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Title: Variation in Food Safety Inspections Based on Local Health

Department and Food Service Establishment Structural, Social, and
Demographic Characteristics

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Variation in Food Safety Inspections Based on Local Health Department and Food Service Establishment Structural, Social, and Demographic Characteristics

A Direct Observation of Local Public Health Study

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Learning Objectives

1. Describe the relationship between LHD and jurisdictional characteristics with the outcome of food safety inspections.
2. Discuss the influence of Food Service Establishment characteristics, including the surrounding environment, on the outcome of food safety inspections.
3. Describe the merits and challenges associated with the direct observation methodology in public health practice.



Direct Observation of Local Public Health

- 🌳 **Purpose:** Using the Foodborne Illness as a public health archetype, the Direct Observation of Local Public Health (DOLPH) study seeks to illuminate the structure, process, and outcome of the local health department (LHD) role in Foodborne Illness prevention, investigation, and intervention.



Purpose

- 🌳 To describe variations in food safety inspections based on Local Health Department (LHD) and Food Service Establishment (FSE) structural, social, and demographic characteristics. LHD characteristics include structure, jurisdictional demographics, workforce size, and per capita spending. FSE characteristics include area level poverty, and size and type of establishment.



Winnable Battles

Tobacco



**Nutrition,
Physical Activity,
Obesity and
Food Safety**

**Healthcare-
Associated
Infections**



**Motor
Vehicle
Injuries**

**Teen
Pregnancy**



HIV

Source: <http://www.cdc.gov/winnablebattles/>

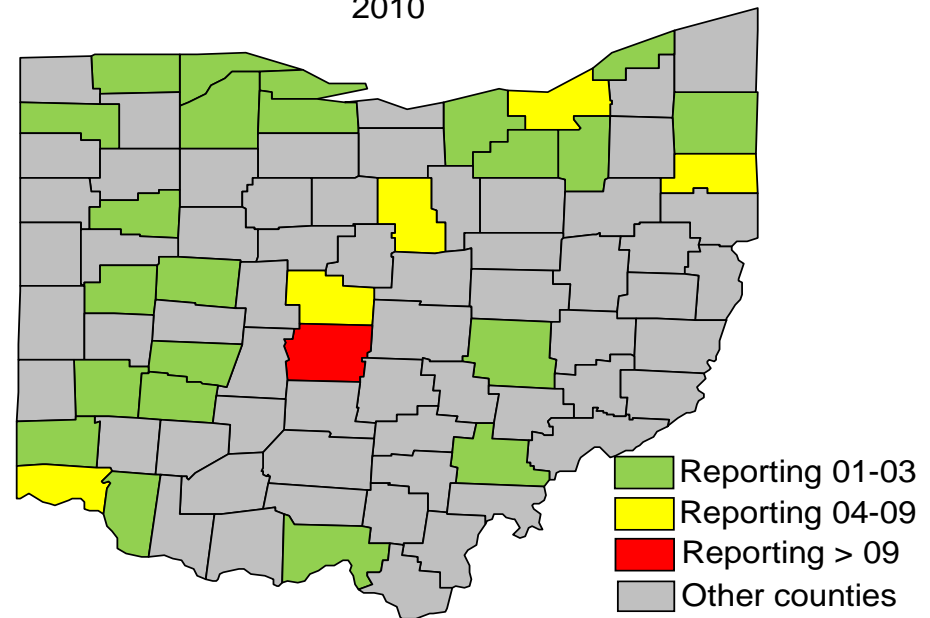


Foodborne Outbreaks

🌿 Statistics

- 67 outbreaks affecting
🌿 911 people in 28 of
🌿 Ohio's 88 counties
- One multi-state
(*E. coli* O145)

