



Food Safety and Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

New Era of Smarter Food Safety: Using a Science-based Approach to Reimagine Food Safety

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New Era of Smarter Food Safety: Using a science-based approach to reimagine food safety education

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Consumer Research at FDA

- FDA's consumer education is science-based
- Social science research methods are used to inform and assess our food safety messages and materials for consumers

FOOD SAFETY
For Pregnant Women, Their Unborn Babies, and Children Under Five

CANNING TIPS
Home canning is an excellent way to store and preserve produce and other foods. But it can be risky—and even deadly—if it's not done correctly. Many home canners are not aware that improperly canned food can cause botulism, a rare but extremely serious form of food poisoning that can lead to paralysis and even death.

The following are tips on how to safely and properly can your produce, so you can protect yourself and your family.

FOOD SAFETY
For Older Adults and People with Cancer, Diabetes, HIV/AIDS, Organ Transplants, and Autoimmune Diseases

FOOD FACTS
Preventing Listeria Infections: What You Need to Know

The Risk
Certain foods – including ready-to-eat refrigerated foods, unpasteurized (raw) milk, and foods made with unpasteurized milk – often may be contaminated with *Listeria monocytogenes* (L.M.), the third leading cause of death from food poisoning. These foodborne bacteria can grow at refrigerator temperatures and can cause an illness that in most healthy people is unpleasant but not serious. But in people who are at high risk, L.M. can cause an illness called listeriosis which can be severe and even lead to death. The people at high risk include pregnant women and their unborn babies, newborns, older adults, and other persons with weakened immune systems, such as those with HIV/AIDS, cancer, diabetes or kidney disease, and transplant patients.

While a pregnant woman may have only a mild, flu-like illness, or may not feel sick at all, listeriosis can lead to miscarriage, death of the unborn baby, a low-birth weight infant, health problems for the newborn, or even infant death. That's why reducing risks from *Listeria* is so important.

How to Reduce Your Risk from Listeria: 3 Easy Steps
There are three very simple things you can do to help prevent illness from *Listeria*:

- 1. Chill at the Right Temperature:** The right temperatures slow the growth of *Listeria*. Put a refrigerator thermometer in the refrigerator and adjust the refrigerator temperature control, if necessary. Put a second thermometer in the freezer. Your refrigerator should register at 40°F (4°C) or below and your freezer at 0°F (-18°C).
- 2. Use Ready-to-Eat Foods Quickly!** Use ready-to-eat, refrigerated foods by the Use-by date on the package. The longer they're stored in the refrigerator, the more chance *Listeria* has to grow.
- 3. Keep the Refrigerator Clean.** Clean your refrigerator regularly. Wipe up spills immediately. This is particularly important, so *Listeria* doesn't have a place to grow and then spread to other foods. Clean the inside walls and shelves with hot water and a mild liquid dishwashing detergent. Rinse, then dry with a clean cloth or paper towel.

March 2011

FDA's Science-Based Approach



Assess

Understand what consumers know, believe, and do



Develop

Develop and test messages with consumers



Disseminate

Disseminate resources through various channels



Evaluate

Monitor knowledge, attitudes, and behavior

Using Research to Inform Our Messages: Produce Safety

- FDA Food Safety Survey identified a gap in self-reported consumer behavior regarding washing produce, specifically hard-rind vegetables
- FSIS observational research identified similar gaps in consumer behavior
- Worked with federal agency partners to develop clear, consistent messages
- Intend to explore new technologies and platforms to deliver these messages



Using Behavioral Science Principles to Inform Our Messages

- Research in behavioral science shows narrative and storytelling can be more persuasive than facts and statistics and can increase comprehension and engagement
- FDA worked with consumers whose lives had been impacted by foodborne illness to tell their stories and reinforce the importance of food safety



Food Safety Culture

1. Promote food safety **throughout the food system**
2. Further promote food safety **throughout the agency**
3. Develop and promote smarter food safety **consumer education campaign**



