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Backyard Chickens – Interest and Risk Awareness among Current and Prospective Owners

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PHO Rounds

Presenter Disclosures

- Katherine Paphitis
 - I do not have a relationship with a for-profit and/or a not-for-profit organization to disclose
- Devon Metcalf
 - I do not have a relationship with a for-profit and/or a not-for-profit organization to disclose

Presentation Overview

- Background on zoonotic diseases transmissible by backyard chickens
- Overview of outbreaks and illnesses associated with exposure to backyard chickens in the United States and Ontario
- Summary of survey and results
- Potential next steps

Learning Objectives

By the end of this session, participants will be able to:

1. List pathogens that are transmissible from backyard chickens to people
2. Describe activities that may increase the risk of pathogen transmission from backyard chickens to their owners
3. Identify misconceptions about pathogens that may be transmitted from backyard chickens to people
4. Consider the potential implications of this study for public health organizations

Poll 1

Which of the following BEST describes you? (pick one)

- I have/had backyard chickens
- I want backyard chickens
- I don't have or want backyard chickens
- I'm undecided – tell me more!
- I know someone who has backyard chickens

Background ^{1,2}

- Chickens are a natural reservoir for zoonotic pathogens
- Many urban municipalities are allowing backyard poultry
- People and their pets may be at risk of zoonotic disease transmission
- Good infection control, food safety and animal husbandry practices can reduce risk



Backyard Chickens

- Backyard chickens are increasing in popularity in urban areas in Ontario
- Flocks and equipment are available for purchase, seasonal or long-term rental
- Information provided by companies typically focuses on animal care and the benefits of raising chickens but usually lack infection prevention strategies
- Awareness of zoonotic infection risks may be low

*Salmonella*¹

- Commonly found in poultry, reptiles, livestock, rodents
- Transmitted via contaminated food/water, animal contact, fecal-oral
- Person to person transmission is possible
- Incubation period: 6-72 hours (usually 12-36 hours)
- Symptoms: diarrhea, headache, abdominal pain, nausea, fever, vomiting
- >2,500 serotypes!
- Numerous serotypes associated with poultry, including *S. Enteritidis*, *S. Typhimurium*, *S. Heidelberg*

Campylobacter sp.²

- Commonly found in poultry and cattle
- Also found in young cats/dogs, pigs, sheep, rodents, birds
- Transmitted via contaminated food/water, undercooked meat, raw milk, animal contact
- Person-to-person transmission is uncommon
- Incubation period: 1-10 days (usually 2-5 days)
- Symptoms: diarrhea, abdominal pain, malaise, nausea, fever, vomiting
- *C. jejuni* responsible for most human illness

***Salmonella* Illness Linked to Backyard Poultry Purchased During COVID-19 in the United States (2021) ³**

- A recent publication by Nichols *et al.* (2021) summarized *Salmonella* outbreaks in the United States linked to backyard poultry in 2020
- In 2020, PulseNet identified 1,722 outbreak-associated human cases of *Salmonella* illnesses linked to backyard poultry
- 12 serotypes: Agona, Anatum, Braenderup, Enteritidis, Hadar, I 4,[5],12:i:-, Infantis, Mbandaka, Muenchen, Newport, Thompson and Typhimurium
- Increase in backyard poultry sales during COVID-19 pandemic

Salmonella Outbreaks Linked to Backyard Poultry⁴

Posted November 10, 2022

This year's investigation of outbreaks linked to backyard poultry is over. However, any backyard poultry can carry *Salmonella* germs that can make you sick. Always take steps to stay healthy around your flock.

Fast Facts

- Illnesses: 1,230
- Hospitalizations: 225
- Deaths: 2
- [States](#): 49, District of Columbia, and Puerto Rico
- Investigation status: Closed



2021 Campylobacter enteritis Data at a Glance⁵

2,203
cases

14.9
rate per 100 000

160
hospitalizations

2
deaths

2021 Salmonellosis Data at a Glance⁶

1,190
cases

8
rate per 100 000

170
hospitalizations

3
deaths

Enteric Illnesses linked to Backyard Poultry in Ontario⁷

In 2022:

- 16.1% of *Campylobacter* cases and 3.4% of *Salmonella* cases reported contact with backyard poultry/their environment
- Serotypes among those *Salmonella* cases who reported contact with backyard poultry were similar to those implicated in outbreaks in the US.
- *S. Enteritidis*, *S. Typhimurium*, *S. ssp.* 4,[5],12:i-, *S. Mbandaka*, *S. Infantis*

iPHIS Case ID #: _____

Public Health Ontario | Santé publique Ontario | **Ontario Salmonellosis Investigation Tool**