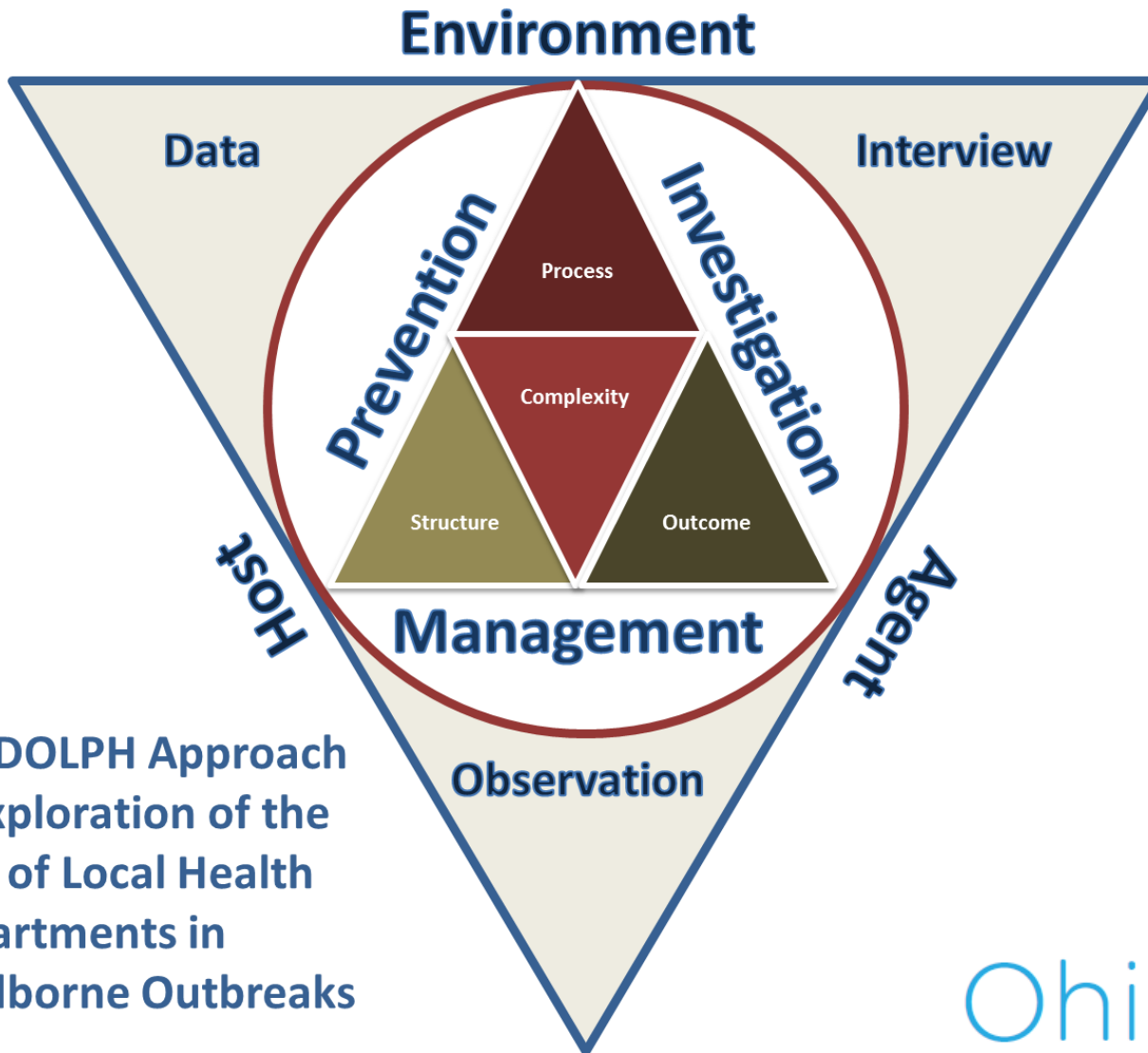
Counties Reporting Foodborne Outbreaks
Ohio Department of Health
2010



Ohio Department of Health

Ohio Department of Health Provisional Data





The DOLPH Approach
to Exploration of the
Role of Local Health
Departments in
Foodborne Outbreaks



Methods

- 🌳 Previously presented
- 🌳 Data integration
 - **Census data**
 - **American Community Survey (ACS) data**
 - Ohio Annual Financial Report
 - LHD data



Methods: DOLPH Scales

- 🌳 PICQRS (PIC Questioning RS); Observational; Alpha= .811
 - Knowledge
 - Judgment
 - Fairness
 - Authority
- 🌳 RS attitude toward PIC (RS Profile); Alpha= .59
 - PICs try to get away with anything to save money
 - PICs dislike inspections
 - PIC are cooperative (reverse code)
 - PIC are cordial (reverse code)

Methods: DOLPH Scales

- 🌳 Job Barriers to Food Safety Inspection (RS Profile); Alpha= .79
 - Competing demands in environmental health
 - Insufficient time to meet expectations
 - Problem relationships health department
 - Problem relationships FSE







Examining area level influence of social determinants of health on FSE inspection

- 🌳 Data from census and ACS entered for the census tract home of each FSE
- 🌳 Examine components of the inspection using t-test and ANOVA
- 🌳 LHD jurisdictional data and the Ohio Annual Financial Report data will also be merged with the data set for further examination

RESULTS



Type of Food Service Establishment

 Private Restaurant	28%
 National franchise	25%
 Fast food	14%
 Local franchise	13%
 Corner store, grocery, drug store, gas station	10%
 Institutional	8.5%

Local Health Departments

🌳 County	29% (45% inspections)
🌳 Combined	34% (41% inspections)
🌳 City	29% (21% inspections)
🌳 <50,000	10% (8% inspections)
🌳 50,000 to 200,000	35% (21% inspections)
🌳 200,000 to 400,000	25% (18% inspections)
🌳 >400,000	30% (53% inspections)

Inspection outcome by jurisdictional size

Jurisdictional Size	Citations* (mean)	Verbal Corrections* (mean)	PIC Thanks (mean)	Technically challenging* (mean)	Inter-personally challenging* (mean)
<50K	2.05	0.87	.91	4.34	4.34
50 to 200K	4.04	1.56	.99	3.59	3.83
201 to 400K	4.01	1.36	.94	3.98	4.11
>400K	3.00	1.83	.88	3.93	4.00