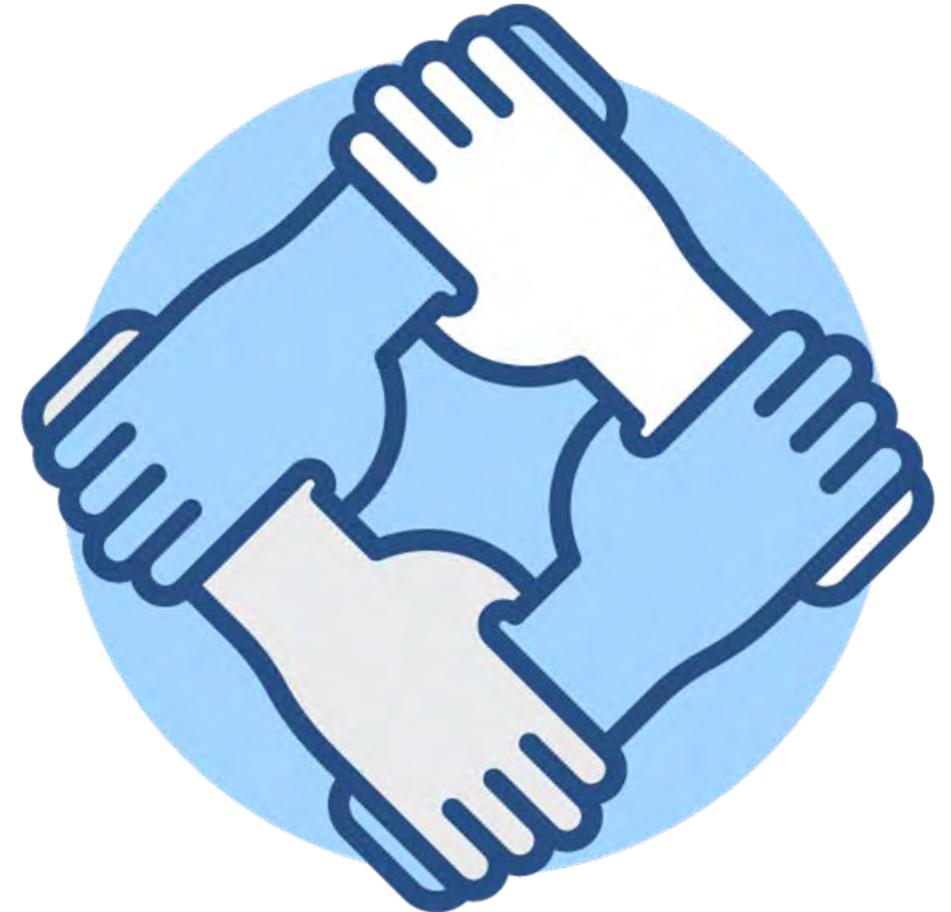
Smarter Food Safety at Home

- Use our science-based approach to bring smarter food safety messages to consumers
- Assess existing food safety messages and food safety research to determine what our foundational message is for consumers
- Update current consumer food safety messages based on the latest science, including behavioral science



Collaboration

- Engage new partners in a broad coalition to promote food safety culture
- Long history of working together with federal agencies and private organizations on food safety research and science-based food safety education for consumers



For More Information

New Era of Smarter Food Safety

www.fda.gov/food/new-era-smarter-food-safety

- Subscribe to updates
www.fda.gov/food/new-era-smarter-food-safety#subscribe
- Contact us
smarterfoodsafety@fda.hhs.gov



Federal Food Safety Information

<https://www.foodsafety.gov/>



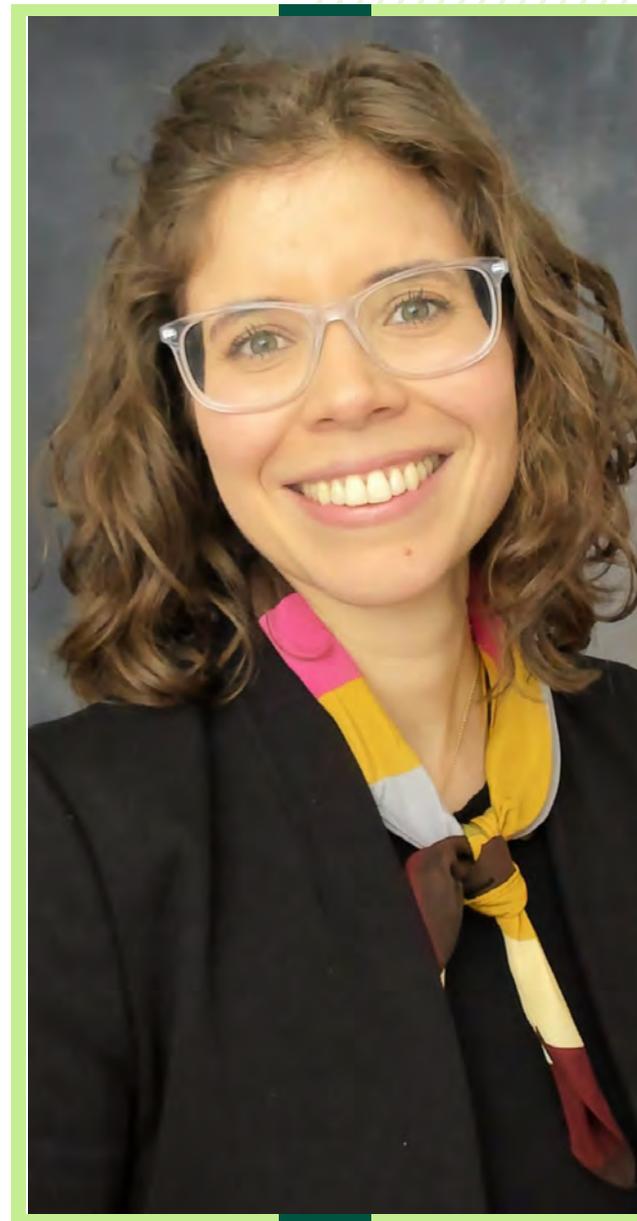


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Application of Social and Behavioral Sciences to Understanding Community Handwashing and Hand Sanitizing Behavior During the COVID-19 Pandemic

