

CDC's National Environmental Assessment Reporting System (NEARS): Informing Foodborne Illness Outbreak Investigation and Prevention

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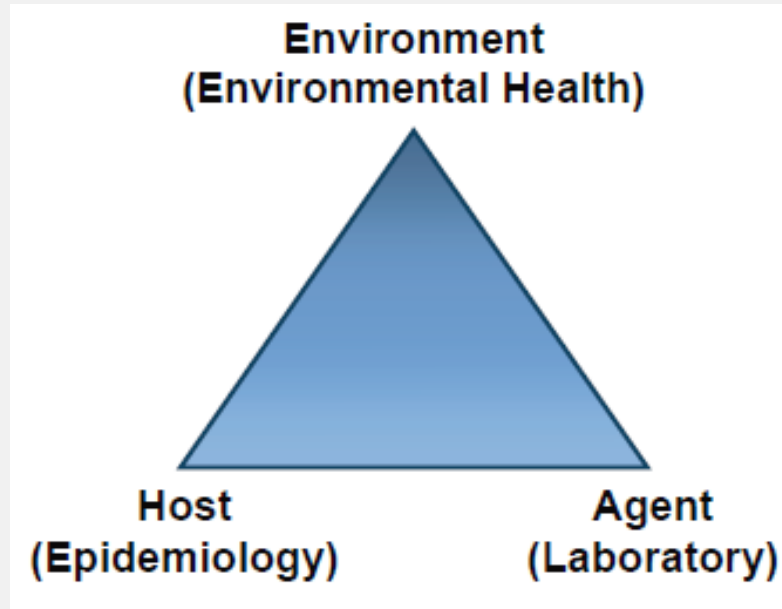
Water, Food, and Environmental Health Services Branch
Division of Environmental Health Science and Practice

East Coast PulseNet/OutbreakNet Joint Regional Meeting
Tampa, Florida
January 16th, 2019

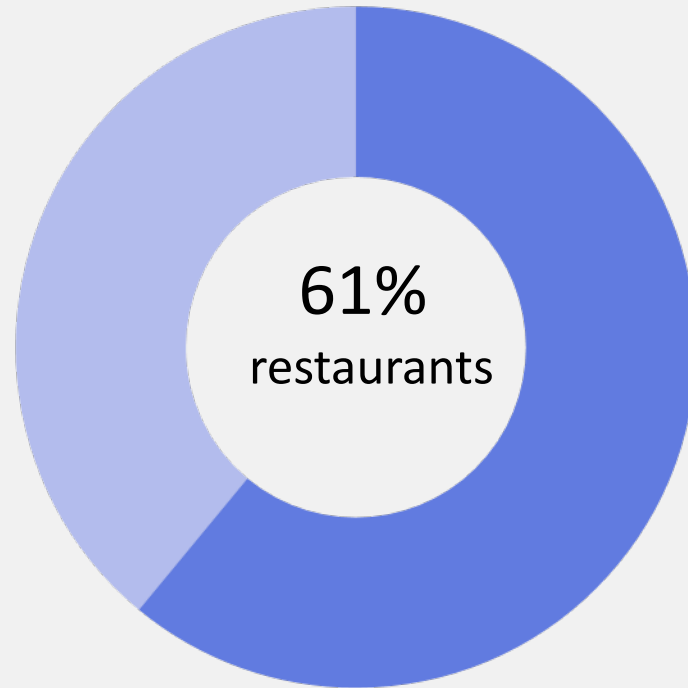
The findings and conclusions in this report are those of the authors and do not necessarily represent the views of CDC or the Agency for Toxic Substances and Disease Registry.

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Host-agent-environment model of disease transmission



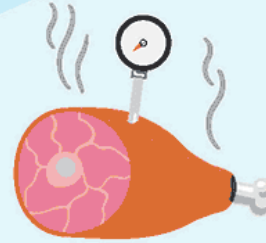
Location of U.S. outbreaks



Environmental health outbreak investigation activities



Interviewing kitchen managers and food workers



Observing how restaurants prepare food (for example, food temperatures)



Reviewing or collecting records (for example, records of food cooking temperatures, traceback records)