Legend i for interview with case! ◆ System-Mandatory ◆ Required ⊘ Personal Health Information

Cover Sheet Note that this page can be autogenerated in iPHIS

<p>Date Printed: __YYYY-MM-DD</p> <p>Bring Forward Date: __YYYY-MM-DD</p> <p>iPHIS Client ID #: _____ Enter number</p> <p>◆ Investigator: _____ Enter name</p> <p>◆ Branch Office: _____ Enter office</p> <p>◆ Reported Date: _____ YYYY-MM-DD</p> <p>◆ Diagnosing Health Unit: _____ Enter health unit</p> <p>◆ Disease: SALMONELLOSIS</p> <p>◆ Is this an outbreak associated case?</p> <p><input type="checkbox"/> Yes, OB # #####-####-####</p> <p><input type="checkbox"/> No, link to OB # 0000-2005-041 in iPHIS</p> <p>Is the client in a high-risk occupation/ environment?</p> <p><input type="checkbox"/> Yes, specify: Specify <input type="checkbox"/> No</p>	<p>⊘ ◆ Client Name: _____ Enter name</p> <p>Alias: _____ Enter alias</p> <p>⊘ ◆ Gender: <u>Select an option</u> ⊘ ◆ Age: <u>Age</u></p> <p>⊘ ◆ DOB: _____ YYYY-MM-DD</p> <p>⊘ Address: _____ Enter address</p> <p style="text-align: center;">Enter address</p> <p>⊘ Tel. 1: #####-####</p> <p>Type: <input type="checkbox"/> Home <input type="checkbox"/> Mobile <input type="checkbox"/> Work <input type="checkbox"/> Other, <u>specify</u></p> <p>⊘ Tel. 2: #####-####</p> <p>Type: <input type="checkbox"/> Home <input type="checkbox"/> Mobile <input type="checkbox"/> Work <input type="checkbox"/> Other, <u>specify</u></p> <p>⊘ Email 1: _____ Enter email address</p> <p>⊘ Email 2: _____ Enter email address</p>
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Source: Ontario. Ministry of Health and Long-Term Care. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King's Printer for Ontario; 2023 [data extracted 2023 May 18].

Highly Pathogenic Avian Influenza (HPAI)

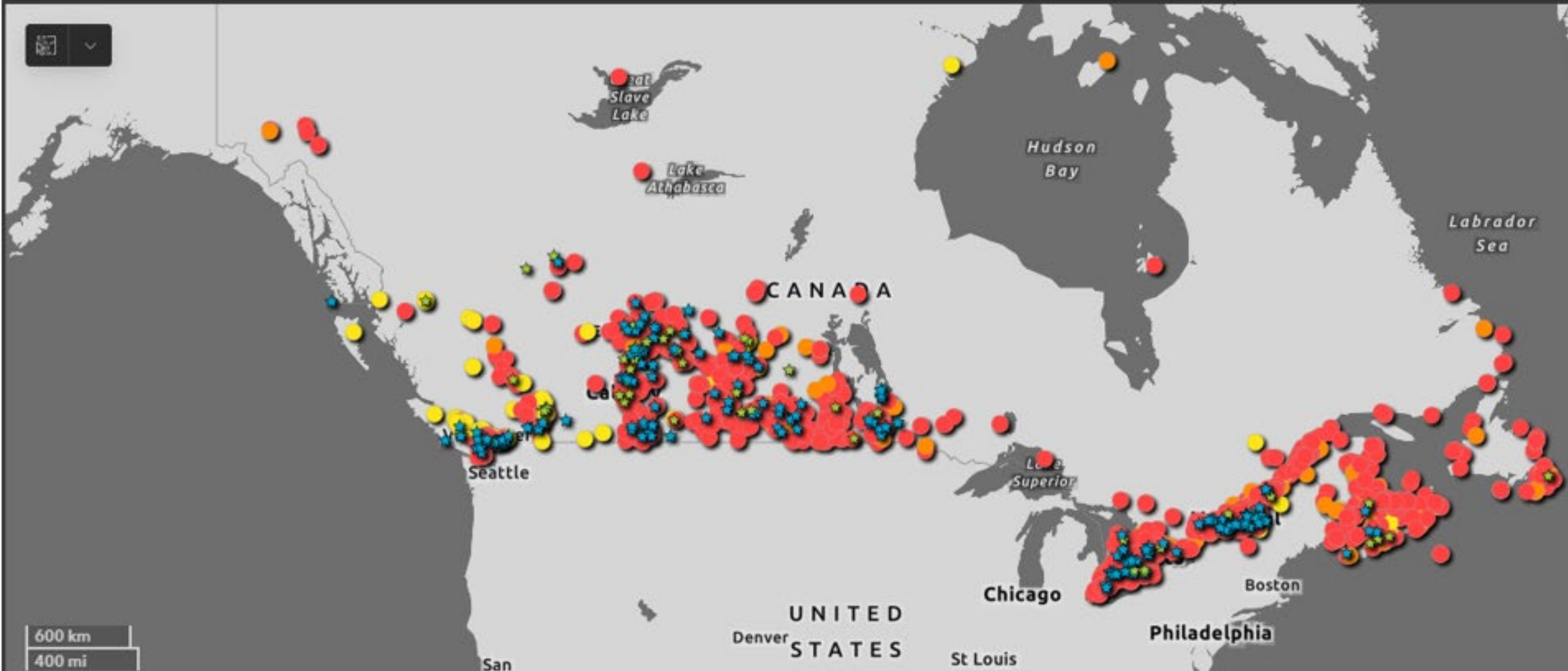
- Avian influenza (AI) is a type of influenza (flu) virus that primarily affects birds, including backyard poultry ⁸
- AI viruses are categorized as low (LPAI) or high (HPAI) pathogenicity based on disease severity ⁸
- H5N1 HPAI is currently affecting farmed birds, wildlife and backyard poultry in Canada ⁹
- H5N1 HPAI can cause severe illness and death in affected birds ^{8,9}
- H5N1 is not transmitted via cooked eggs/meat ¹⁰
- Infected birds may transmit infection to people, although this is unlikely ^{8,9}



