

Veterinarians' and Para-Veterinarians' Perceptions on Canine Hookworms and Riley County's Community Health Improvement Plan

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Master of Public Health

Infectious Disease and Zoonoses

Candidate

Outline

Primary

- Hookworm survey
 - Background
 - Objectives
 - Survey details
 - Survey results
 - Implications
 - AAVP poster

Secondary

- Riley County Health Department - Community Health Improvement Plan
 - Background
 - Objectives
 - CHIP process
 - Local Public Health Systems Assessment
 - Community Listening Sessions

Background

Canine hookworm

- Intestinal parasite
 - *Ancylostoma caninum*
 - Three pairs of teeth

Mode of infection

- Ingestion, direct contact, in-utero, milk

Animal signs and symptoms

- Anemia, bloody diarrhea, itchy paws, death

Human signs and symptoms

- Cutaneous larva migrans, anemia, fatigue

Treatment

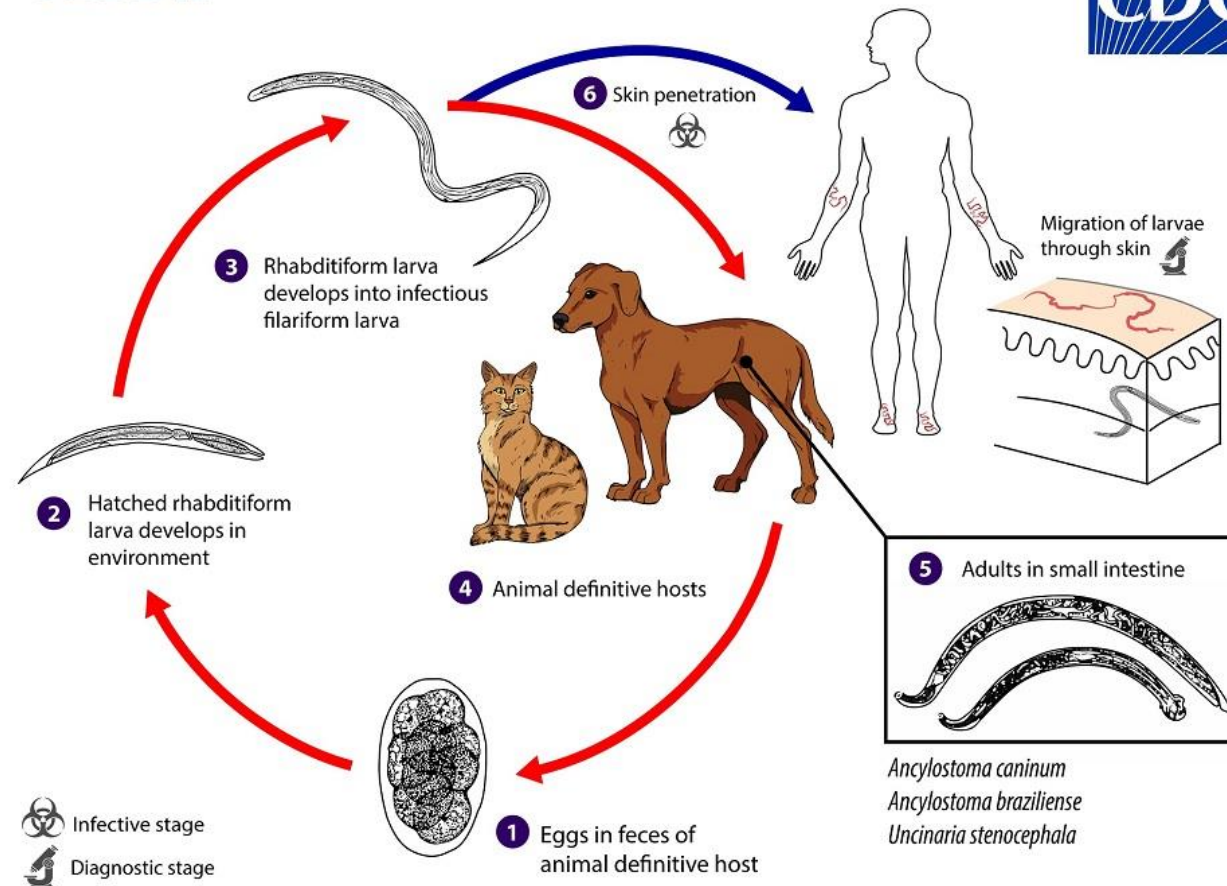
- Anthelmintic



Background

DPDx

Cutaneous Larva Migrans



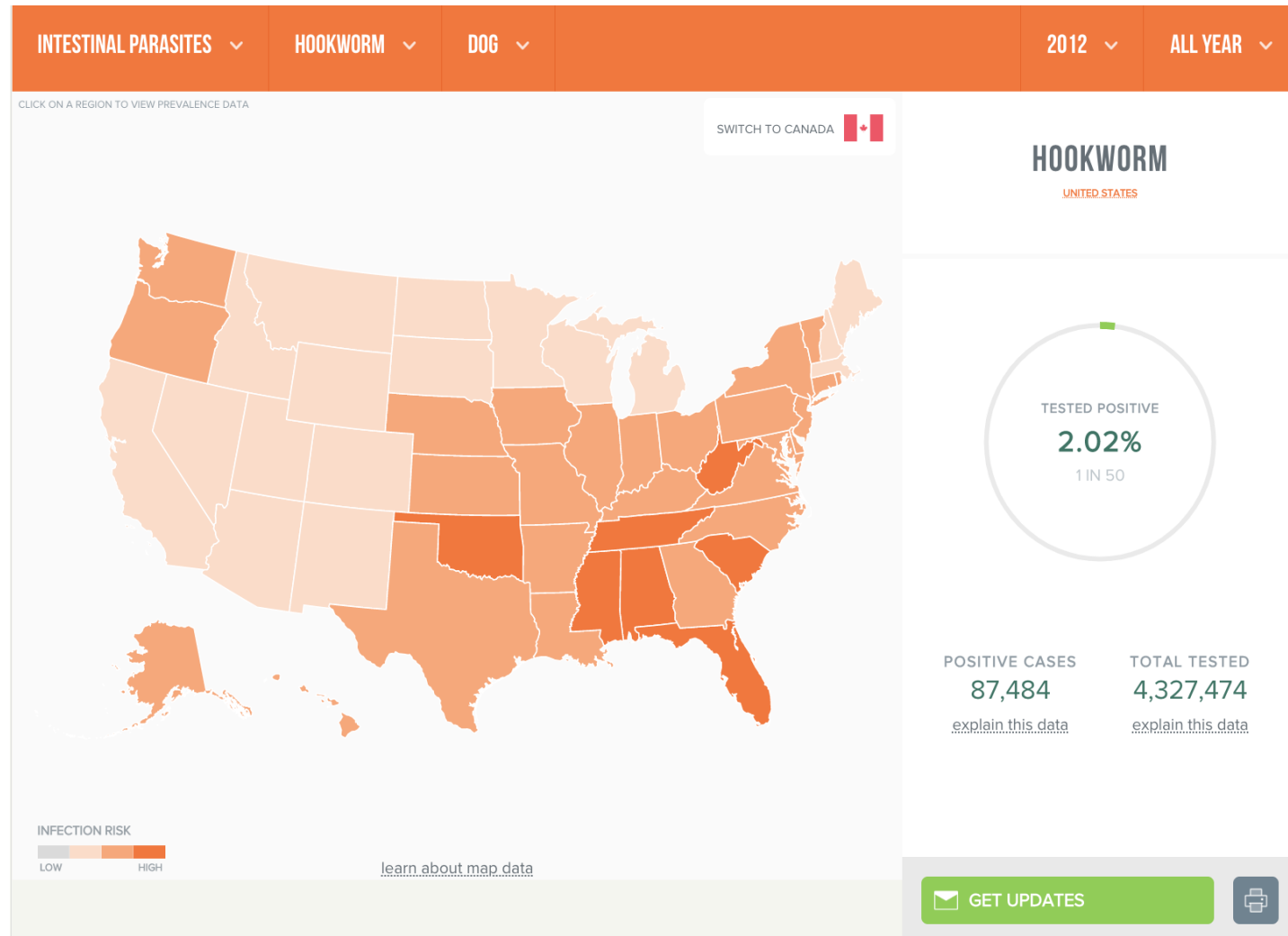
Background

- 🐕 Greyhound racing history
- 🐕 Process of ending Greyhound racing
- 🐕 Start of multi-drug resistant infection



