Next Steps

Determine issues to address at CFP in March

InFORM Presentations

- Meeting summary
- Produce safety panel

Promote implementation at meetings throughout the year

- Week of Feb 27 ASTHO Meeting with Congress
- Provide InFORM slides as a template for others
- MCAFDO, CASA, NEFDOA...
- Mexico at AFDO meeting

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AFDO Romaine Sampling Webinar

- Test Romaine at time of illnesses last year from illness sources
- Heighten E. coli O157:H7 surveillance in Fall for Salinas cases
 - Immediate investigation and controls if matching cases
 - Test Romaine if implicated, and obtain traceback info
- Require location and date of harvest on Romaine lettuce for rapid traceback
 - Food Code: Approved Source
- Notify industry that sampling will occur to drive improved safety and promote purchasing from safe sources

2020 Priority Objectives

Prevent Recurring Leafy Green Outbreaks

- Assure preventive actions taken at implicated farms
 - Buyers require audits of high risk suppliers
 - FMI Guidance document
 - Prevent contamination from manure
 - Assure irrigation water safety
 - Regulatory action to prevent adulterated food from entering commerce
- Environmental assessment during harvest season
- Industry and government sampling at time of harvest and from sources of illness at same time of exposure last year
- Heightened surveillance and rapid response at sign of first cases to reduce number ill

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2020 Priority Objectives

Workgroups Needed?

- Policy Group to prioritize and push next steps...
- Appropriations
- Research
- Education
- Root cause analysis (build upon Pew work)
- Salmonella
 - Performance standards
- Use CDC Centers for Excellence
 - CDC can't fund research to them, however
- Vaccine development and promotion