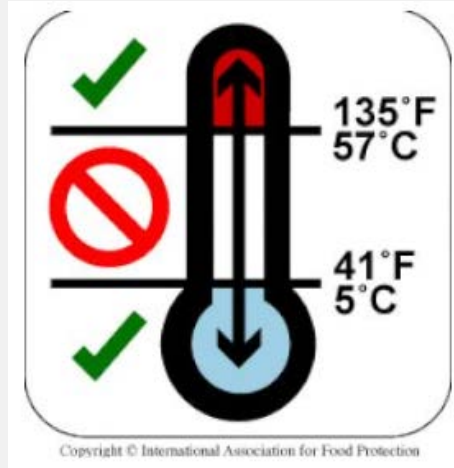


Sampling for pathogens in the restaurant kitchen

Outbreak contributing factors



Contamination

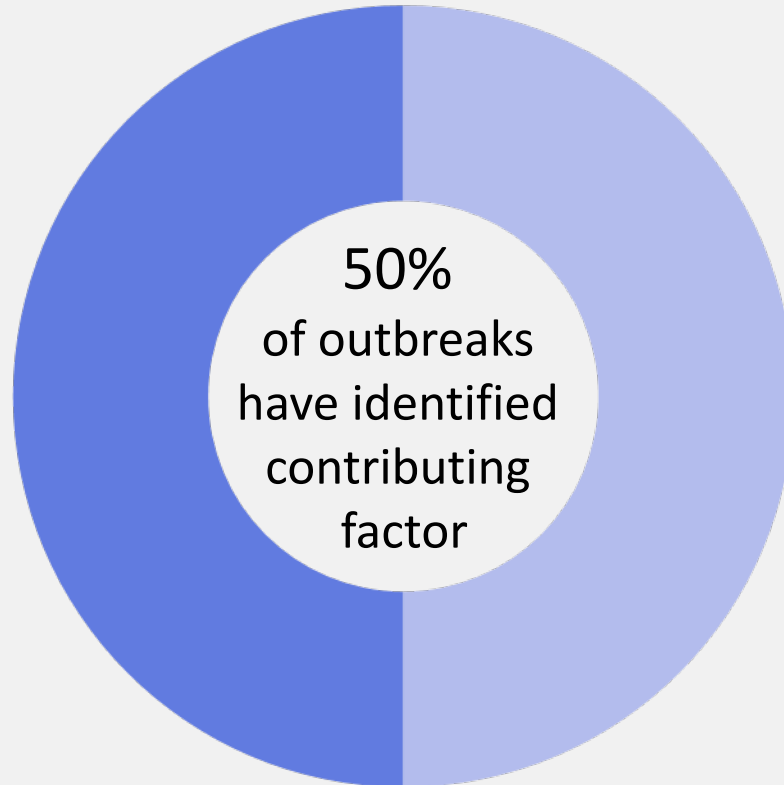


Proliferation

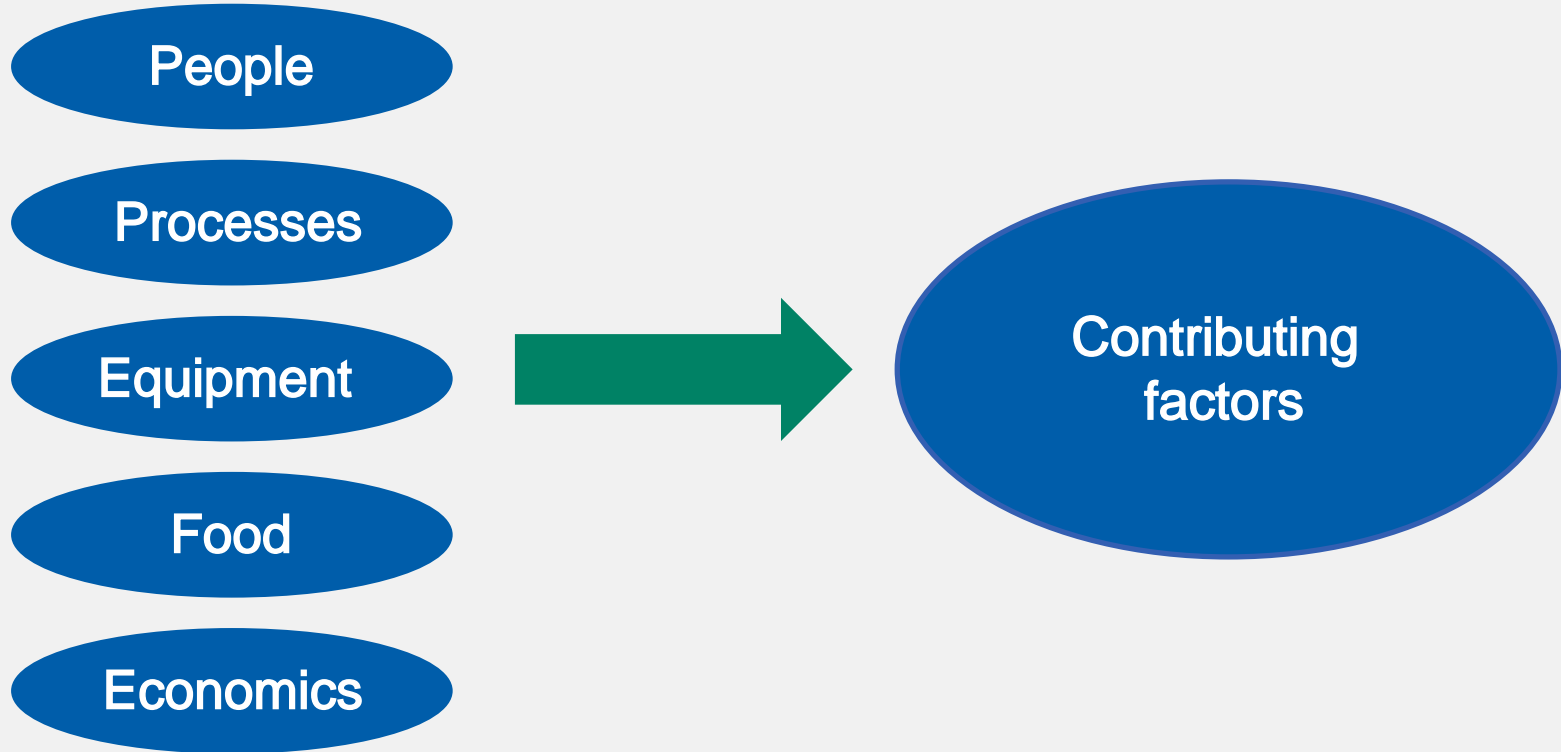