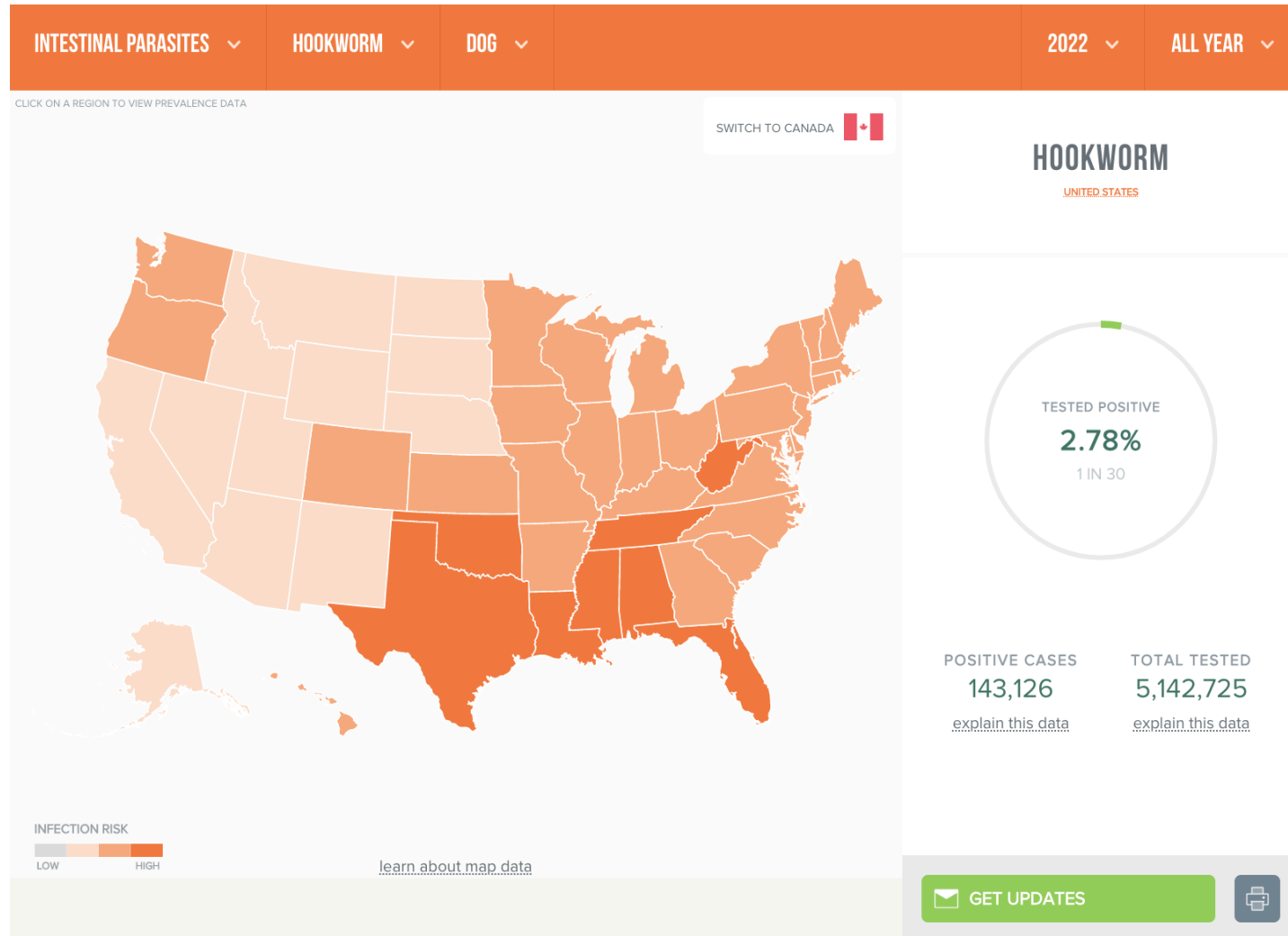


Hookworms in the U.S.






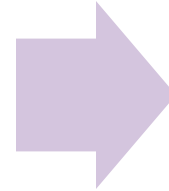
Hookworms in the U.S.



Objectives

A vertical strip on the left side of the slide shows a microscopic view of several hookworms. They are translucent, segmented, and have a curved, worm-like shape. The background is a solid purple color.

Survey U.S. veterinarians and para-veterinarians on their perceptions of prevalence, breed predilection, diagnoses, treatment, resistance and client communication on canine hookworms.



Gather information about awareness on zoonotic, multi-resistant hookworms and One Health.

A vertical, purple-tinted microscopic image of a nematode worm, showing its segmented body and head with a mouthpart.

Survey details

Veterinarian Survey

- 16 questions
- Demographics, prevalence, breed predilection, diagnoses, treatment, resistance, and client communication
- 180 responses

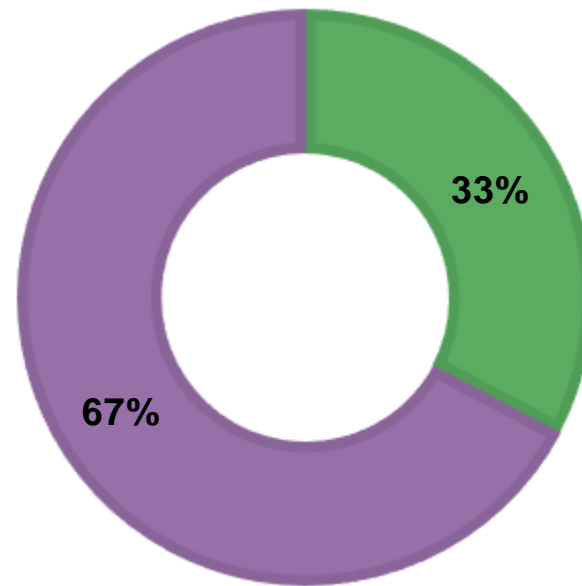
Para-Veterinarian Survey

- 13 questions
- Demographics, prevalence, breed predilection, and client communication
- 25 responses

Survey was released February 1, 2022, and February 11, 2022.
Survey was open for a month.

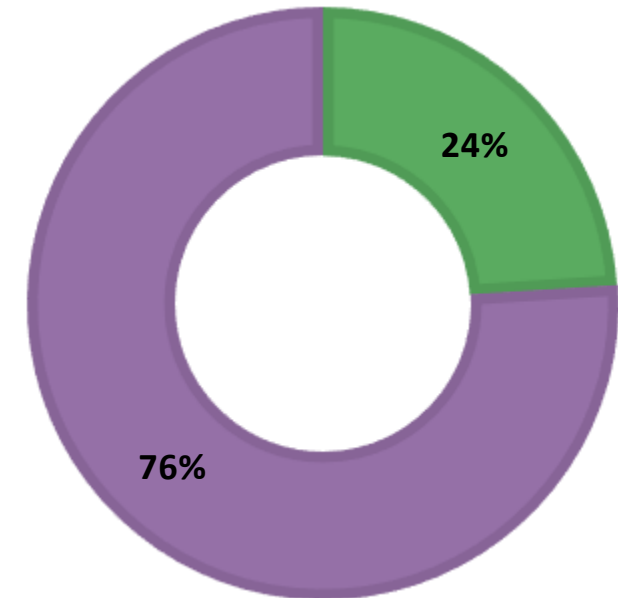
Small or Mixed Animal Practice

Veterinarian



■ Mixed ■ Small

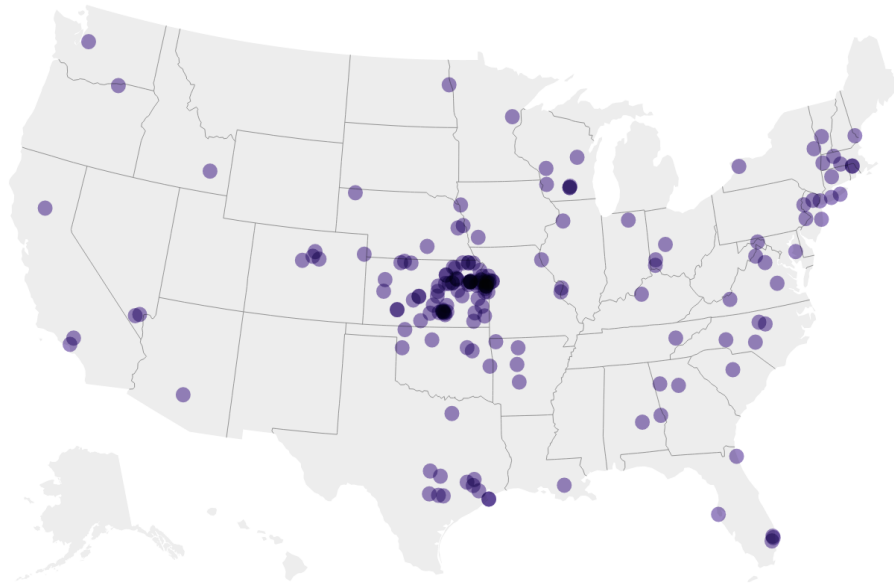
Para-Veterinarian



■ Mixed ■ Small

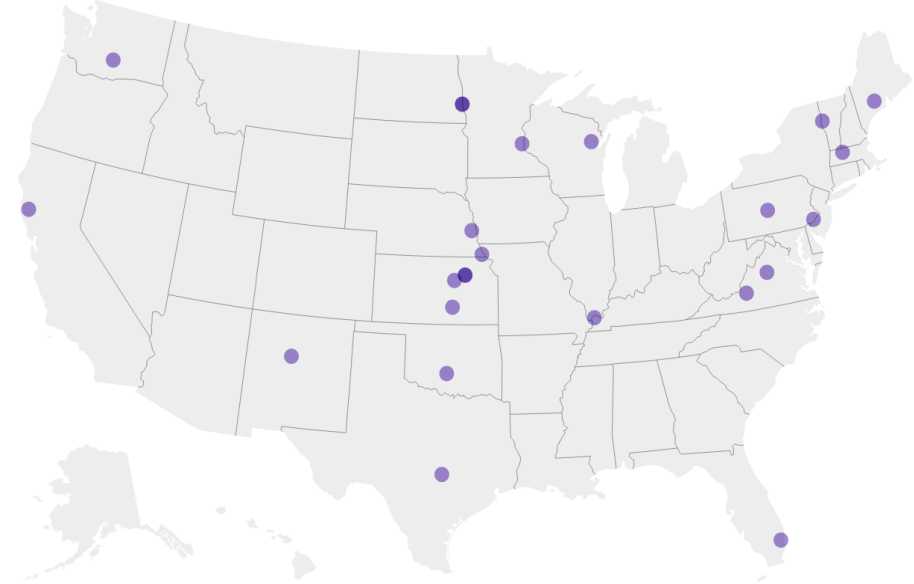
Clinic Locations

Veterinarian



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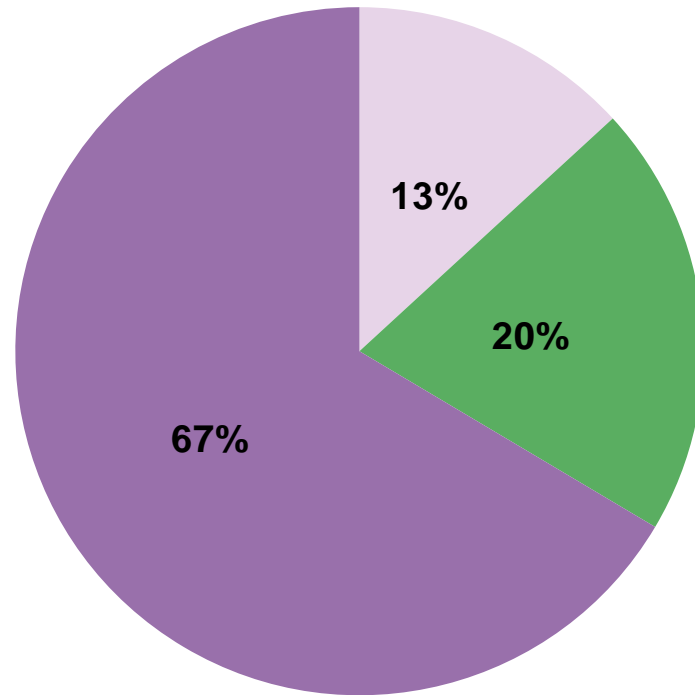
Para-Veterinarian