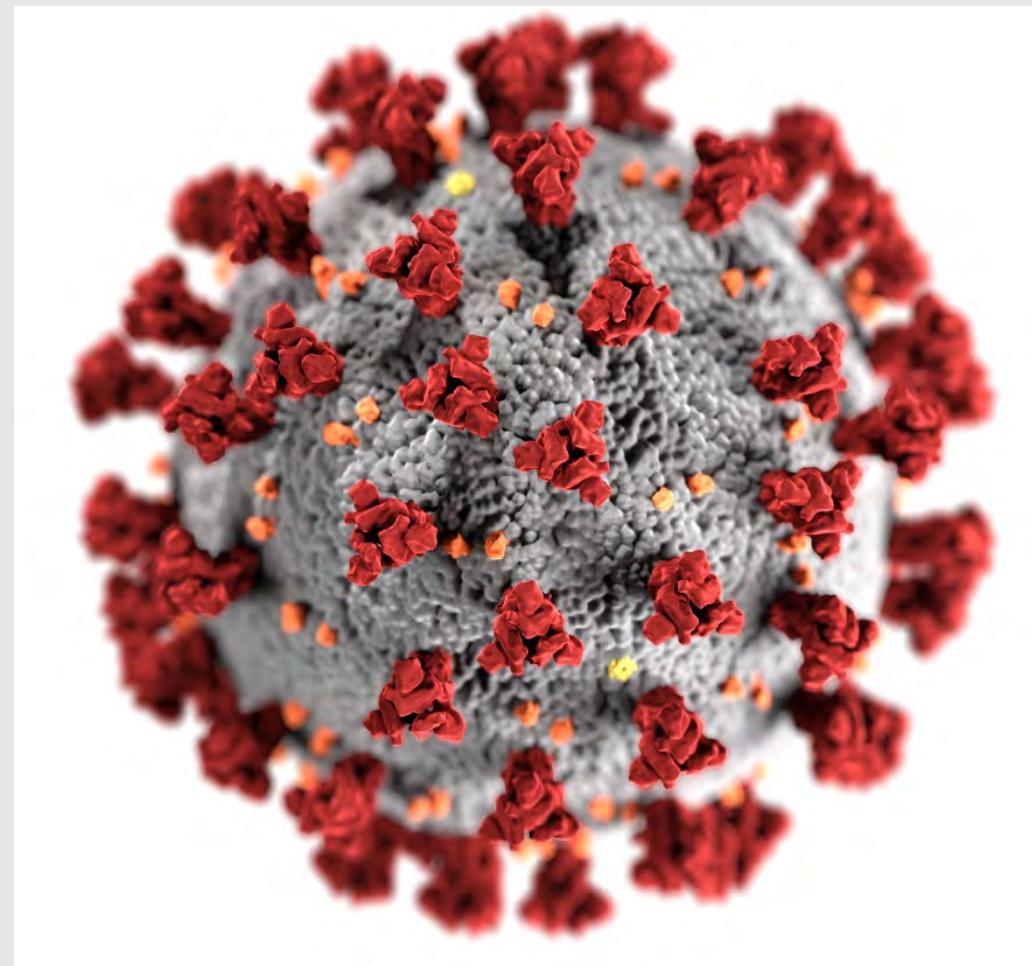
Dr. Amanda Garcia-Williams

Behavioral Scientist, Waterborne Disease Prevention Branch
Division of Foodborne, Waterborne
and Environmental Diseases
Centers for Disease Control and Prevention



Application of social and behavioral sciences to understanding community handwashing and hand sanitizing behavior during the COVID-19 pandemic

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Behavioral Scientist
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Division of Foodborne, Waterborne, and Environmental Diseases
October 19, 2020



cdc.gov/coronavirus



Prevention in Community Settings

- Cover mouth and nose with a mask when around others
- Put at least 6 feet of distance between yourself and people who don't live in your household
- Wash hands often with soap and water for at least 20 seconds
 - If soap and water are not available, use a hand sanitizer that contains at least 60% alcohol
- Participate in case investigation and contact tracing
- Cover coughs and sneezes using a tissue or the inside of the elbow
- Clean and disinfect frequently touched surfaces daily



Prevention in Community Settings

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Community Hand Hygiene

- CDC promoted handwashing and hand sanitizing behavior before the COVID-19 pandemic many topics, such as:
 - Flu prevention
 - Enteric disease prevention