HIGH PATHOGENICITY AVIAN INFLUENZA IN WILDLIFE

By CFIA NEOC GIS Services

[As of June 13, 2023 – 3:47pm]



Source: Canadian Food Inspection Agency. High pathogenicity Avian Influenza in wildlife [Internet]. Ottawa, ON: Government of Canada; 2023 [cited 2023 Jun 13].

Available from: <https://cfia-ncr.maps.arcgis.com/apps/dashboards/89c779e98cdf492c899df23e1c38fdbbc>

Backyard Chickens — A Cross-Sectional Survey of Current and Prospective Backyard Chicken Owners in Ontario (2019–2021)¹²



Study Overview¹²

- Cross-sectional survey (December, 2019 - March, 2021)
- Interested to hear from respondents in Ontario
- Survey questions
 - Current/recent backyard chickens?
 - Interest in getting chickens?
 - Reasons for having/wanting chickens
 - Interactions between chickens and children/pets
 - Zoonotic disease awareness
 - Sources and types of information

Study Findings¹²

- 279 Ontario respondents
- Most (81.5%) were female
- Most (33.3%) were aged 30-39 years
- 36.5% households had high risk family members
 - 64.8% had children <5 years of age
 - 26.1% had adults > 65 years of age
 - 22.7% had a person with a compromised immune system
 - 7.95% had a pregnant woman



Interest in Backyard Chicken Ownership¹²

- Most respondents (59.5%, n=166) currently/recently owned backyard chickens
 - Year-round (90.4%)
 - Seasonal (9.0%)
- Of those who did not currently have backyard chickens (n=113), 66.4% wanted them



Seasonal Flock Rentals¹²

- Seasonal poultry rentals:
 - Lack of information on zoonotic disease risks
 - Focus on animal husbandry
 - May be rented by long-term care homes or other high-risk settings



Poll 2

Which of the following reasons do you think describe why people have/want backyard chickens in Ontario?

- For their eggs
- For their feathers
- For their meat
- As a pet
- As a hobby
- As a companion for other pets
- As a learning opportunity for children

Reasons for Having or Wanting Backyard Chickens¹²

Reason(s) for having/wanting chickens:

- Eggs (94.0%)
- Hobby (62.4%)
- Pets (49.6%)
- Pest control (28.2%)
- Fertilizer (27.4%)
- Companion (20.9%)
- **Meat (8.1%)**
- Companion for other animal(s) (3.4%)



Perceived Benefits of Owning Backyard Chickens

- Backyard chicken rentals and ownership increased during COVID-19 pandemic – numerous rental options in Ontario
- Reported increased interest associated with rising food costs
- Perceived increase in nutritional value or food safety

BARRIE | News

Chicken rental business is booming for two local farmers



Lexy Benedict CTV News Barrie Assignment Editor
[Contact](#)

Published Thursday, May 21, 2020 6:53PM EDT
Last Updated Friday, May 22, 2020 1:40PM EDT