Survival

Outbreak contributing factors



Outbreak environmental antecedents



Outbreak example

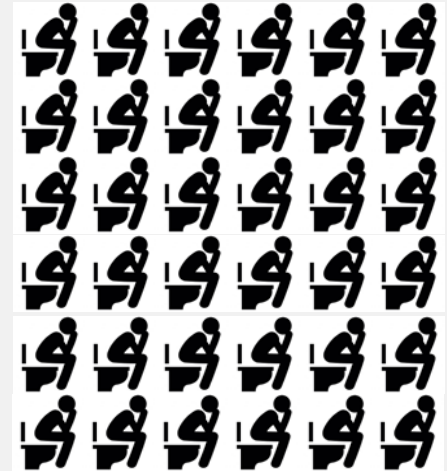
Restaurant A



Dinner rolls



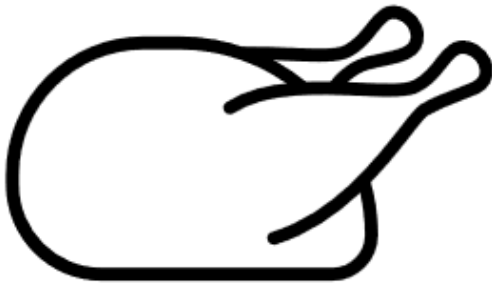
36 cases of
Salmonella Enteritidis