*p< .05



Inspection outcome by jurisdictional size

LHD Type	Citations* (mean)	Verbal Corrections* (mean)	PIC Thanks* (mean)	Technically* challenging (mean)	Inter- personally challenging (mean)
County	2.07	1.91	.87	4.03	4.10
City	3.14	1.07	.91	4.10	4.14
Combined	4.42	1.13	1.00	3.66	3.97

*p< .01



Limiting Factors

 RS perceive limitations in their ability to conduct FSE inspections because of:

- Competing EH demands 69.7%
- Work load too heavy 70.1%
- LHD Relationships 50.0%
- FSE Relationships 39.0%

RS attitude toward PIC

- 🌳 Negative RS attitude toward PIC not related to RS:
 - Age
 - Race
 - Generalist vs specialist
 - Experience
 - Percent time doing FSE
 - Experience with FBO
- 🌳 Males more likely to have negative attitudes (43.8%) than females (19.4%) ($p=0.04$)

Social Determinants of Health

Percent

- Female headed household
- Family below poverty level in past 12 months
- Residential mobility (move within the last year)
- High school or GED
- Households without a vehicle
- Vacant homes

Female Headed Household%

- 🌳 RS use of humor
- 🌳 No shaking hands
- 🌳 Less food safety education during inspection
- 🌳 PIC less engaged
- 🌳 Less improvement planning at check out
- 🌳 Less food safety education at check out
- 🌳 Concerned about future problems
- 🌳 More citations
- 🌳 More critical violations

All $p < .05$



Residential Mobility%

- 🌳 PIC expresses uncertainty
- 🌳 PIC interrupts
- 🌳 RS interrupts
- 🌳 RS Jargon
- 🌳 Fewer questions elicited
- 🌳 Concerned about future problems
- 🌳 More citations

All $p < .05$



Families Below Poverty Level

- Lower RS uncertainty
- RS use of humor
- PIC interrupts
- RS interrupts
- No shaking hands
- Less food safety education during inspection
- Less improvement planning at check out
- Less food safety education at check out
- Fewer questions elicited
- Interpersonally difficult inspection
- Hand on the doorknob syndrome
- More verbal corrections
- More critical violations

All $p < .05$



High School or GED

- 🌳 PIC expresses uncertainty
- 🌳 RS jargon
- 🌳 PIC stalls RS
- 🌳 Less check in time
- 🌳 Less food safety education during inspection
- 🌳 Less advice during inspection
- 🌳 Less improvement planning at check out
- 🌳 Less food safety education at check out
- 🌳 Concerned about future problems
- 🌳 More citations
- 🌳 More critical violations

All $p < .05$



Households without Vehicles

- 🌳 RS use of humor
- 🌳 RS interrupts
- 🌳 Less food safety education during inspection
- 🌳 Less food safety education at check out
- 🌳 Interpersonally difficult inspection
- 🌳 More verbal corrections

All $p < .05$



Vacant Houses

- 🌳 RS use of humor
- 🌳 PIC interrupts
- 🌳 RS interrupts
- 🌳 Less food safety education during inspection
- 🌳 PIC less cooperative
- 🌳 Less food safety education at check out
- 🌳 More verbal corrections

All p < .05



Pertinent Negatives

- 🌳 PIC humor
- 🌳 Heart sink inspections
- 🌳 Observed conflict
- 🌳 Positive feedback
- 🌳 Feedback given negatively
- 🌳 Address by name or title
- 🌳 Introduces self
- 🌳 Technically difficult inspection
- 🌳 RS satisfied with inspection
- 🌳 Check out time
- 🌳 PIC/RS Thank you

All NS



Limitations

- 🌳 Convenience sample
- 🌳 Preliminary analysis
- 🌳 Complex and interrelated data set
- 🌳 Novel methodology for Public Health requires replication
- 🌳 Student observer influence RS actions (reported at 7%)

Strengths

- 🌳 Good inter-rater reliability
- 🌳 Different approach
- 🌳 Detailed data available
- 🌳 Geographic spread
- 🌳 Ability to combine original research with publicly available data
- 🌳 Decreased error variation



Key Findings

- 🌳 Its not just what we do that matters, but how we do what we do
- 🌳 Differences in results based on jurisdictional size and LHD type
- 🌳 Substantial difference in structure, process and outcomes of food safety inspection based on area level social determinants of health of FSE location

Key Findings

- 🌳 More problems in disadvantaged neighborhoods noted but less education
- 🌳 Both PIC and RS behavior is different (and perhaps mutually reinforcing)
- 🌳 Less apparent connection between RS and PIC
- 🌳 Difference present for multiple metrics of disadvantage, most impressive for poverty
- 🌳 Results could be worse (see pertinent negatives)

Conclusion

- 🌳 While RS generally demonstrate outstanding food safety inspection skill technically and interpersonally, there is a meaningful difference in FSE located in disadvantaged neighborhoods
- 🌳 Efforts are needed to enhance RS cultural competence and confront these differences

