

# Food Safety and Risk Analysis

RTI International's food safety experts are at the forefront of research—focusing on the commodities, hazards, and processes that pose the greatest food safety risks from farm to fork. We offer a full range of technical, analytical, and logistical support services in the area of food safety—including application and methods/guidance development, data management, systems analysis, geographic information systems (GIS), statistics, modeling, consumer behavior, and economics.

## More Information

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## Overview

RTI is a recognized leader in food safety research and risk analysis, with more than 50 years of experience collaborating with domestic and international partners—including academic, federal, and private organizations.

We recognize the complexity of modern food supply networks, and we take a systems approach to food safety solutions. Our teams are composed of experts from diverse areas—including risk assessment, food science, environmental science, epidemiology, laboratory analytics, data science, economics, behavioral science, and policy research.

We have strong research portfolios in food, water, and the environment. Our global network of regional offices and external partnerships provides us with the ability to develop innovative solutions for emerging food markets and address challenges that cross borders.

## Evidence-Based Decision Making

We have conducted several food safety risk assessments and have worked with the U.S. Food and Drug Administration (FDA) to support the implementation of the Food Safety Modernization Act. We developed a broadly applicable modeling framework to assess potential risks from microbial agents in foods and the environment, evaluating the efficacy of food safety policies and quantifying the relative reductions in risk associated with proposed interventions. Our food safety team has also developed and conducted training in risk ranking and evidence-based approaches for the U.S. government as well as low- and middle-income countries using a combination of lectures and hands-on exercises to engage and motivate participants.

## Food Safety Analytics

Our team has developed several tools to aggregate and visualize comprehensive data on food safety metrics, benchmarking, and spatial-temporal trends in U.S. establishments. One dashboard includes data and analyses on the occurrence of pathogenic bacteria in U.S. establishments that produce raw, not-ready-to-eat turkey products for human consumption. Another dashboard illustrates restaurant violations by risk factor and zip code to highlight the occurrence of restaurant practices and

human behaviors that contribute to illnesses and outbreaks in retail food establishments. We also are developing customized software portals to enable food producers and industry members to safely communicate and share data within the industry.

## Virtual Reality

RTI recently built a food safety training platform using 360-degree video to immerse the user in an environment to progress through a food preparation scenario. The platform includes data visualization tools, which allow managers to track scores by individual, by class, and by topic area. There are numerous applications for this type of training (such as facility inspections and training on equipment), and the platform is adaptable for many types of training modules.

## Consumer Research and Stakeholder Engagement

We have conducted numerous stakeholder surveys and focus groups to inform policy development and evaluate regulatory impact of food safety initiatives—including pathogen awareness and prevention, role of health care providers, safe handling practices for at-risk foods, and impact of third-party audits.

## Economic Modeling and Impact Evaluation

For more than 2 decades, we have analyzed and evaluated the economic impact of policies and regulations in food and agriculture to improve health and well-being. Our experience includes estimating industry costs of implementing potential food safety defense practices, revising labels to comply with regulation and reformulating foods in response to regulation, simulating changes in trade flows and prices due to product bans and regulatory requirements, and other analyses related to economic impacts of various food processing technologies.

We have conducted several policy impact evaluations related to meat and poultry—including illness reduction, inspection effectiveness and efficiency, consumer confidence in safety, and food safety production practices.

## Emerging Risks

In addition to research focused on traditional food safety risks—such as microbial pathogens and chemical residues—our team also has expertise in understanding emerging risks related to the use of advanced technologies and materials in the farm-to-fork continuum. Our team is at the forefront of novel analytical methods to help track and control emerging risks, and assess the impact of new technologies. We support antimicrobial resistance (AMR) surveillance and control in the food supply chain by developing novel data management and visualization platforms to integrate multiple data

sources—including geographical, population, and whole genome sequencing data—in order to enable state-of-the-science health risk models and complex factor analyses. We are involved in research on AMR entry points in poultry production.

## Other Areas of Experience

<b>Aquaculture</b>	Development of generic food defense plans and guidelines, cost-benefit analysis, program evaluation, consumer surveys
<b>Animal manure and other soil amendments</b>	Decision support related to agricultural applications, risk analysis, release, fate, and transport throughout the food chain; exposure and risk for chemical and microbial contaminants
<b>Microbial water quality</b>	Development of guidelines, risk communication, network review of microbial water quality monitoring activities, ongoing technical support
<b>Microsimulations and synthetic populations</b>	Creation of synthetic populations for use in agent-based models

## Project Highlights

### FDA

- Decision Analysis Support for Implementing a Risk-Informed Decision Making System in the FDA Foods and Veterinary Medicine Program
- Develop and Validate Risk Ranking Model (Version 3) to Inform RRM-PT List
- Total Diet Study
- Enhancement and Validation of Produce Risk Assessment Model
- Enhancement of Decision Analysis Model
- Cross-Contamination Studies to Quantify Pathogen Transfer and Redistribution on Produce During Processing

### U.S. Department of Agriculture

- Food Safety Consumer Research Project (Food Safety and Inspection Service [FSIS])
- Modernizing Safe Handling and Ready-to-Eat/Not-Ready-to-Eat Labeling Instructions (FSIS)
- Development of New Industry Surveys—Meat Slaughter (FSIS)
- 5-Year Assessment of Agriculture and Food Research Initiative—Food Safety Challenge Area (National Institute of Food and Agriculture)

### Other Funded Research

- Food and Agriculture Organization Risk Ranking Guidance
- Evaluation of Microbiological Criteria for Salmonella in Chicken Parts (Pew, Industry)

RTI International is an independent, nonprofit research institute dedicated to improving the human condition. Clients rely on us to answer questions that demand an objective and multidisciplinary approach—one that integrates expertise across the social and laboratory sciences, engineering, and international development. We believe in the promise of science, and we are inspired every day to deliver on that promise for the good of people, communities, and businesses around the world. For more information, visit [www.rti.org](http://www.rti.org).

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