Outbreak example

Same set of brushes

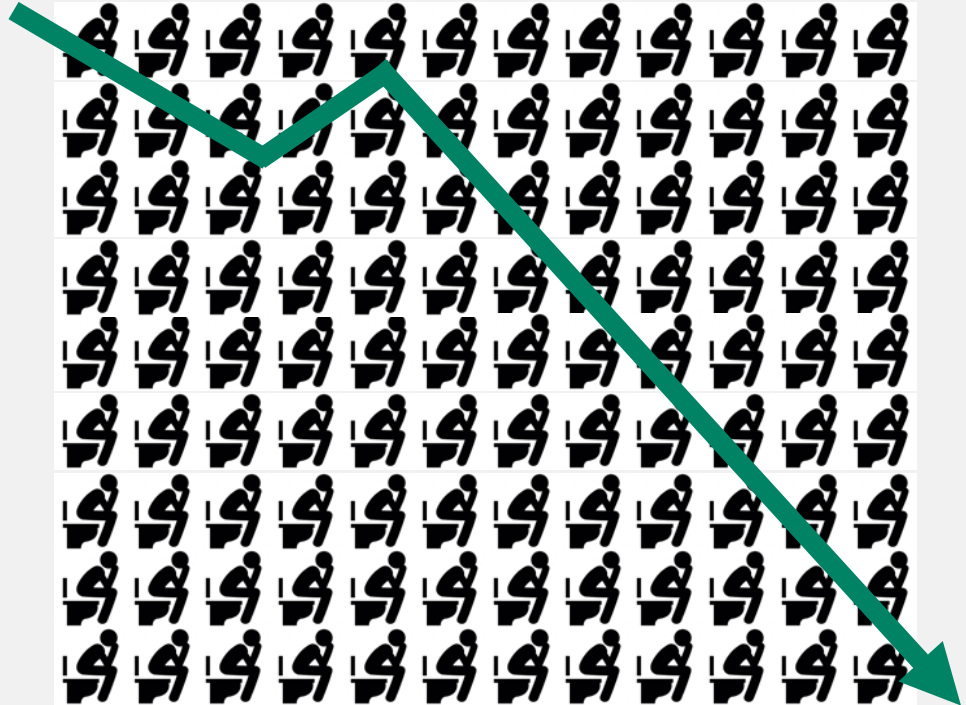
Raw chicken



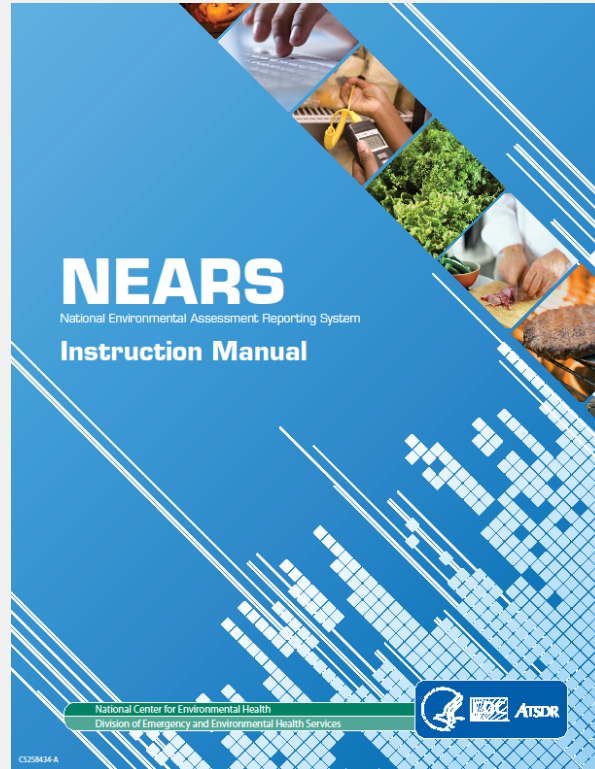
Cooked rolls



Illness/outbreak prevention



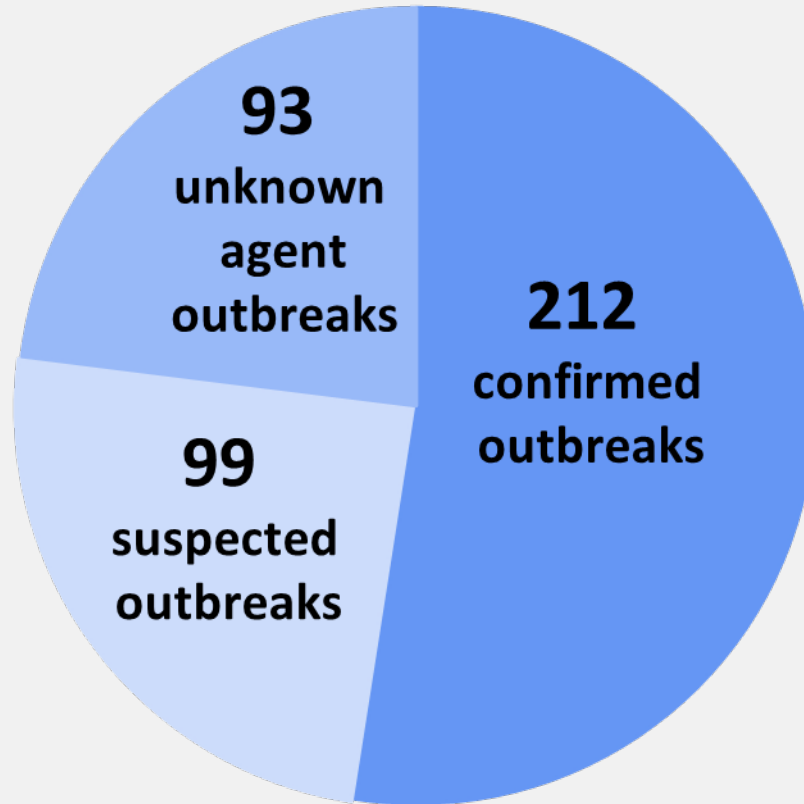