<https://www.cdc.gov/flu/prevent/prevention.htm>

<https://www.cdc.gov/handwashing/index.html>

Community Hand Hygiene Behaviors

- During COVID-19 pandemic emerging questions include:
 - How to encourage and promote community hand hygiene behavior
 - How to integrate hand hygiene behavior into a routine healthy habit
- Social and behavioral science methods and approaches can help answer these questions

Agenda

- Behavioral epidemiology of community hand hygiene behavior
 - Application of epidemiological approaches to understanding human behavior
- Trends and characteristics of hand hygiene-related public inquiries received via CDC-Info (1-800-CDC-Info)
- Synthesis of evidence-based findings on community hand hygiene behavior
- Implications

Behavioral Epidemiology of Hand Hygiene Behavior



Behavioral Epidemiology of Handwashing

- Recent published survey studies in Australia, United States, and United Kingdom found between 76-86% of survey respondents self-report frequent handwashing
 - Pre-pandemic self-reported handwashing behavior after going to the bathroom estimated at 87%
- CDC survey study conducted in March 2020 among US adults found 93% of survey respondents self-reported frequent handwashing to prevent coronavirus

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2767261>

<https://www.bradleycorp.com/handwashing/healthy-handwashing-2019>

<https://pubmed.ncbi.nlm.nih.gov/32574184/>

<https://www.medrxiv.org/content/10.1101/2020.04.25.20079996v1>

<https://www.medrxiv.org/content/10.1101/2020.04.01.20050039v1>

<https://www.openicpsr.org/openicpsr/project/120312/version/V1/view;jsessionid=F1B16DA680BAEE824D69B7E4BACF0C86>

<https://www.researchsquare.com/article/rs-62989/v1>

Behavioral Epidemiology of Handwashing

- **Polling data have suggested decreases in self-reported handwashing behavior over time**
 - Between April and May 2020, decrease in self-reported handwashing (63% to 52%) after going to the grocery store
 - Between April and May 2020 decrease in handwashing or using disinfectant more frequently (75% to 68%)

Behavioral Epidemiology of Handwashing

- **Patterns of Behavior**
 - Men and young adults have lowest levels of self-reported handwashing compliance
- **Knowledge**
 - Survey studies conducted by CDC between April and June, 85% of respondents had heard that washing hands was important to protect against coronavirus
- **Attitudes**
 - Survey study conducted in Australia found over 90% of survey respondents believed handwashing with soap and water was effective for COVID-19 prevention
- **Motivators**
 - Risk perceptions strongly correlated with self-reported handwashing behavior in study conducted across 10 countries

<https://pubmed.ncbi.nlm.nih.gov/32427341/>

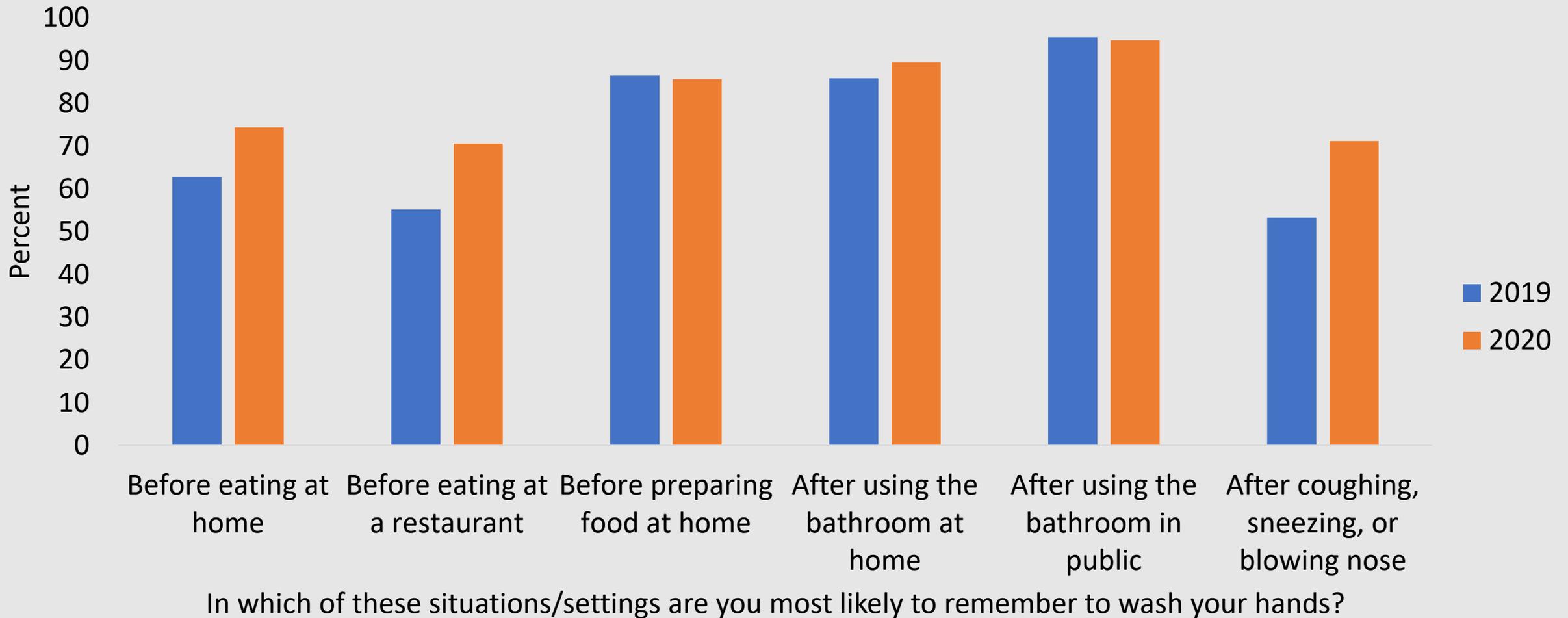
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<https://www.researchsquare.com/article/rs-62989/v1>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0235112>