Source: Benedict L. Chicken rental business is booming for two local farmers. CTV News [Internet], 2020 May 21 [cited 2023 Jul 4]; Barrie. Available from: <https://barrie.ctvnews.ca/chicken-rental-business-is-booming-for-two-local-farmers-1.4949418?cache=ifsojnmkgmxbok%3FclipId%3D263414%3FautoPlay%3Dtrue>

Interactions With Backyard Chickens¹²

- Most (63.7%) considered chickens to be family pets
- >20% allowed chickens to come into their house
- Significantly more likely to allow backyard chickens to enter home if consider them to be family pets ($p=0.005$)
- Chickens allowed to interact with children (82.7%) or with household pets (59.9%)
- 17.5% didn't always wash hands after handling chickens

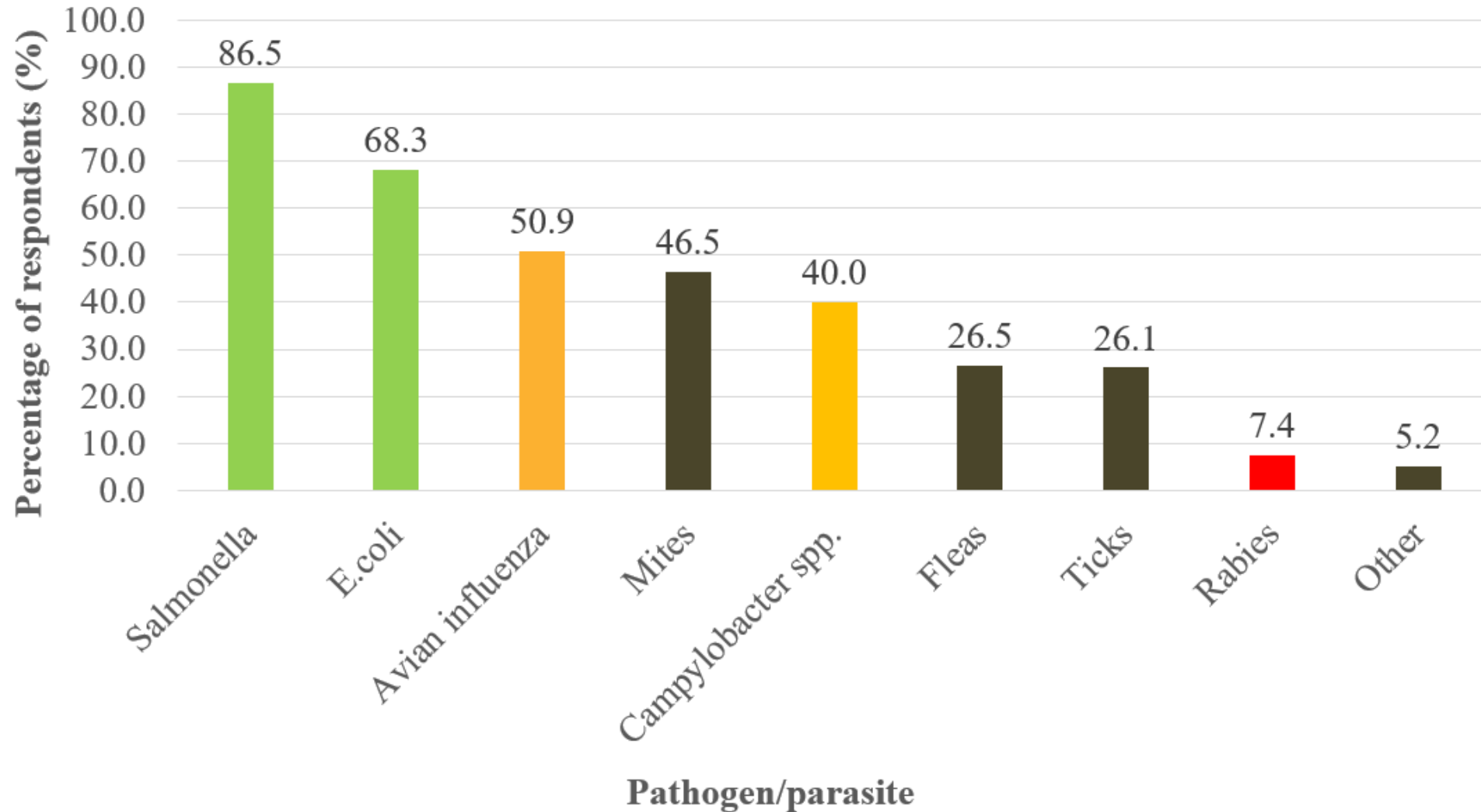
Reasons Chickens Left Owner's Property¹²