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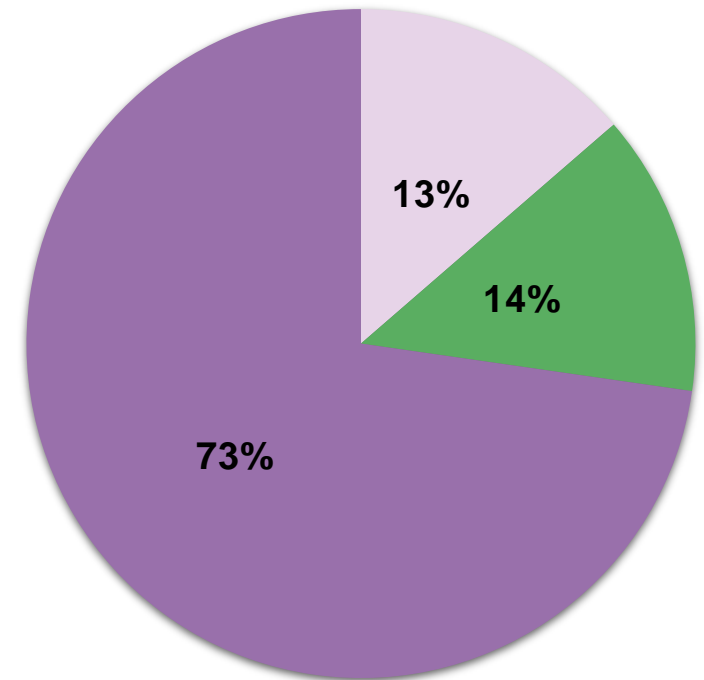
Awareness of hookworm prevalence in the last year