<https://www.tandfonline.com/doi/full/10.1080/13669877.2020.1758193>

Behavioral Epidemiology of Handwashing Behavior



Behavioral Epidemiology of Hand Sanitizer Use

- Survey studies conducted in March 2020 in Australia and United Kingdom found between 56-60% of survey respondents self-reported frequent hand sanitizer use
- CDC survey study conducted in March 2020 among US adults found 60% of survey respondents self-reported carrying alcohol-based hand sanitizer to prevent coronavirus

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2767261>

<https://pubmed.ncbi.nlm.nih.gov/32574184/>

<https://www.medrxiv.org/content/10.1101/2020.04.25.20079996v1>

<https://www.medrxiv.org/content/10.1101/2020.04.01.20050039v1>

<https://www.researchsquare.com/article/rs-62989/v1>

Behavioral Epidemiology of Hand Sanitizer Use

- **Polling data have suggested decreases in hand sanitizing behavior over time**
 - Between April and May 2020, decrease in self-reported hand sanitizing use (47% to 38%) after going to the grocery store

Behavioral Epidemiology of Hand Sanitizer Use

- **Patterns of Behavior**
 - Little is known
- **Knowledge**
 - Survey studies conducted by CDC between April and June 2020, between 73-79% of respondents had heard that using hand sanitizer was important to protect against coronavirus
- **Attitudes**
 - Survey study conducted in Australia in March 2020 found about 80% of survey respondents believed using hand sanitizer was effective for COVID-19 prevention
- **Motivators**
 - Little is known

Trends and Characteristics of Hand Hygiene-Related Public Inquiries ~~to CDC from the Public~~ from CDC-Info (1-800-CDC-Info)



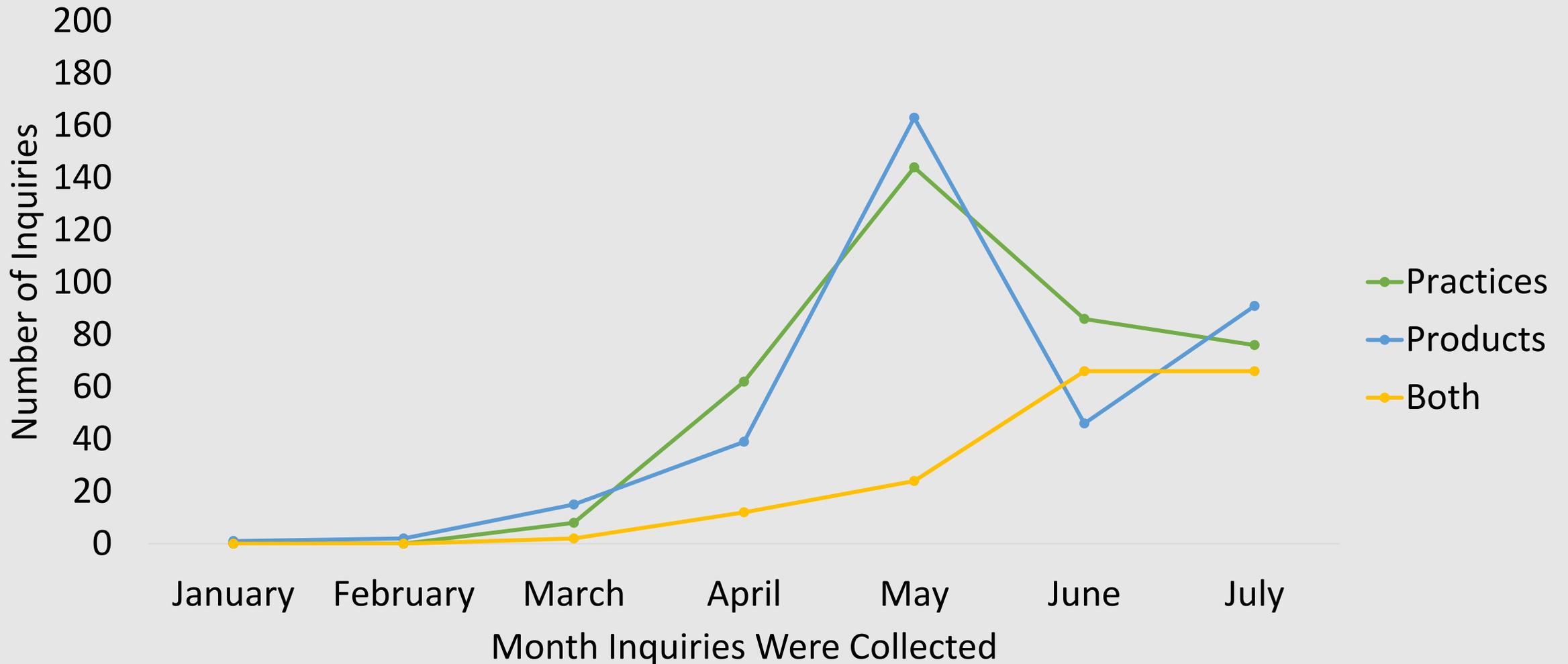
Public Inquiries to CDC About Hand Hygiene