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Mobile App



Available on the
App Store

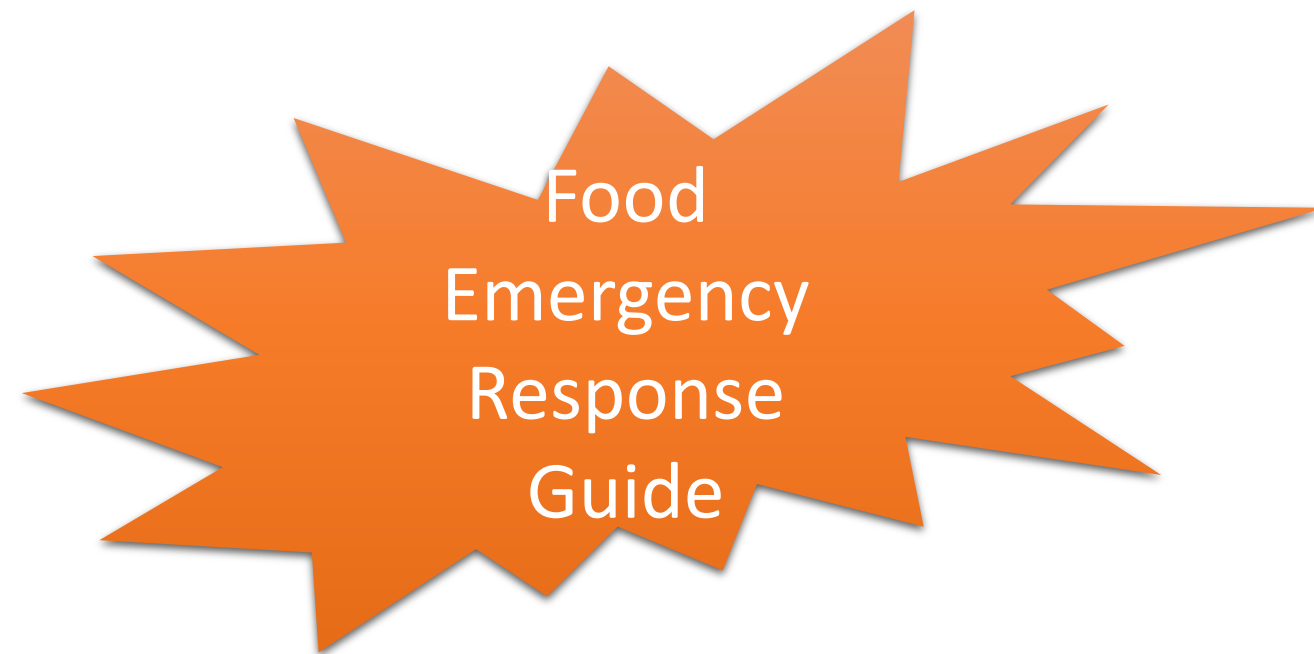


Get it on
Google play

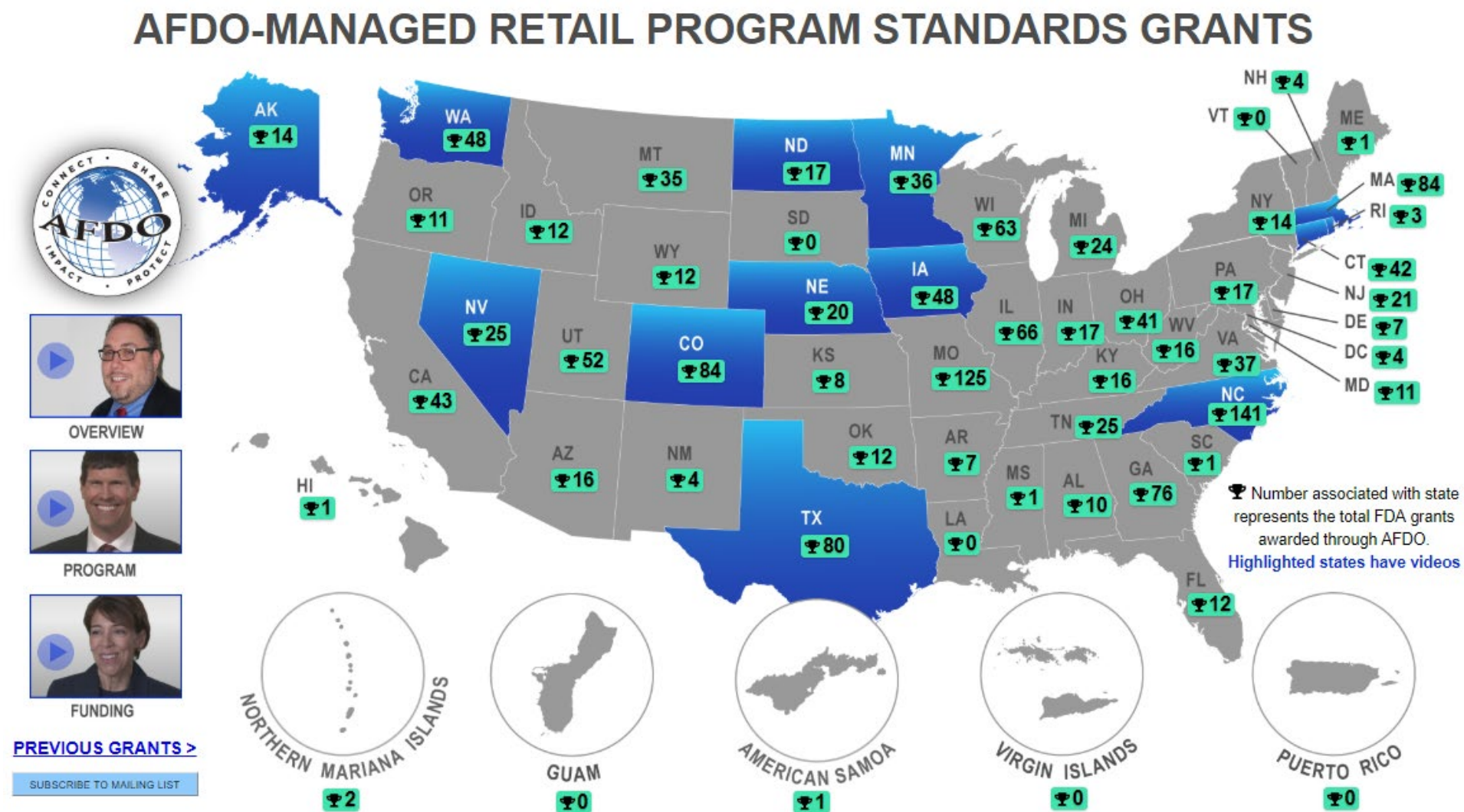


Publications

Available at
www.afdo.org



Retail Program Standards Grant Program



Preventive Controls Training Grants

- **Accepting applications through June 15, 2021***
- Human Food Training – Funding for regulatory staff to attend the FSPCA Preventive Controls for Human Food Course or the Train the Trainer Course
- Animal Food Training – Funding for regulatory staff to attend the FSPCA Preventive Controls for Animal Food Course or the Train the Trainer Course
- **Pre-Authorized Training** (**Accepting applications through June 15, 2021***) – FDA will verify that the requestor has a slot in a specific course(s) and meets the eligibility requirements to apply.
- **Additional Opportunities** may be posted at this site. Please [register your email address](#) to receive updates on future openings.