National Environmental Assessment Reporting System (NEARS)



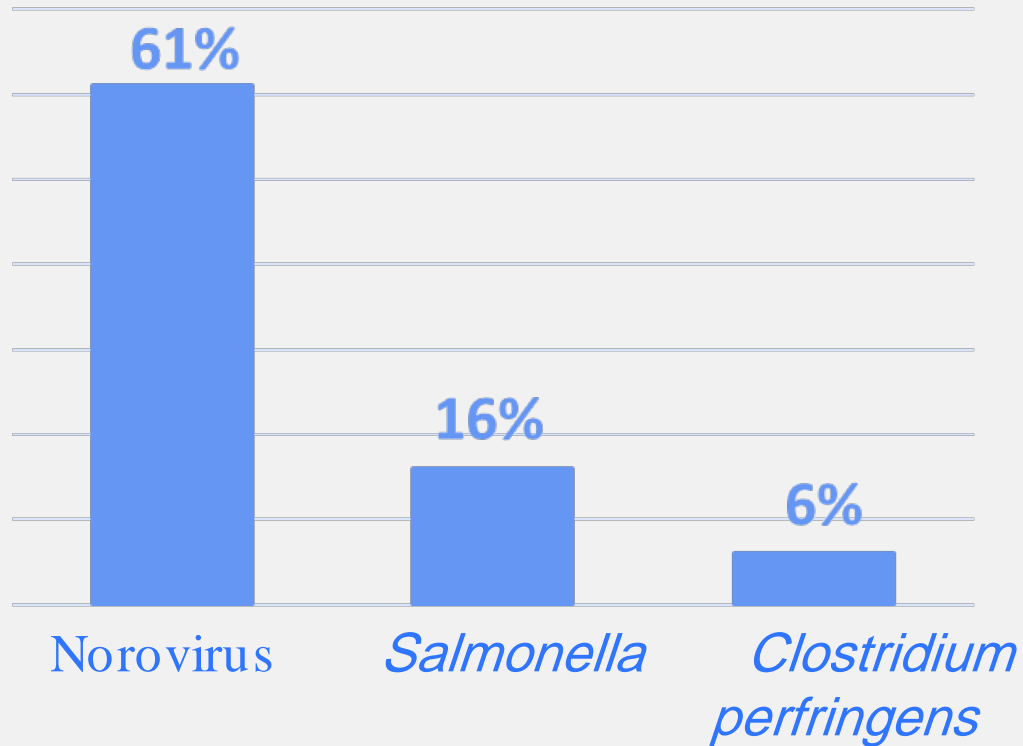
NEARS 2014-2016 data

- **Outbreak characteristics**
- **Outbreak establishment characteristics**
- **Outbreak investigation characteristics**