Veterinarian



Maybe No Yes

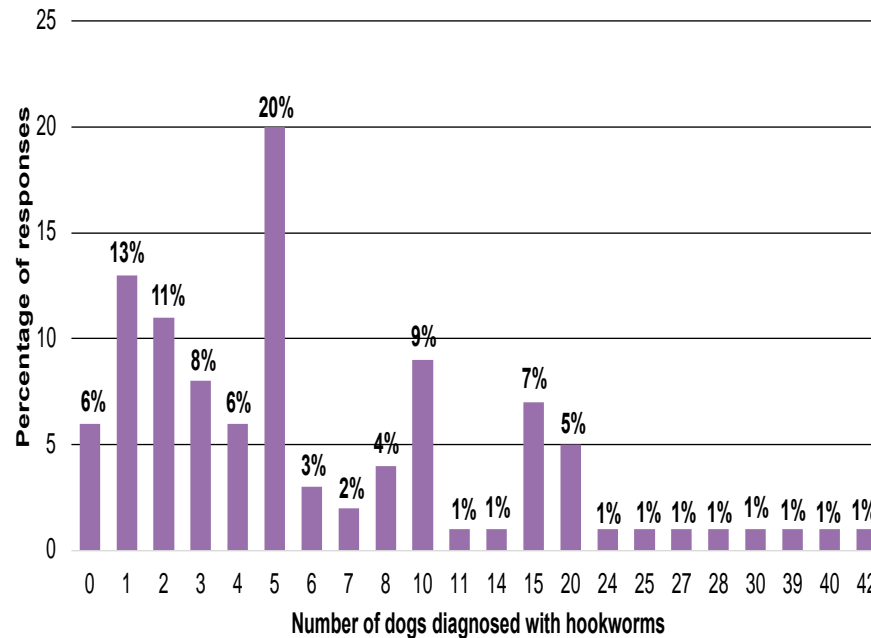
Para-Veterinarian



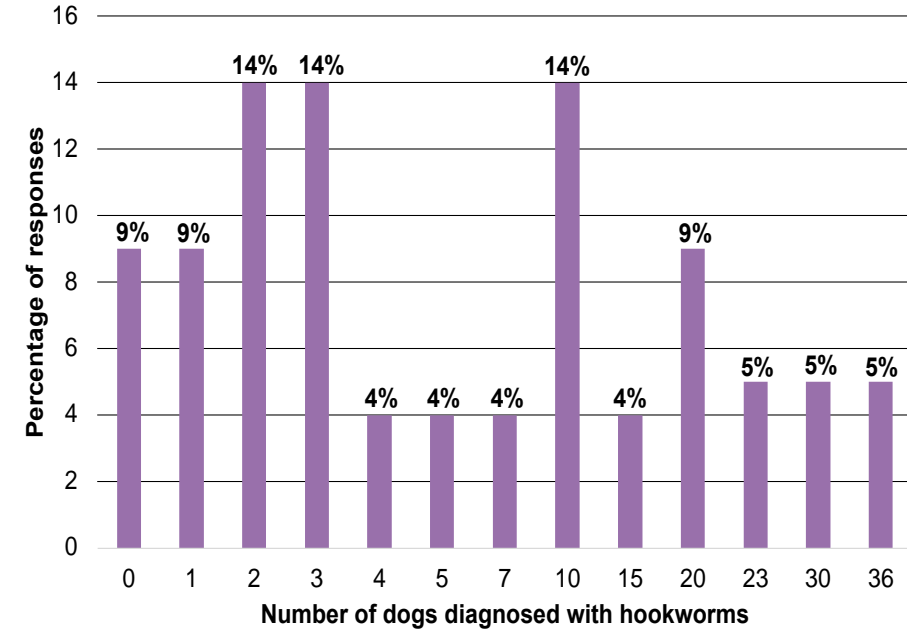
Maybe No Yes

Dogs positive for hookworms in a month

Veterinarian

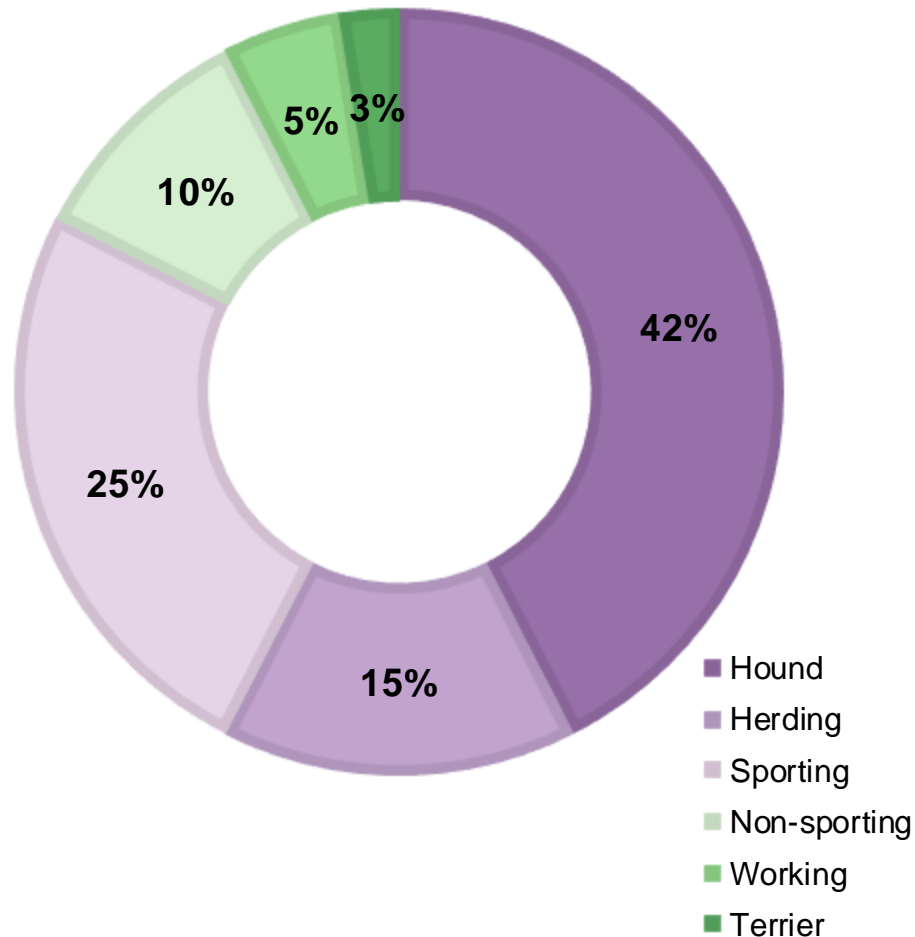


Para-Veterinarian

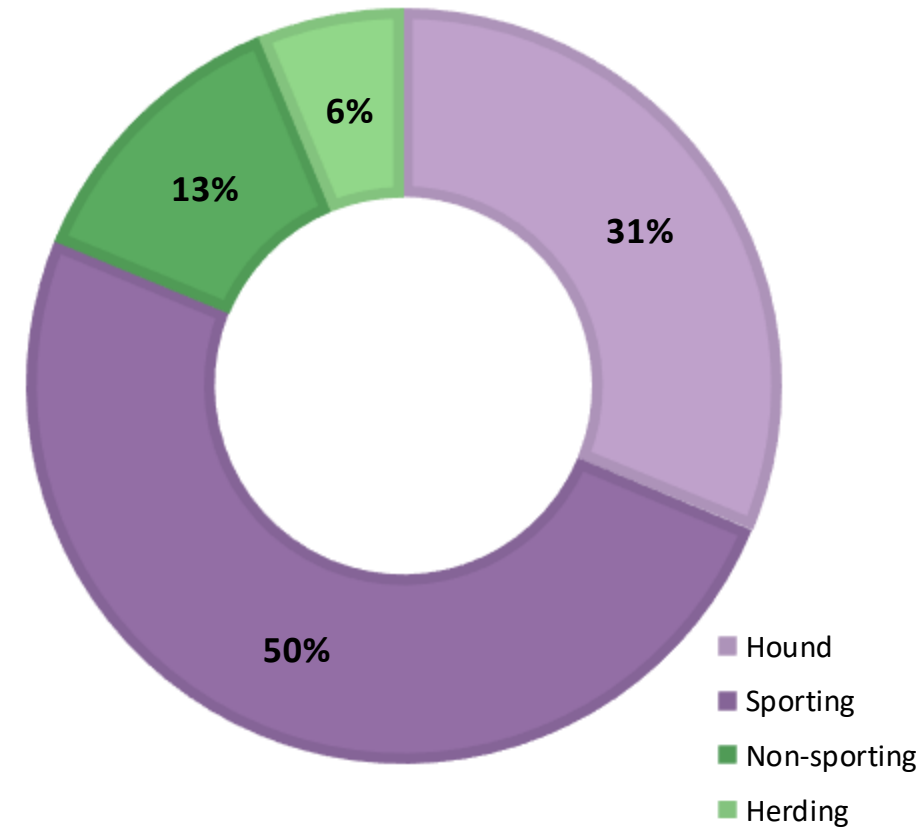


Breed groups commonly diagnosed with hookworms - AKC

Veterinarian

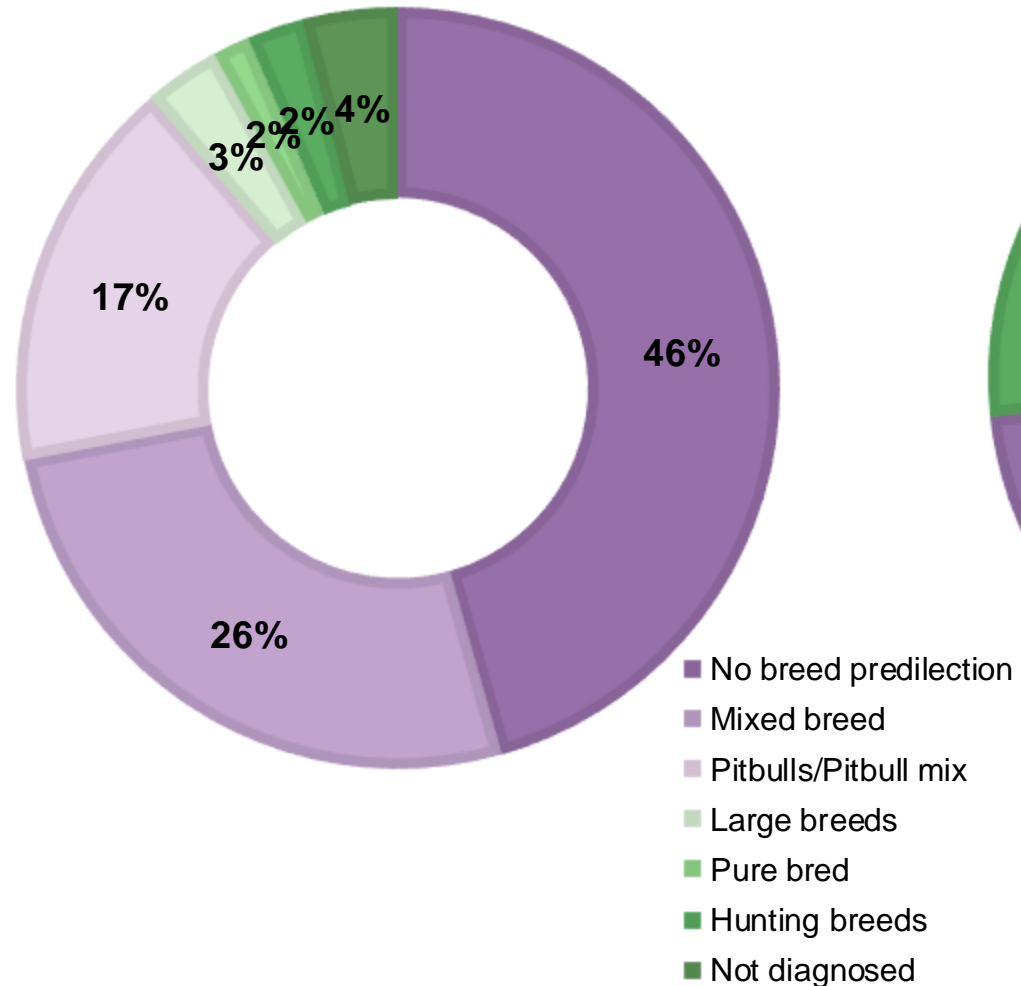


Para-Veterinarian

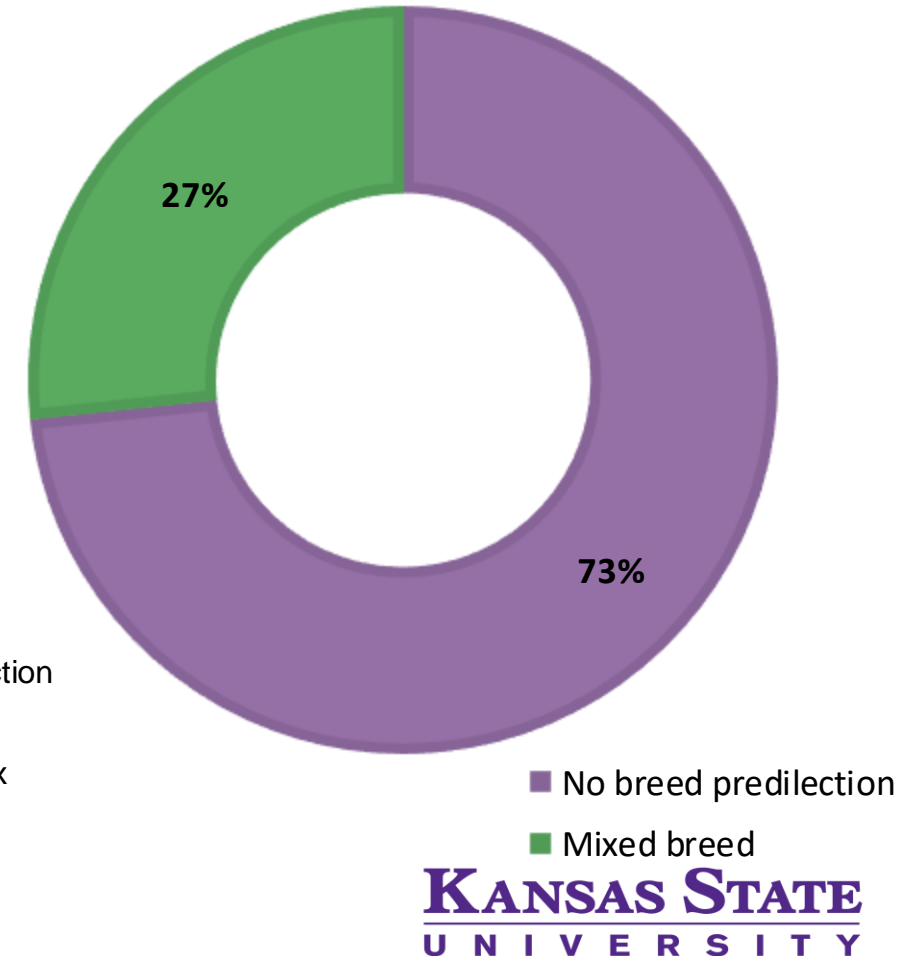


Breed groups commonly diagnosed with hookworms – non-AKC