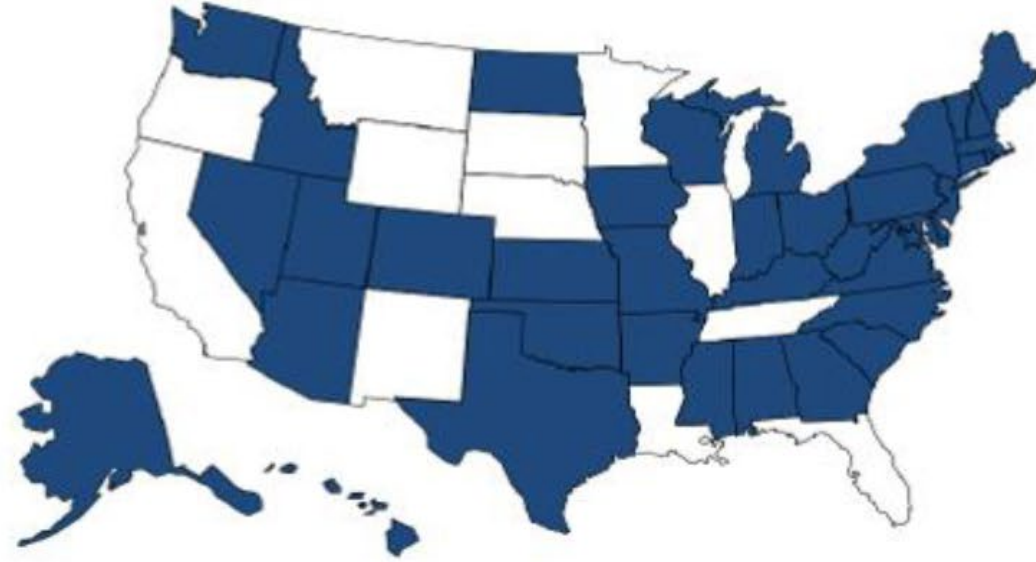
Priorities – Short Term



- Norovirus Webinar in November



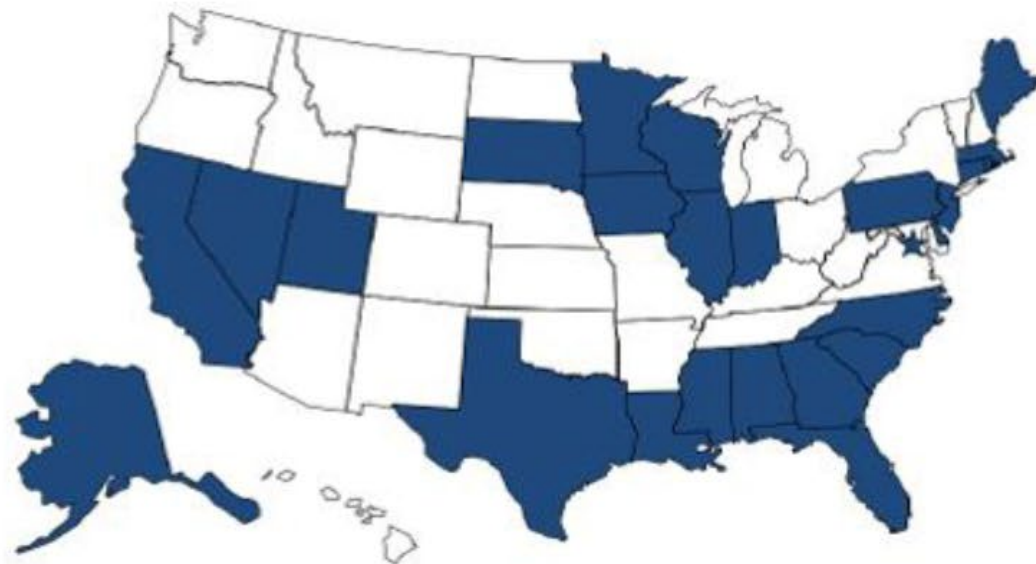
Prohibition of bare-hand contact



Exclusion of food workers with vomiting/diarrhea



Certified Food Protection Manager

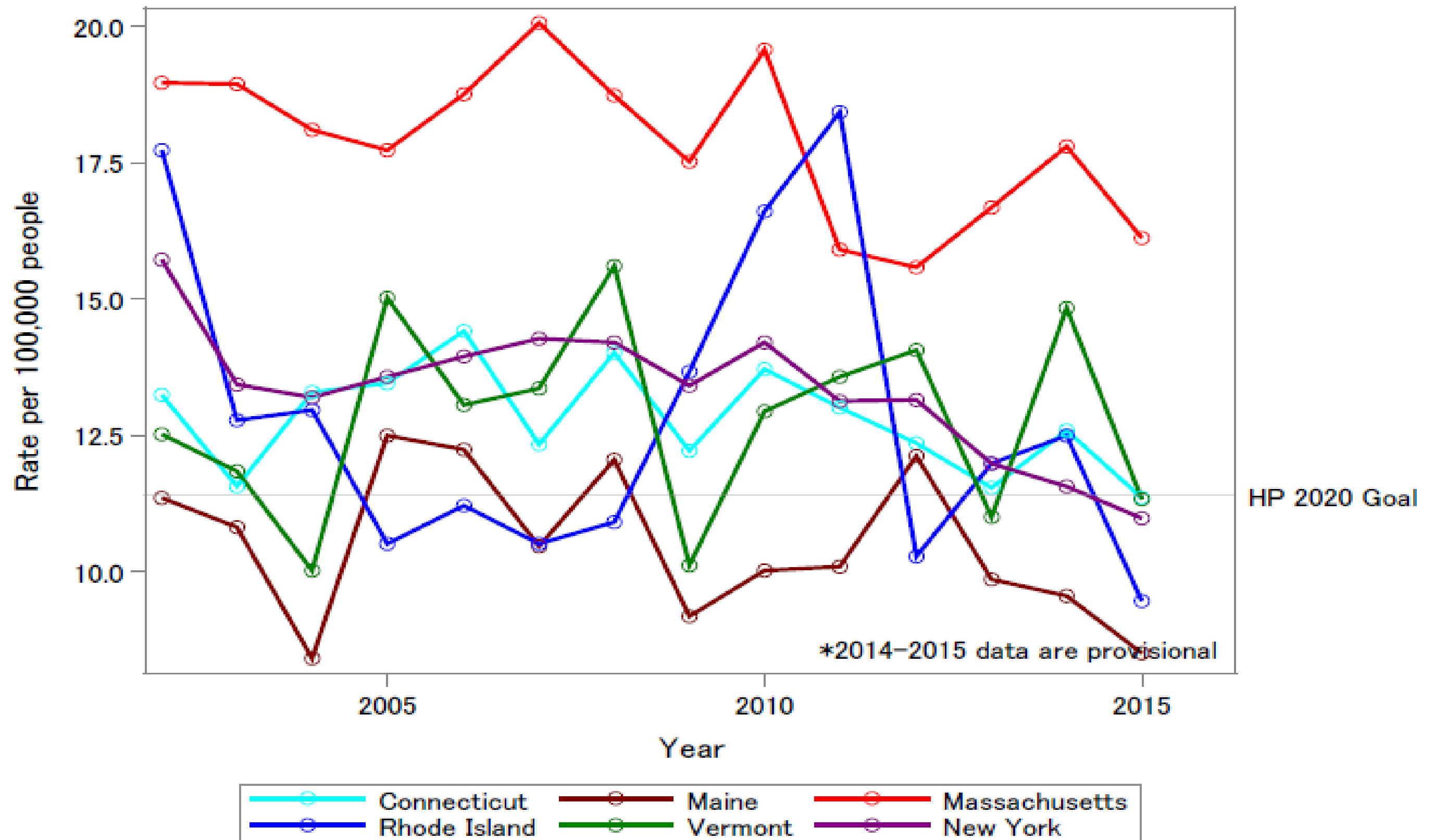


Contamination event response plan

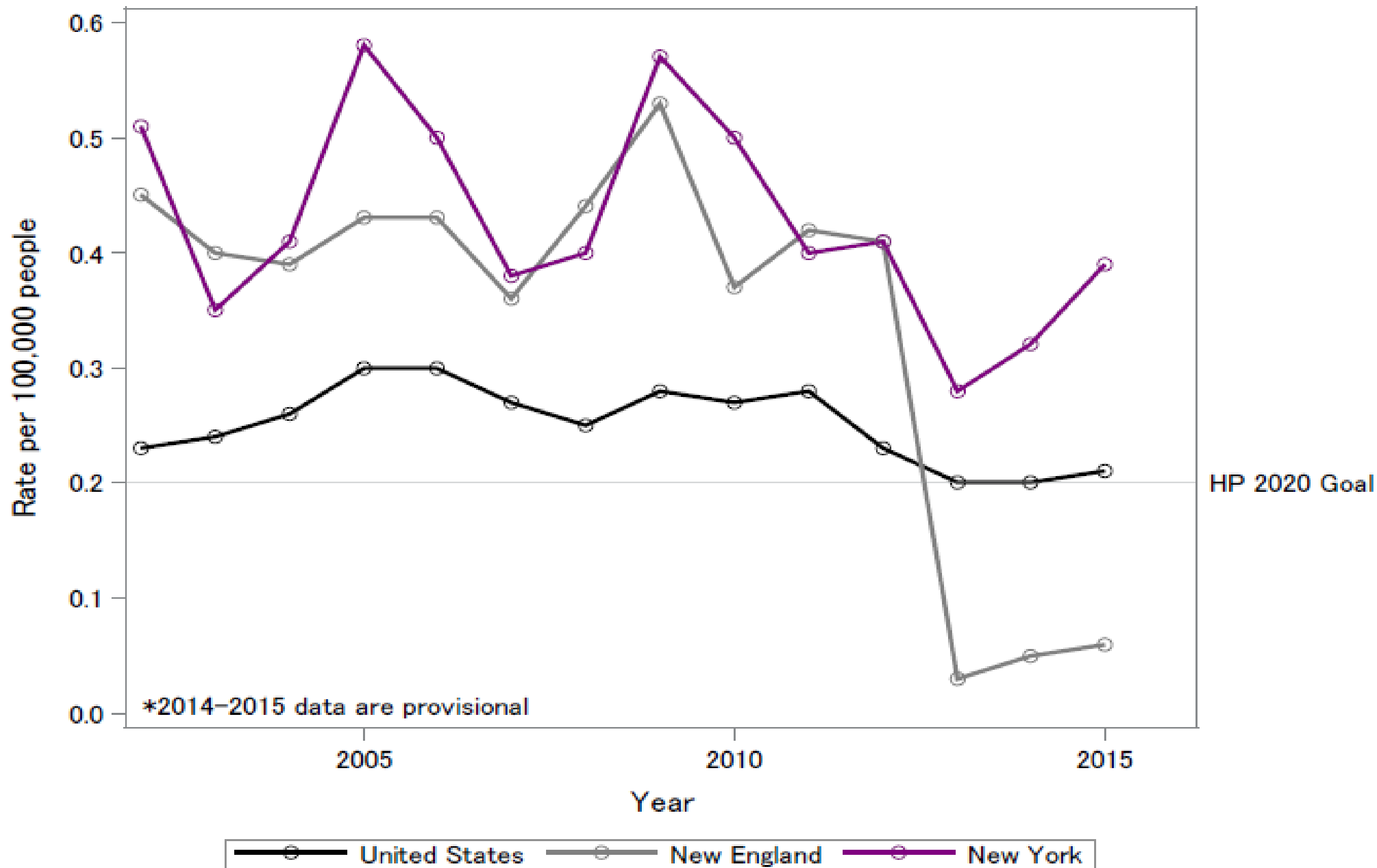


Kambhampati 2016 JFP

Rates of Salmonellosis in Rhode Island, New England States, and New York State
(2002–2015*)



Rates of Listeriosis in New York State, New England, and the US (2002–2015*)





Priorities

700,000 human deaths worldwide from Multi-Drug Resistant (MDR) Pathogens

- MDR *Salmonella Infantis* associated with chickens
- MDR *Salmonella Reading* associated with raw turkey
- **MDR *Salmonella* 1,4,[5],12:i:- associated with swine and other livestock (Kansas State found in swine feed plant)**
- MDR *E. coli* O157:H7 from Romaine last year
- MDR *Salmonella Newport* from beef

2 calls with CDC, FDA, AAFCO

- **Any of these pathogens found in feed here?**
- Coordinated federal and state sampling to determine extent feed may be resulting in human MDR illnesses



Thank You!