- Public inquiries related to coronavirus made to CDC are inventoried as part of a system called CDC-Info
 - Between January and July 2020, CDC received over 260,000 coronavirus related inquiries
- Narrative search using SAS and hand coding to identify WASH-related inquiries
 - Between January and July 2020, CDC received 7,748 WASH-related coronavirus inquiries
 - Of those 903 were related to handwashing or hand sanitizing in non-healthcare or non-clinical settings

Main Types of Inquiries

Hand Hygiene Practices (n=376)	Related to how to properly clean hands or concerns or questions about practices being used.
Hand Hygiene Products (n= 357)	Related to type, effectiveness and/or safety of hand hygiene products, about access to hand hygiene products, and making hand hygiene products.
Both (n=170)	Any inquiry that could be classified as both hand hygiene practices and products. Such examples included inquiries considering the use and effects of certain hand hygiene products as well as availability.

Trends in Inquiry Type



Synthesis



Synthesis

- Room for improvement in hand hygiene behavior
- Patterns of behavior are similar to other respiratory pandemics, and to non-outbreak handwashing data
 - Men and young adults have lower levels of self-reported hand hygiene behavior
- Although hand hygiene recommendations are not new, the public continues to have questions about how to engage in hand hygiene, and what products to use



Implications



Implications

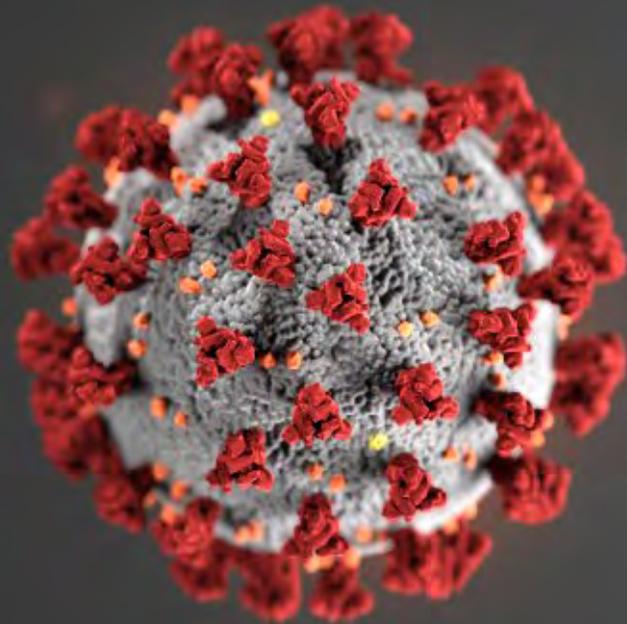
- Gaps in understanding include limited studies examining motivators of hand hygiene behavior, especially among low compliance groups, to inform behavior change strategies
- Gaps in research characterizing hand sanitizing behavior and patterns of behavior among different populations
- Limited work focused on developing and evaluating effective interventions to promote community hand hygiene behavior
- Lack of polling data over time tracking changes in hand hygiene behaviors overall, and among certain populations
- Outreach may need to go back to basics and continue to provide information on how to engage in hand hygiene, when to do it, and what products to use



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For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

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.