- Many current or recent backyard chicken owners reported that chickens may leave their property
- 24.6% indicated that chickens occasionally escape their property
- 9.2% permitted chickens to roam freely
- **15.4% might leave to visit schools, nursing homes or other facilities**





Risk Perception¹²



Information¹²

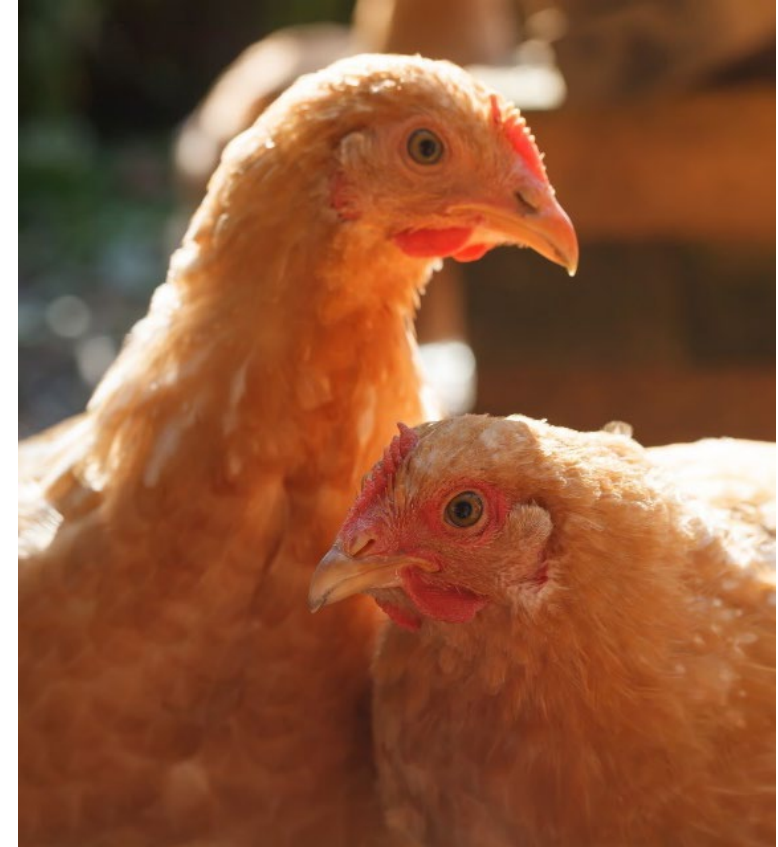
- Most reported looking up information on backyard chickens
- 78% wanted information on how to prevent diseases in chickens
- Only 59.6% wanted information on how to prevent disease transmission from chickens to people
- Preference to obtain information online
- Less than half of backyard chicken flocks had ever visited a veterinarian

Conclusions¹²

- Misconceptions about pathogens transmissible from chickens to people
- Reported interactions may increase risk of pathogen transmission
- Perception of chickens as pets may increase risk
- Consumption of backyard chickens associated with other issues
- Infection control and biosecurity practices could reduce risk
- Opportunities to consult with local vets could improve education

Public Health Implications

- Due to knowledge gaps, backyard chicken owners may be at increased risk of infections
- Backyard chicken owners may benefit from educational resources to increase awareness of risk and appropriate infection prevention practices
- Lack of flock information makes reaching backyard poultry owners challenging



Recommendations for Backyard Poultry Owners

- Wash hands after contact with poultry or their environment
- Avoid contact between backyard poultry and high-risk household members
- Supervise children during animal contact
- Avoid bringing backyard poultry indoors
- Keep backyard poultry and their feed/water away from wild birds
- Regularly clean backyard poultry enclosures, feed and water containers
- Seek veterinary care if poultry show clinical signs of illness
- Cook eggs and meat to a safe internal temperature

Resources

- Public Health Ontario
 - Evidence brief: reducing health risks associated with backyard chickens¹³
 - At a glance: highly pathogenic avian influenza: infection prevention and control guidance for veterinary clinics¹⁴
- OMAFRA
 - Biosecurity recommendations for small flock poultry owners¹⁵
 - Small flock poultry webpage¹⁶
- CFIA
 - How to prevent and detect disease in small flocks and pet birds¹⁷

Future Work

- Develop educational resources to address knowledge gaps
 - Public health units
 - Backyard chicken suppliers
 - Veterinarians



Acknowledgements

- Dr. Scott Weese (CPHAZ, OVC)
- Public Health Ontario
- Survey respondents
- Local public health units and partner agencies

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