Veterinarian

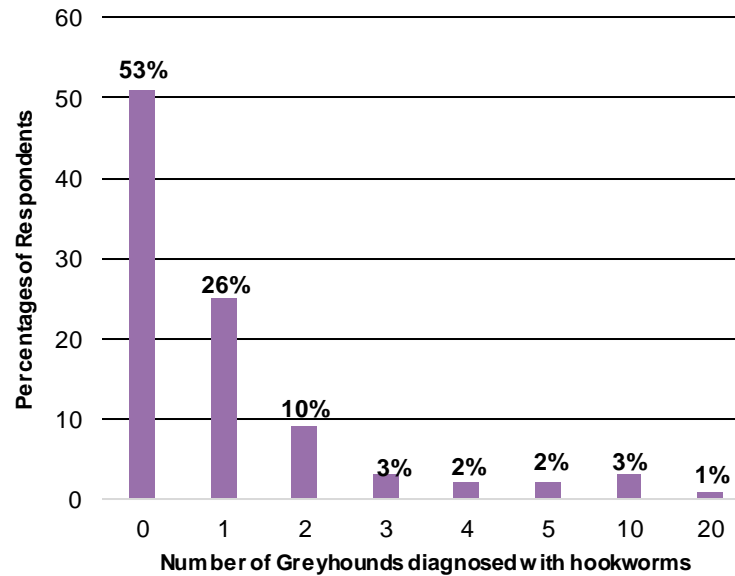


Para-Veterinarian

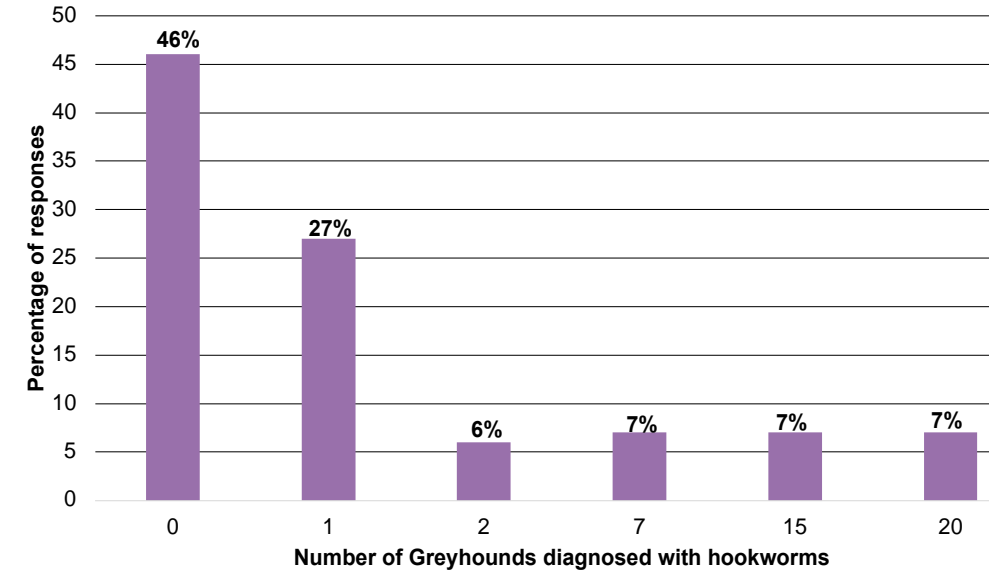


Greyhounds positive for hookworms in a month

Veterinarian



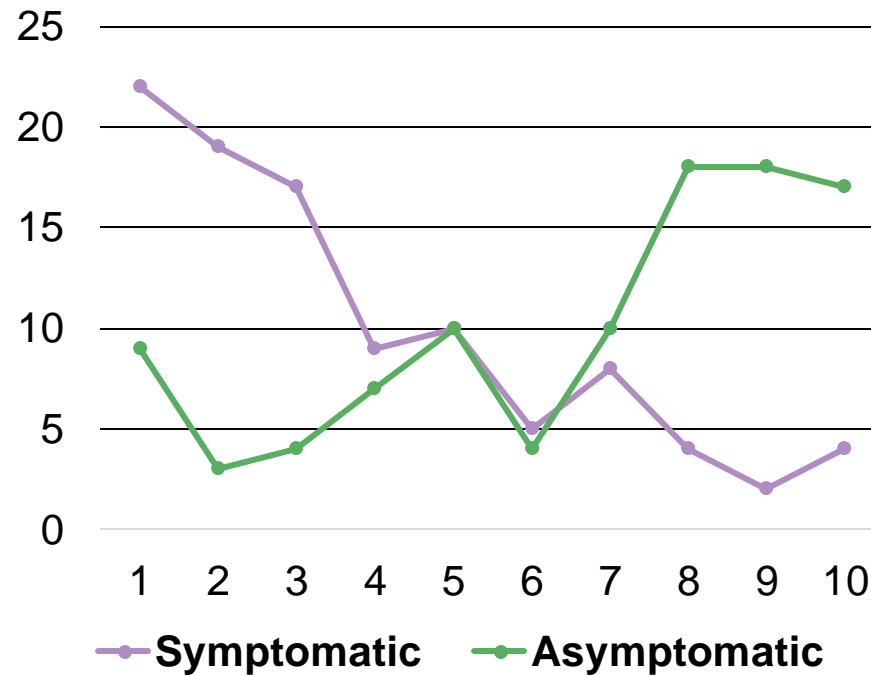
Para-Veterinarian



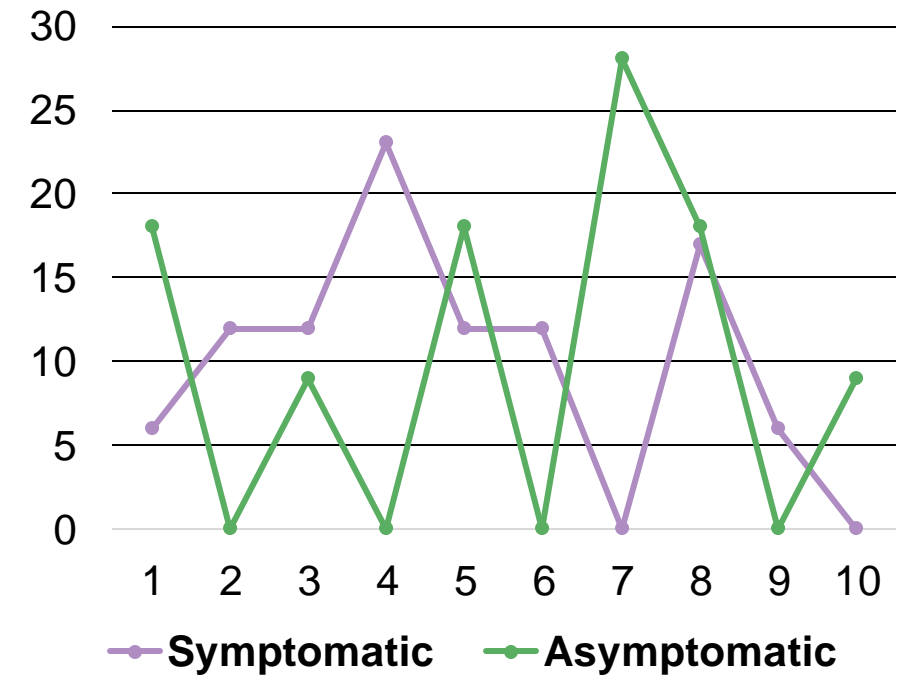
Clinical signs in patients with hookworms



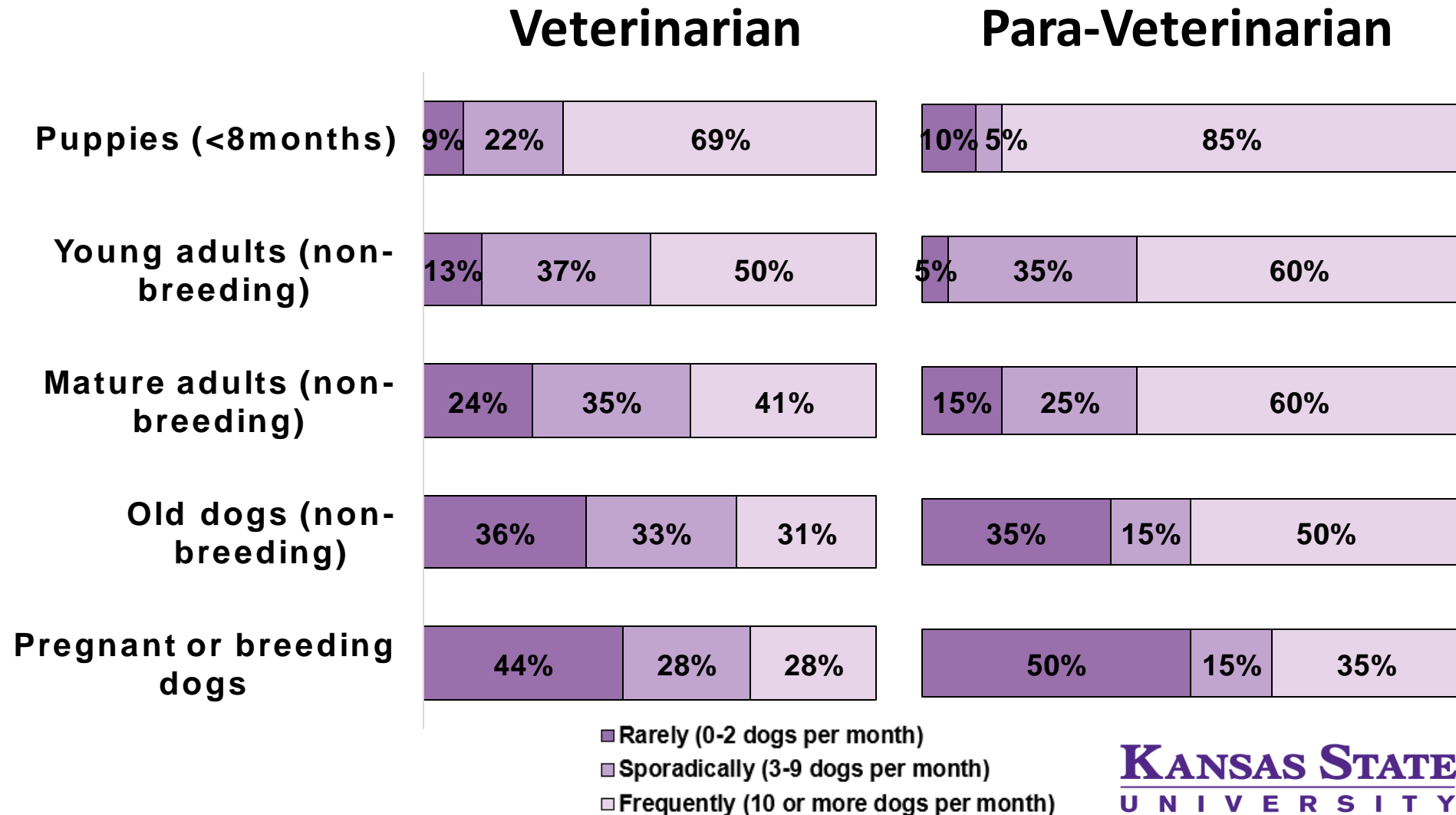
Veterinarian



Para-Veterinarian



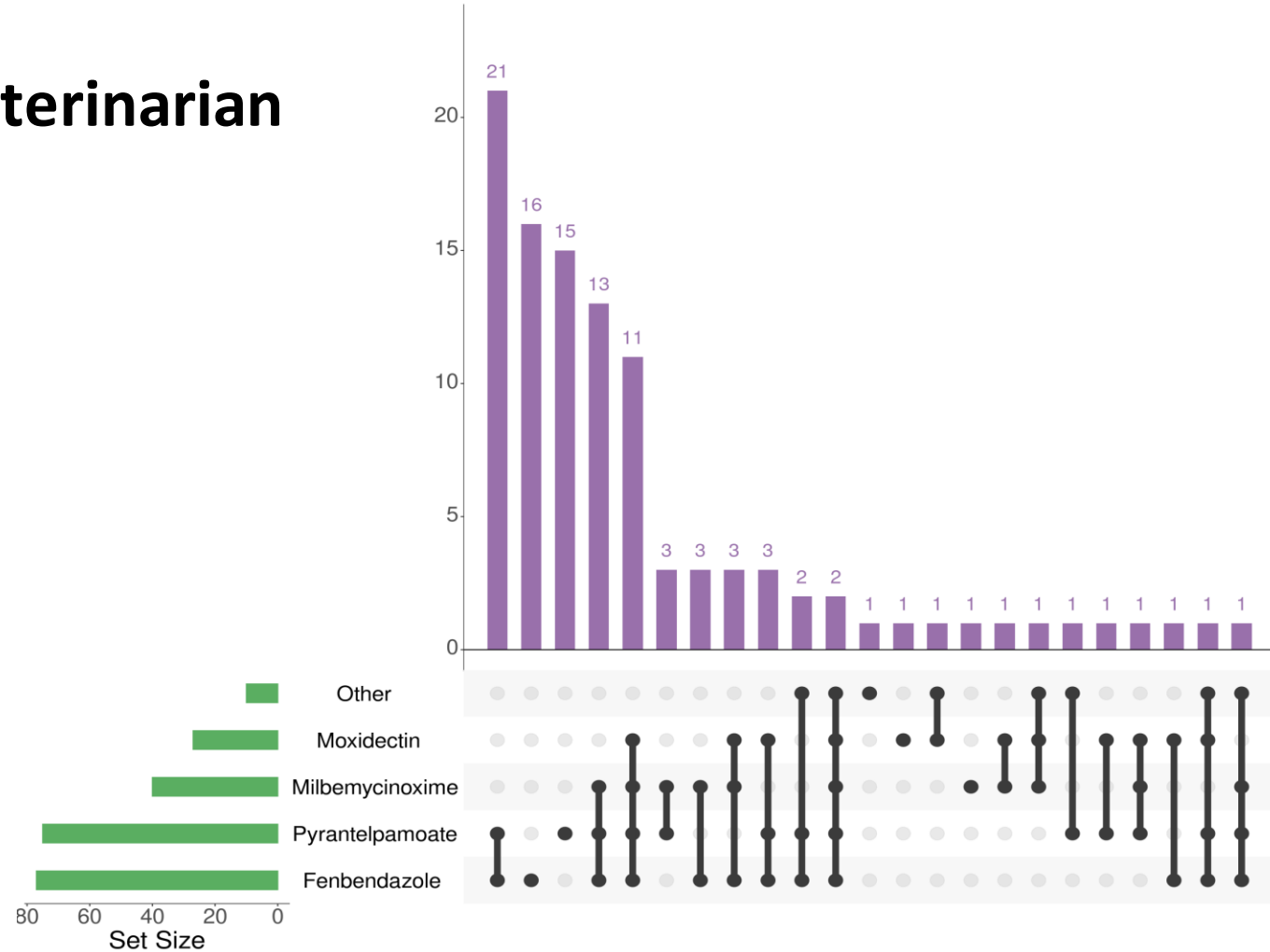
Frequency of testing for hookworms in different age groups