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BREAK





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Industry and Consumer Education

Carletta Ooton

Vice President

Product Assurance, Risk and Security

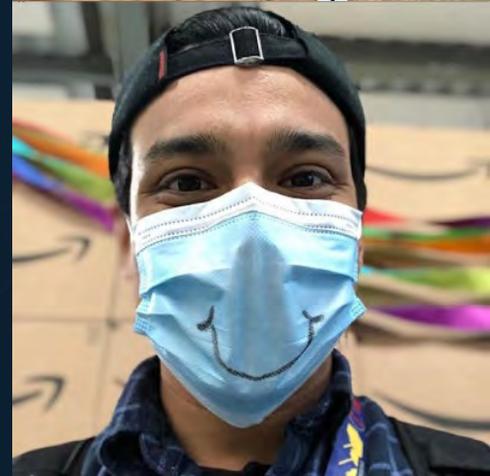
Amazon





Industry and Consumer Education

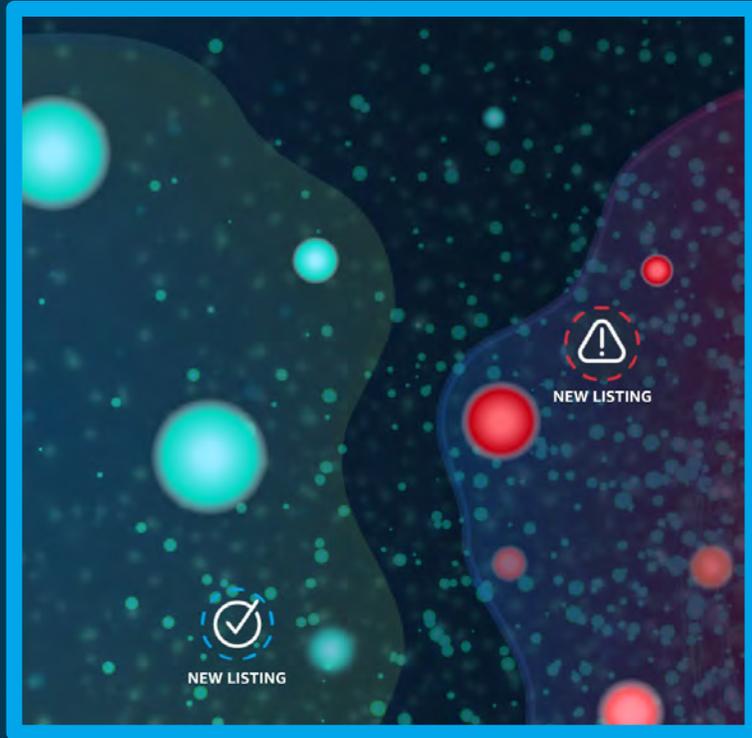
Carletta Ooton Vice President
Product Assurance, Risk & Security (PARS)