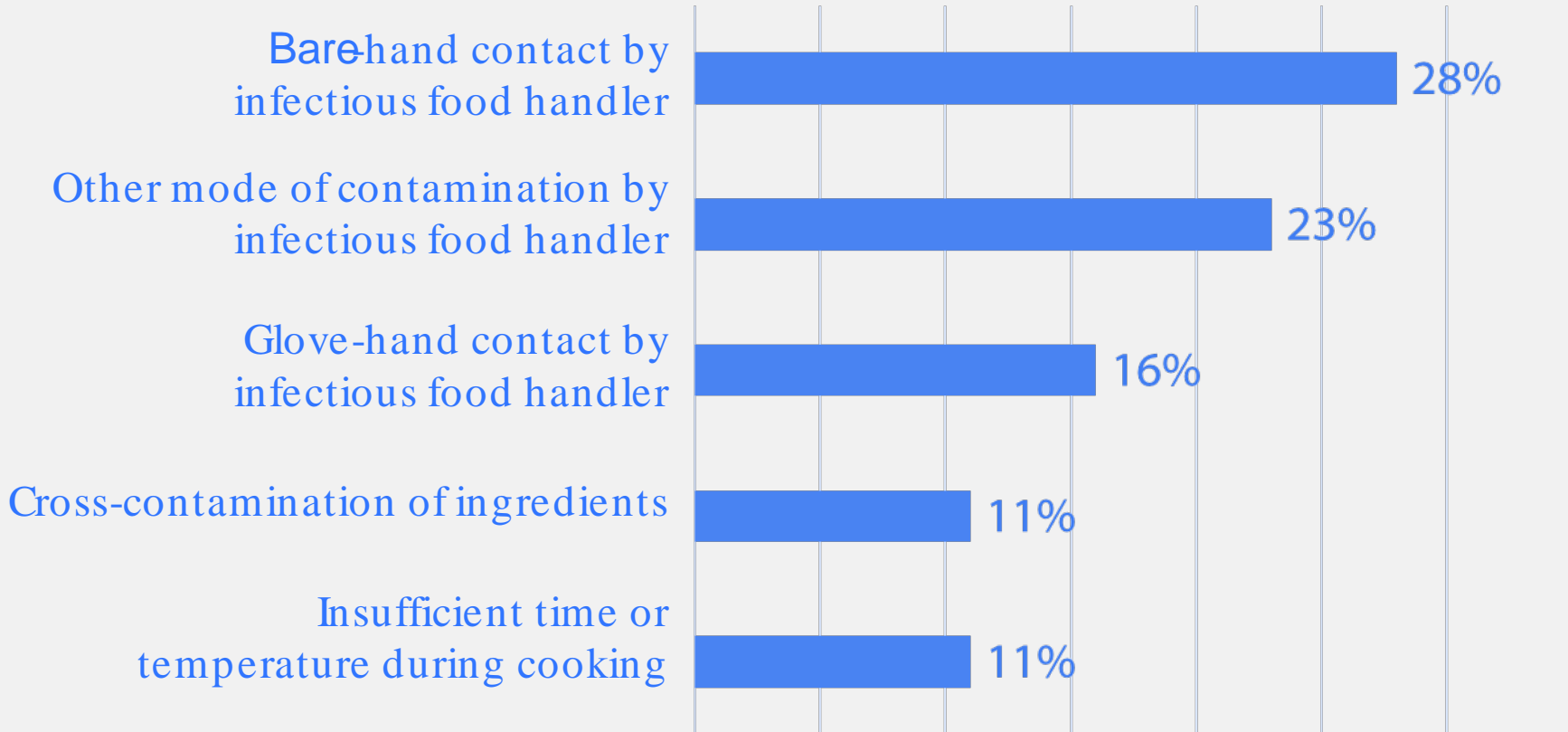
NEARS outbreaks



NEARS outbreaks



Contributing factors to NEARS outbreaks



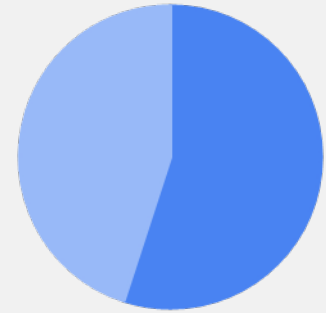
NEARS outbreak establishments



73%
independently
owned