Treatment and Preventatives

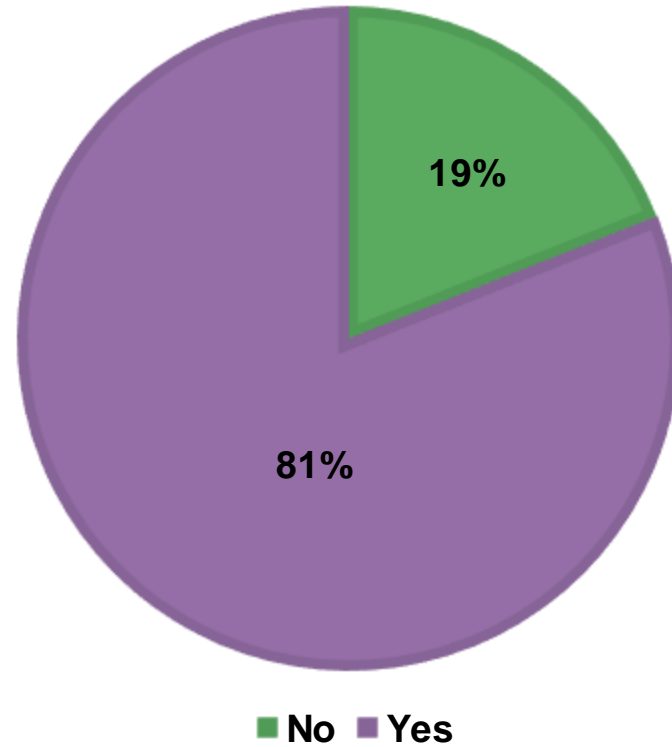
Veterinarian



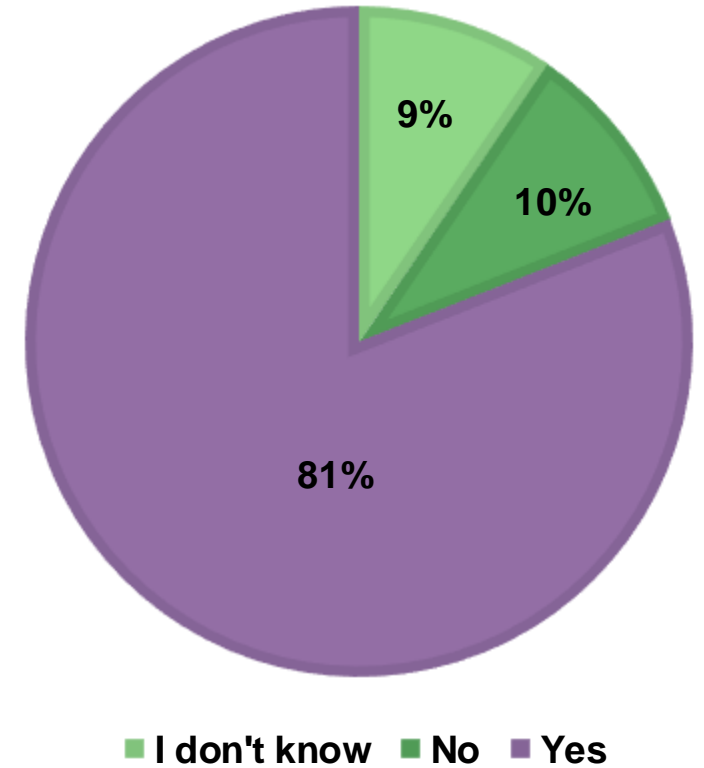
Follow-up on patients treated with hookworms



Veterinarian

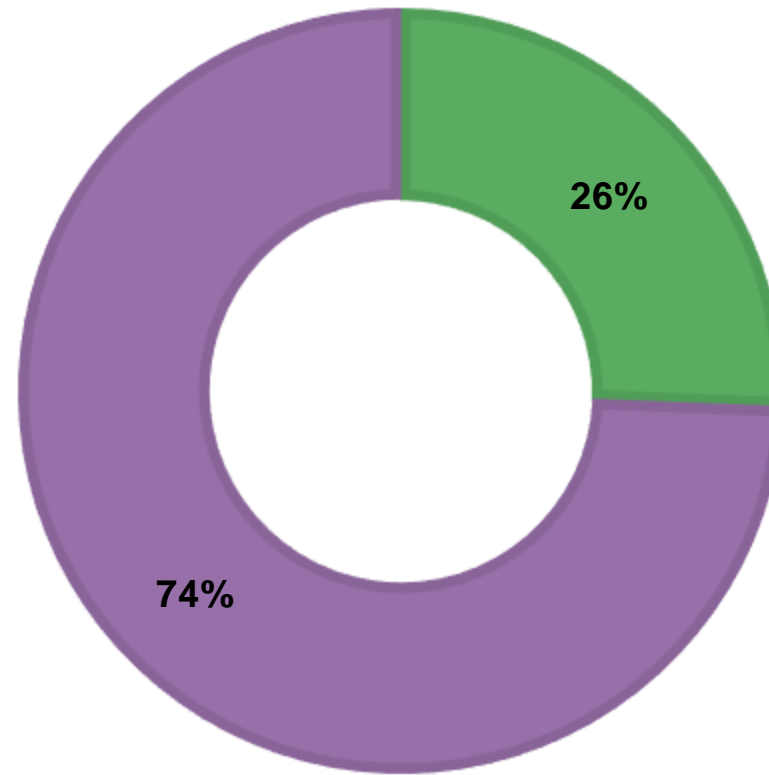


Para-Veterinarian



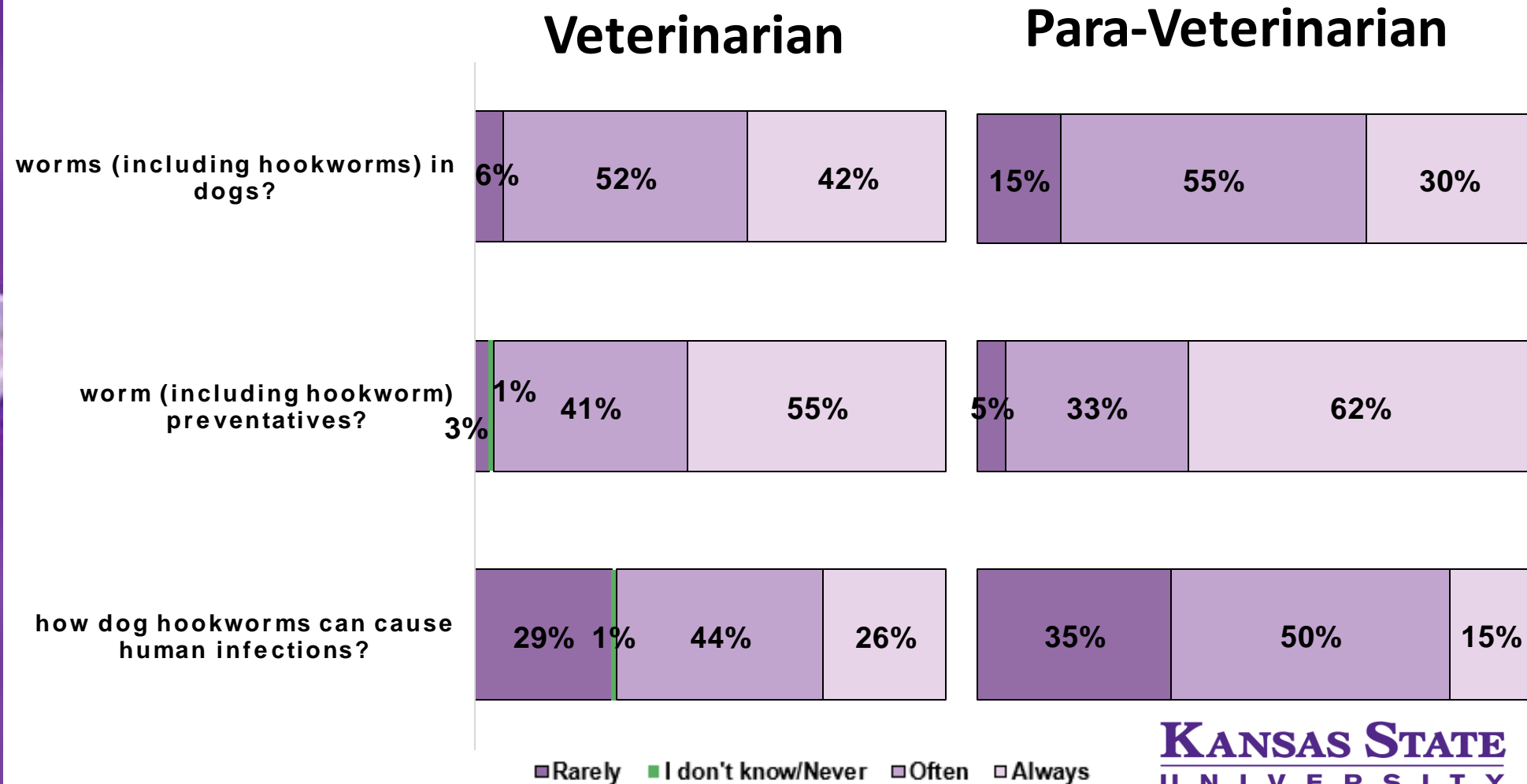
Awareness of multi-drug resistant hookworms in the U.S.

Veterinarian



■ No ■ Yes

Do you or your co-workers educate clients about...