01 Amazon & Food



02 Technology To Impact Customer Safety and Compliance



Predictive Controls



Reactive Controls

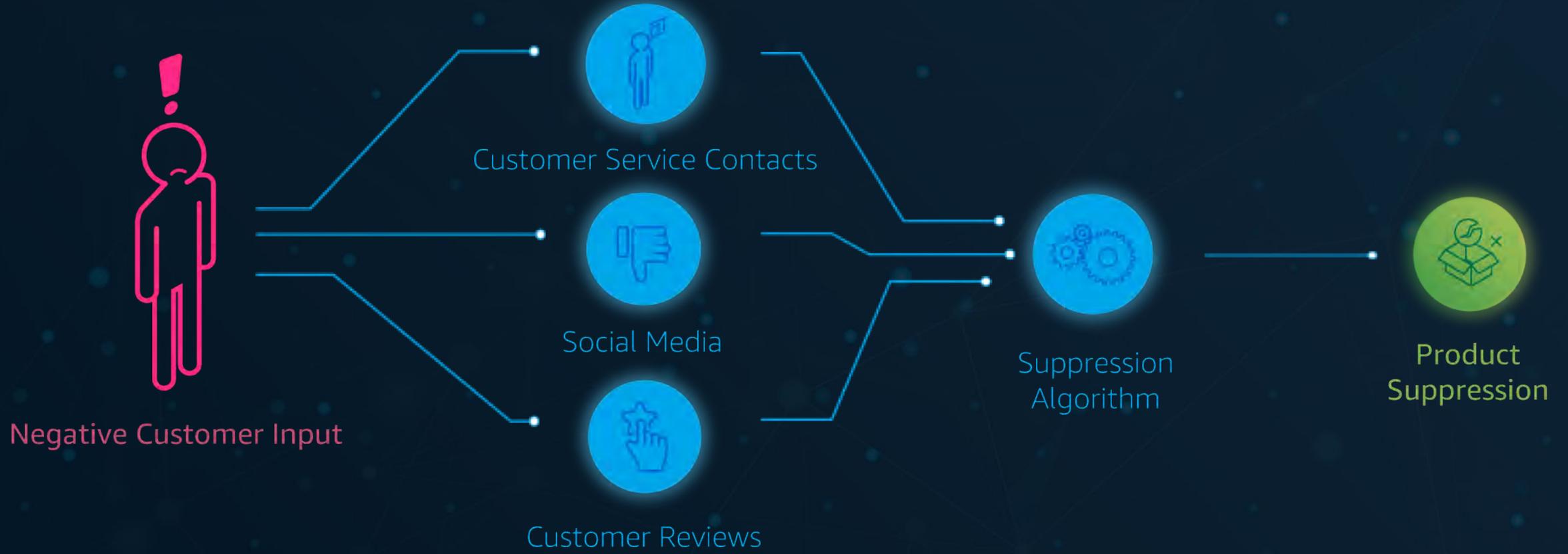


Product and Process Controls

03 Predictive Controls



04 Reactive Controls



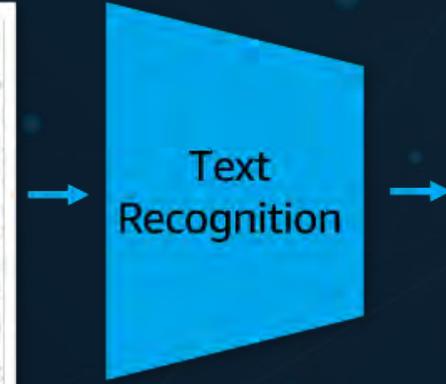
05 Product and Process Controls



Food Label Image



Predicted text locations



Predicted text (transcription)



Allergen Detected:
Milk

06 Workflow Compliance Prompts

Contextual guidance 5.1 (Frozen, Meat, chemical)

Order Level tip



Order preparation



Get coolers for packing chilled or frozen items. Required for 3 items in this order.

Got it

Unable to follow instructions

Item Level tip - Raw meat



Packing guidance



Items like raw meat, seafood may leak. Use separate produce bag to wrap the items before packing.



Use coolers for packing chilled or frozen items.

Got it

Unable to follow instructions

Item Level tip - Chemical



Packing guidance



Keep household chemicals in separate produce bags. It may lead to contamination.

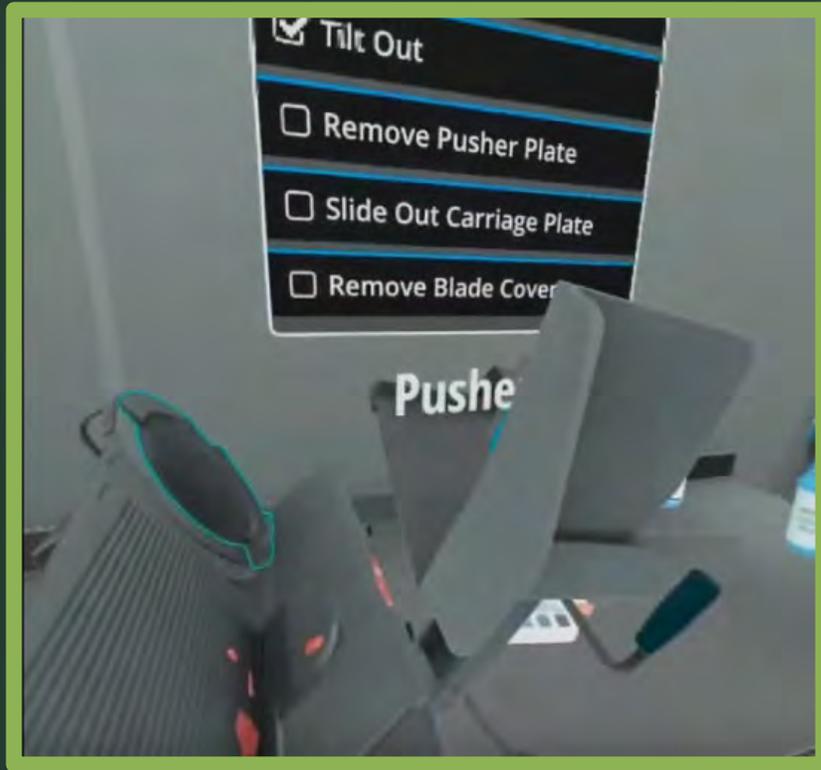
Got it

Unable to follow instructions

HEX #3C9D17

07 Novel Training Methods

Virtual Reality



Deli Slicer Cleaning

Gamification

UNDERCOOKED

- Earn points for mastering missions!
- See if you can top the leaderboard!
- Reinforce your Food Safety training!

Tap to play!

The image shows a gamified training interface for a deli workflow. At the top, the word "UNDERCOOKED" is written in large, bold, white letters. Below this is a 3D rendering of a deli kitchen environment, including a counter, shelves, and a small orange character. Below the rendering is a list of three bullet points: "- Earn points for mastering missions!", "- See if you can top the leaderboard!", and "- Reinforce your Food Safety training!". At the bottom, the text "Tap to play!" is written in large, bold, white letters.

Deli Workflow

08 Current and Forward-Looking Customer Connections



Thank You

Carletta Ooton Vice President
Product Assurance, Risk & Security (PARS)