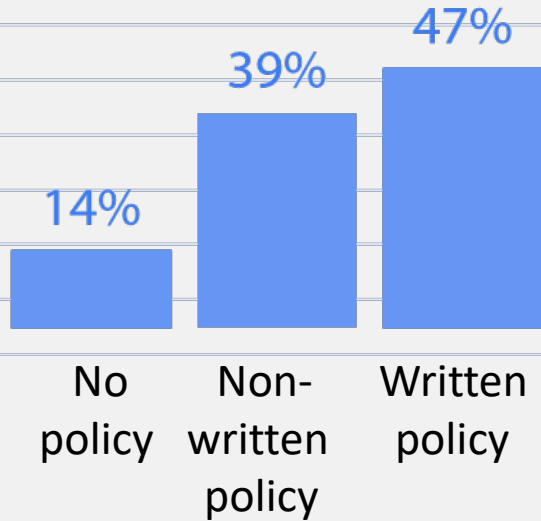


87%
complex food
preparation

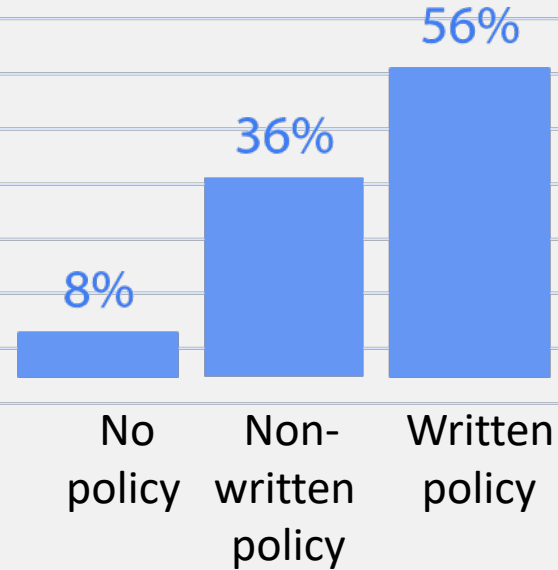


55%
serve ≤ 200
meals daily

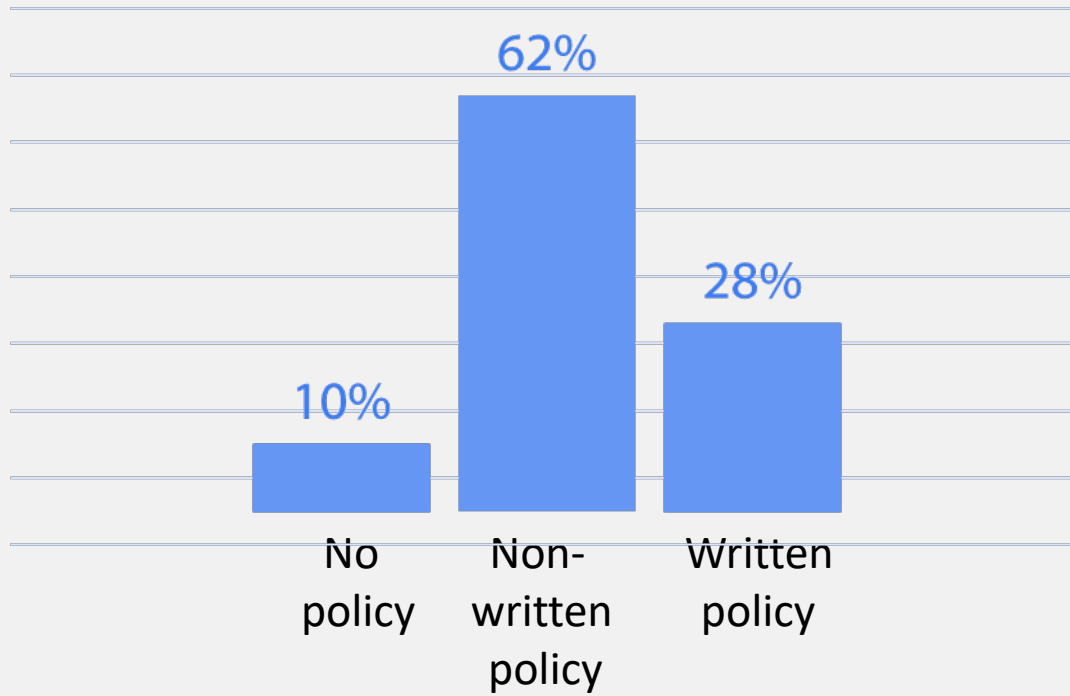
Policy to restrict or exclude ill workers