Implications

- 🪚 Hookworm infections are mostly asymptomatic
- 🐶 Anthelmintic resistant hookworms have spread to many breeds
- 🔬 More frequent testing in younger dogs was reported
- 💊 Different drugs and combinations are used in every practice
- 👩 Client education on zoonotic infections is key for prevention and control
- 🌐 One Health perspective should become a norm to achieve optimal health outcomes

AAVP Poster

Survey of U.S. Based Veterinarians' Perceptions on Canine Hookworms

Sara Jessica Ochoa ¹, Gregg Hanzlicek ^{2,3}, Justin J. Kastner ³, Jeba Jesudoss Chelladurai ^{2,3}

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³ Kansas State Veterinary Diagnostic Laboratory, College of Veterinary Medicine, Kansas State University
⁴ Department of Diagnostic Medicine/Pathobiology, College of Veterinary Medicine, Kansas State University



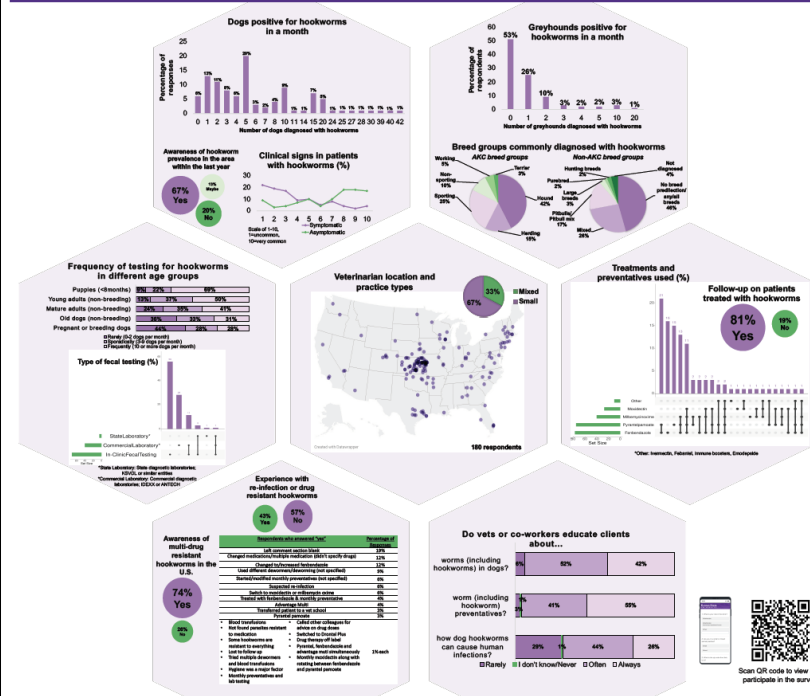
Introduction

- Canine hookworms are zoonotic parasites demanding a one health perspective, especially in the face of widespread multi-drug resistant infections.
- Veterinarians help manage hookworm infection risk in pets and owners.
- It is important for veterinary educators to understand the knowledge, practices and perceptions of veterinary health care professionals in the field.

Objectives & Methods

- To obtain a better understanding of veterinarians' perceptions about:
 - Prevalence, breed predilection, diagnoses, treatment, resistance and client communication.
- A cross-sectional survey was used to collect data from U.S. veterinarians.
- Data were analyzed using Qualtrics, Datawrapper, Intervene and Microsoft Excel.

Results



Implications

- Survey results have implications for veterinarians, veterinary educators and dog-owning public.
- Hookworm infections are mostly asymptomatic.
 - Practitioners should perform annual fecal testing even on asymptomatic animals.
- Some breed predilection reported.
 - The Hound group was perceived to be most frequently diagnosed with hookworms.
 - Practitioners should be vigilant in this particular breed group but should be aware of hookworms in all breeds.
- Research has shown that anthelmintic resistant hookworms have spread to many canine breeds.
- More frequent testing in younger dogs was reported.
 - Practitioners should also test for hookworms in older animals.
- Different drugs and combinations are used in every practice.
 - Practitioners have to perform follow-up testing to understand drug efficacy at an individual case level.
- Awareness of resistance in hookworms is high, but a majority have not encountered resistant hookworm cases.
 - Client education on zoonotic infections is key for prevention and control.
- Practitioners should educate their clients on preventatives, control techniques and course of treatment.
 - One health perspective should become more of the norm to achieve optimal health outcomes in canine patients and their owners.

Acknowledgements:

We thank the KSVDL Client Services for distributing the survey, Dr. Kastner and Dr. Mukuliy of the MPH Program for guidance and funding, and AAVP Young Investigator Travel Award for funding.



Scan QR code to view and participate in the survey

Outline

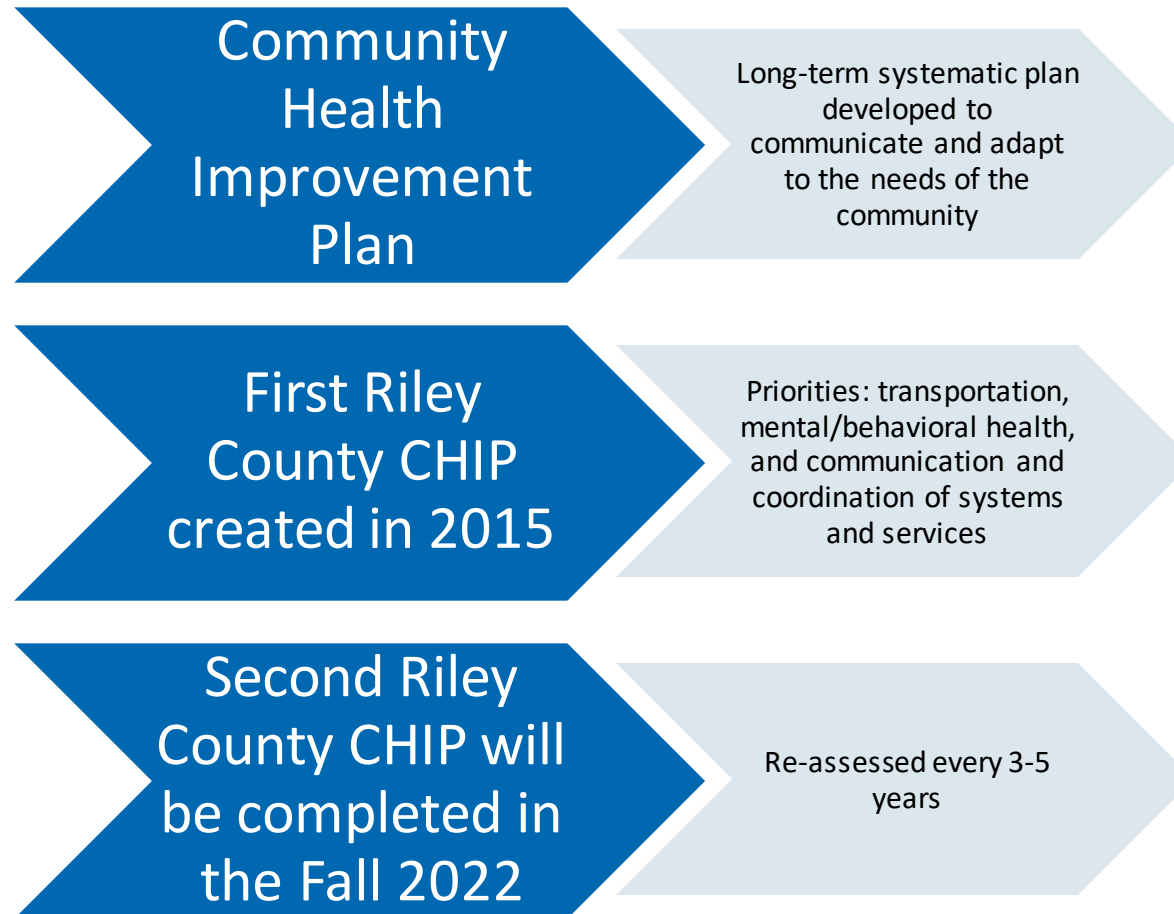
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Secondary

- Riley County Health Department - Community Health Improvement Plan (CHIP)
 - Background
 - Objectives
 - CHIP process
 - Local Public Health Systems Assessment
 - Community Listening Sessions

Background



Staff and Partners



Shanika Rose

- Health Educator/Accreditation Coordinator

Julie Gibbs,
MPH

- Director of Riley County Health Department

Sara Ochoa
and Ryan Allen

- RCHD MPH Student Interns



Objectives

Collaborate with community members to create a healthier, happier, and better county.

Invite subject matter experts to LPHSA, organize events, marketing flyers for the community listening sessions

Become more involved and aware of Riley County happenings



CHIP process



Comprehensive Community Needs Assessment

- Community Survey of over 1,000 respondents
 - Stakeholder Interviews
 - Focus Groups
 - Data Review
- 2019-2020

Local Public Health Systems Assessment

Review of the Public Health System by Subject Matter Experts and Community Stakeholders

February 16, 2022

Community Listening Sessions

Multiple meetings around the county and virtually to receive public input to inform planning efforts.

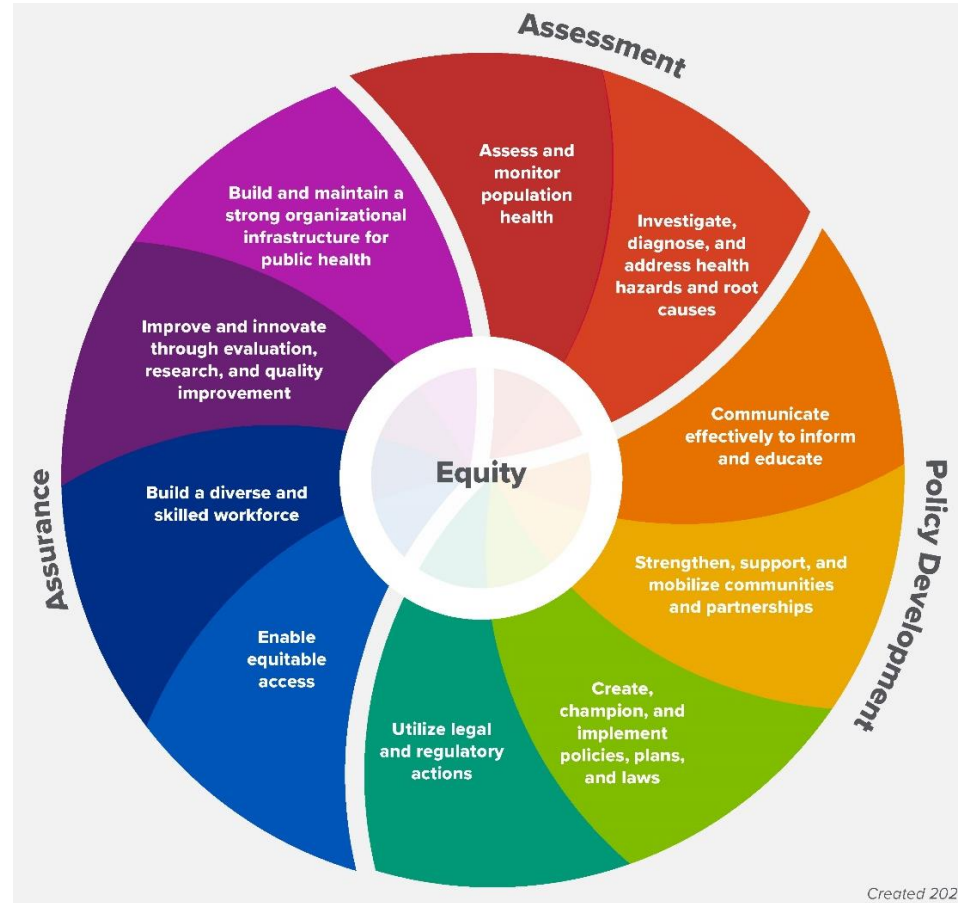
March – May 2022

Community Health Improvement Plan

Determining top health priorities to address and improve through coordinated efforts in the next 3-5 years.

Summer-Fall 2022

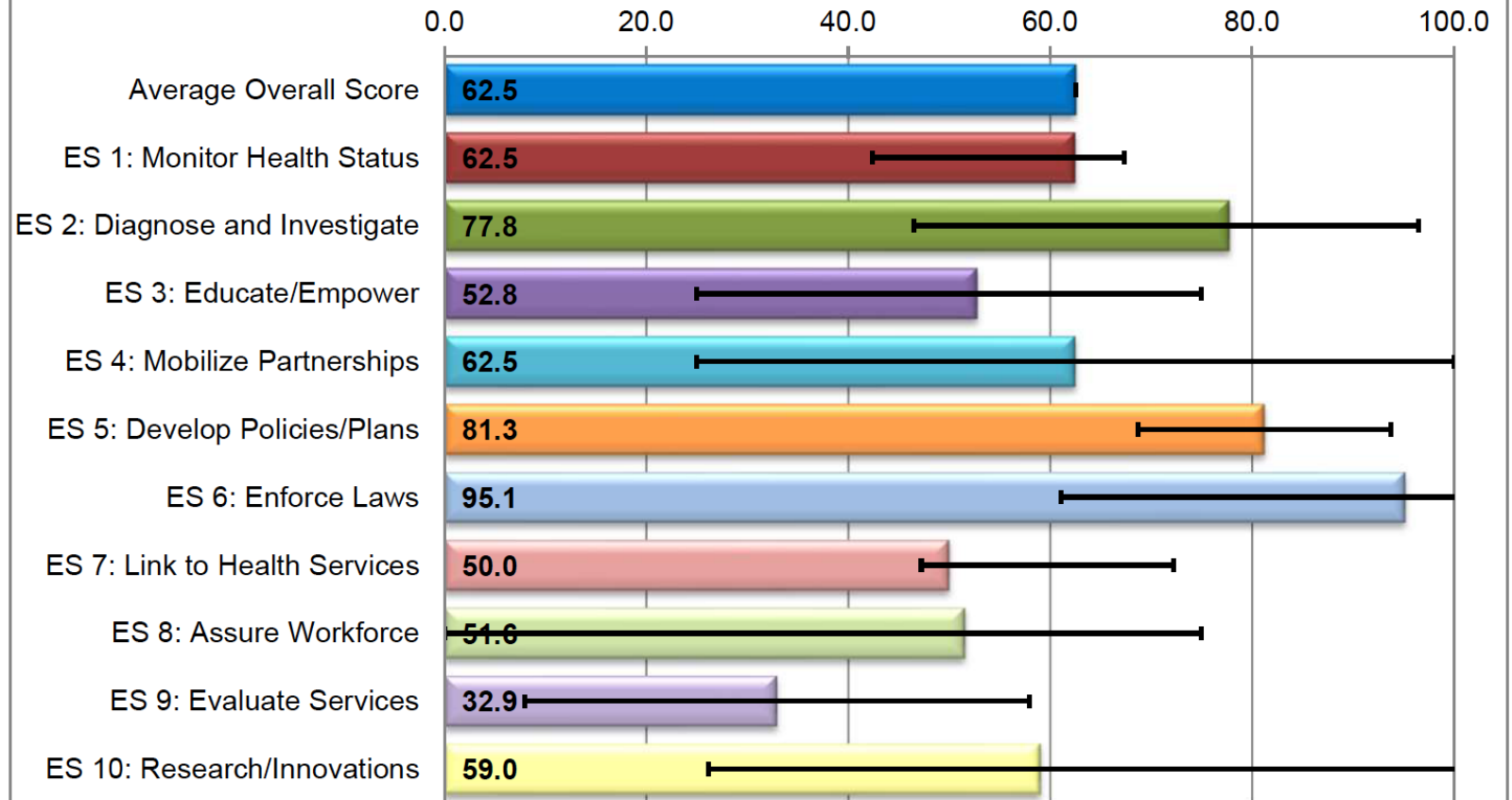
Local Public Health Systems Assessment - LPHSA



- 10 Essential Public Health Services describe the public health activities all communities should undertake.
- 5 Teams
 - 8-10 community subject matter experts
- Roughly 40-50 participants
 - School district superintendents
 - County commissioners
 - Public service leaders
 - Health Service representatives

LPHSA - Results

Summary of Average ES Performance Score



LPHSA - Observations

- Average Overall Score: 62.5 (Significant Activity)
- No essential services performed in the “No Activity” (0%) or “Minimal Activity” (1-25%) categories.
- Overall, the Riley County Public Health System scored favorably
- General lack of awareness of the local public health system
 - Increase the number of participants and meetings
 - Increase communication, coordination and all-around awareness
 - High need for mental/behavioral health services



Community Listening Sessions

Date	Location	Number of Attendants	Top 3 voted priorities
March 22, 2022	Manhattan Public Library	2	<ul style="list-style-type: none"> • Mental Health • Affordable Housing • Access to Care
March 29, 2022	Riley County over Zoom	11	<ul style="list-style-type: none"> • Affordable Housing • Mental Health • Nurse Shortage
April 1, 2022	Spanish Speaking community over zoom	5	<ul style="list-style-type: none"> • Bilingual personnel (Medical or RCHD) • Community news bulletin • English Classes
April 5, 2022	Ogden Community Center	9	<ul style="list-style-type: none"> • Transportation • Gym/Clinic • Lack of fresh/healthy foods
April 7, 2022	BLM MHK over zoom	7	<ul style="list-style-type: none"> • Mental Health • Recreation location/recreational activities • Access to Healthcare
April 12, 2022	Leonardville Community Center	16	<ul style="list-style-type: none"> • Affordable Healthcare • Transportation Services • Lack of Grocery Store
April 12, 2022	Northview Elementary	3	<ul style="list-style-type: none"> • Child Care • Mental Health • Resources for the elderly population
April 14, 2022	KSU Leadership Studies Building	2	<ul style="list-style-type: none"> • Mental Health • Affordable Housing • Maternal Health



Community Listening Sessions



Competencies

2

- Select quantitative and qualitative data collection methods appropriate for a given public health context

3

- Analyze quantitative and qualitative data using biostatistics, informatic, computer-based programming, and software, as appropriate

11

- Assess population needs, assets, and capacities that affect communities' health

19

- Communicate audience-appropriate public health content, both in writing and through oral presentation

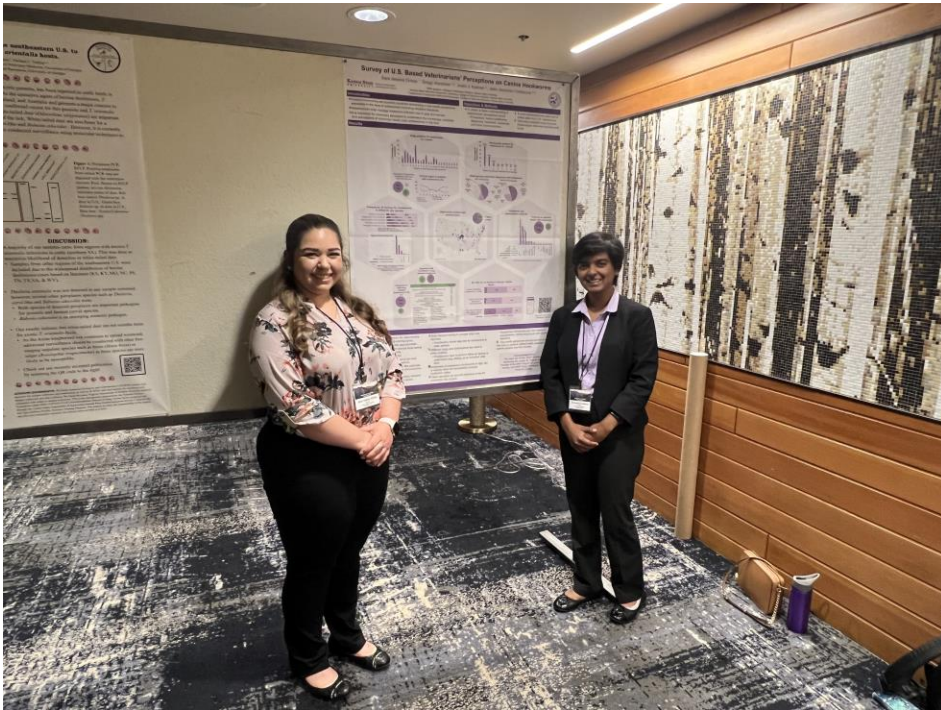
21

- Perform effectively on interprofessional teams

Acknowledgments

Dr. Jeba Jesudoss Chelladurai
College of Veterinary Medicine
Kansas State University

Shanika Rose and Ryan Allen
Riley County Health Department



Acknowledgments

Dr. Justin Kastner

Dr. Paige Adams

Dr. Ellyn Mulcahy



Thank You!

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