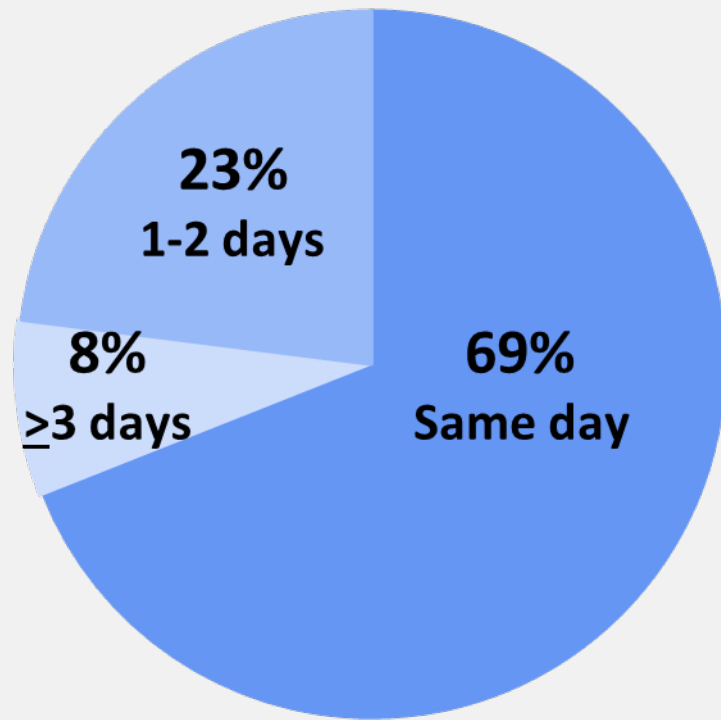
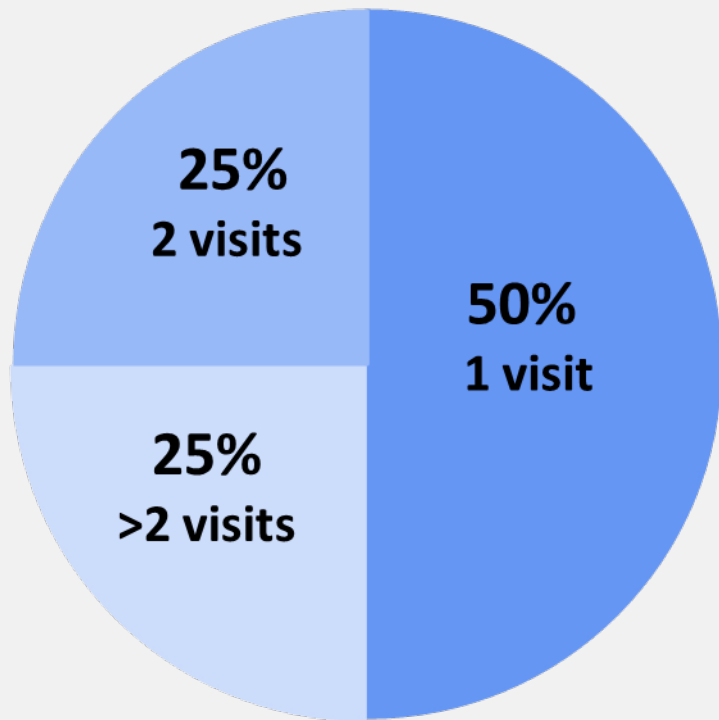
Policy for workers to tell managers when they are ill



Policy requiring disposable glove use



NEARS outbreak investigations



Recap

NEARS collects data from the environmental health component of outbreak investigations to:

- ✓ Emphasize environmental causes of outbreaks
- ✓ Target prevention efforts

These data can be analyzed to identify and understand:

- Establishment types vulnerable to outbreaks
- Contributing factors to outbreaks
- Gaps in establishment policies and practices
- Gaps in investigation practices

Future research

- **What restaurant characteristics are associated with outbreak occurrence?**
 - Compare outbreak to non-outbreak restaurants
- **What restaurant characteristics are associated with outbreak size?**
 - Compare small to large outbreaks
- **What restaurant characteristics are associated with outbreak type (bacterial vs. viral)?**
 - Compare bacterial to viral outbreaks

More info

NEARS

- General info: www.cdc.gov/nceh/nears/index.htm
- Recent pub: www.cdc.gov/nceh/ehs/nears/publications.htm

CDC's Environmental Assessment Training

- <https://www.cdc.gov/nceh/ehs/elearn/eats/index.html>

Thank you

For more information, contact NCEH
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

