

WORKSHOP 1:

TRENDS IN TB, REDUCING RISK FOR DAIRY HERDS



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This workshop will discuss in detail how to reduce risk of introducing infection, and will offer insight and advice on managing the herd in the event of TB outbreak.



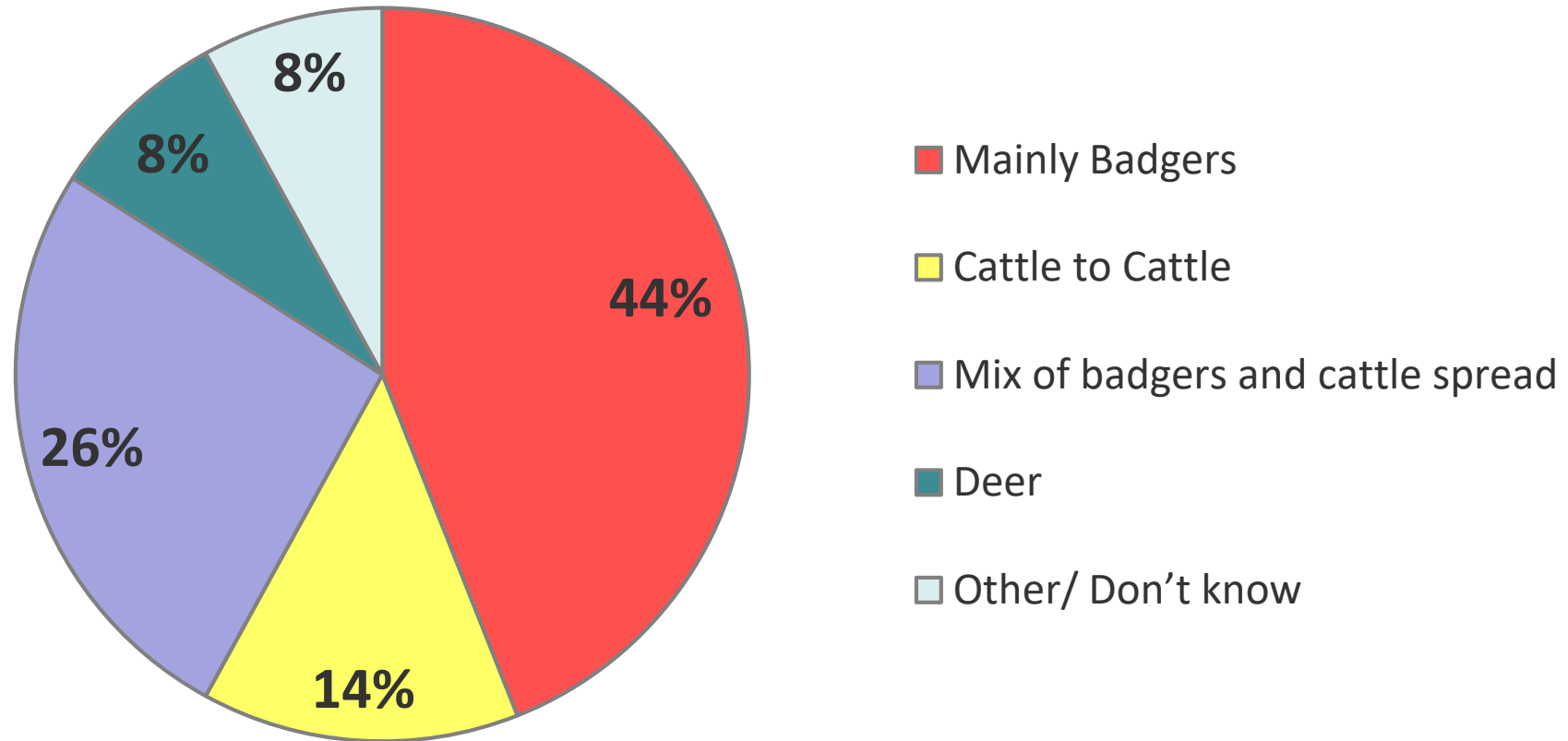
*Register
Now*

NATIONAL
DAIRY
CONFERENCE

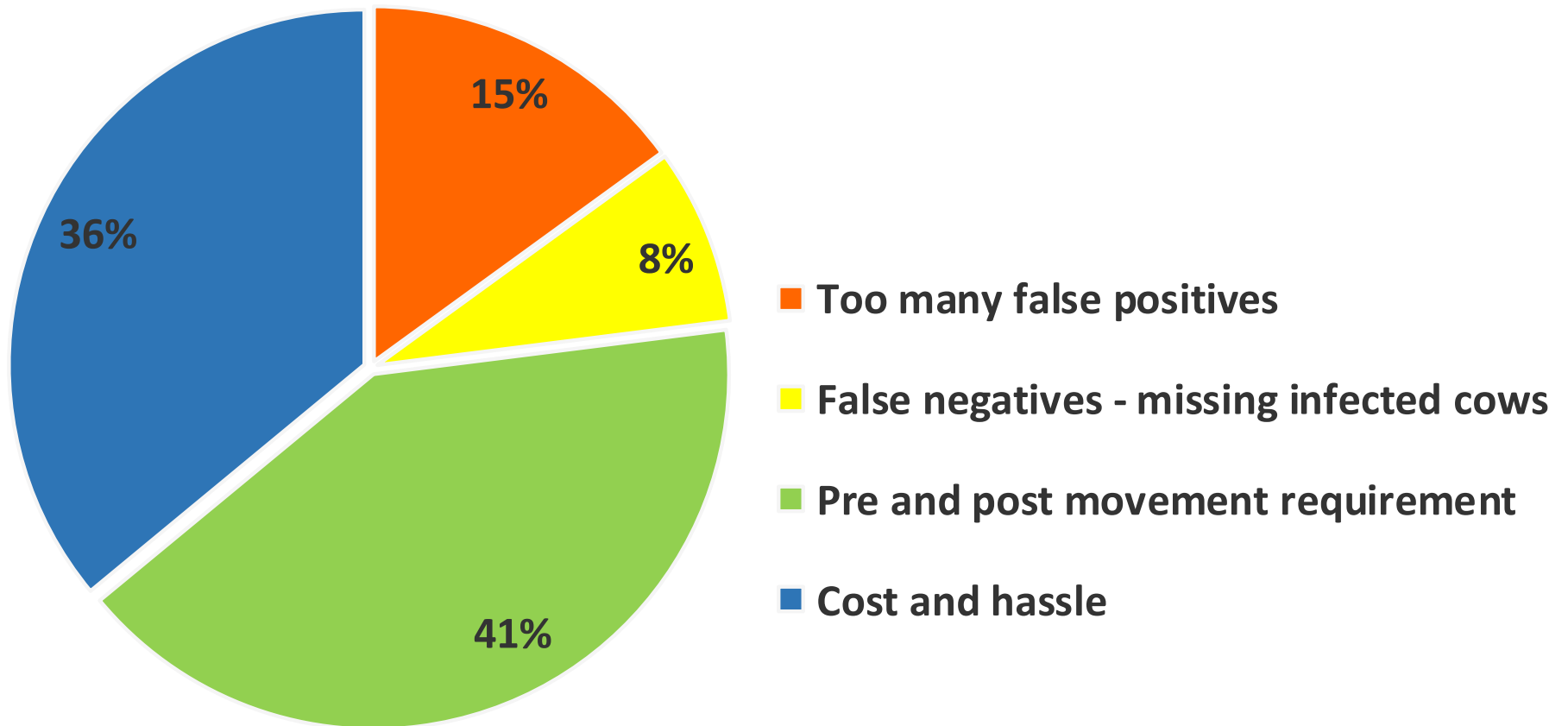
Wednesday,
27 November

Limerick
Racecourse

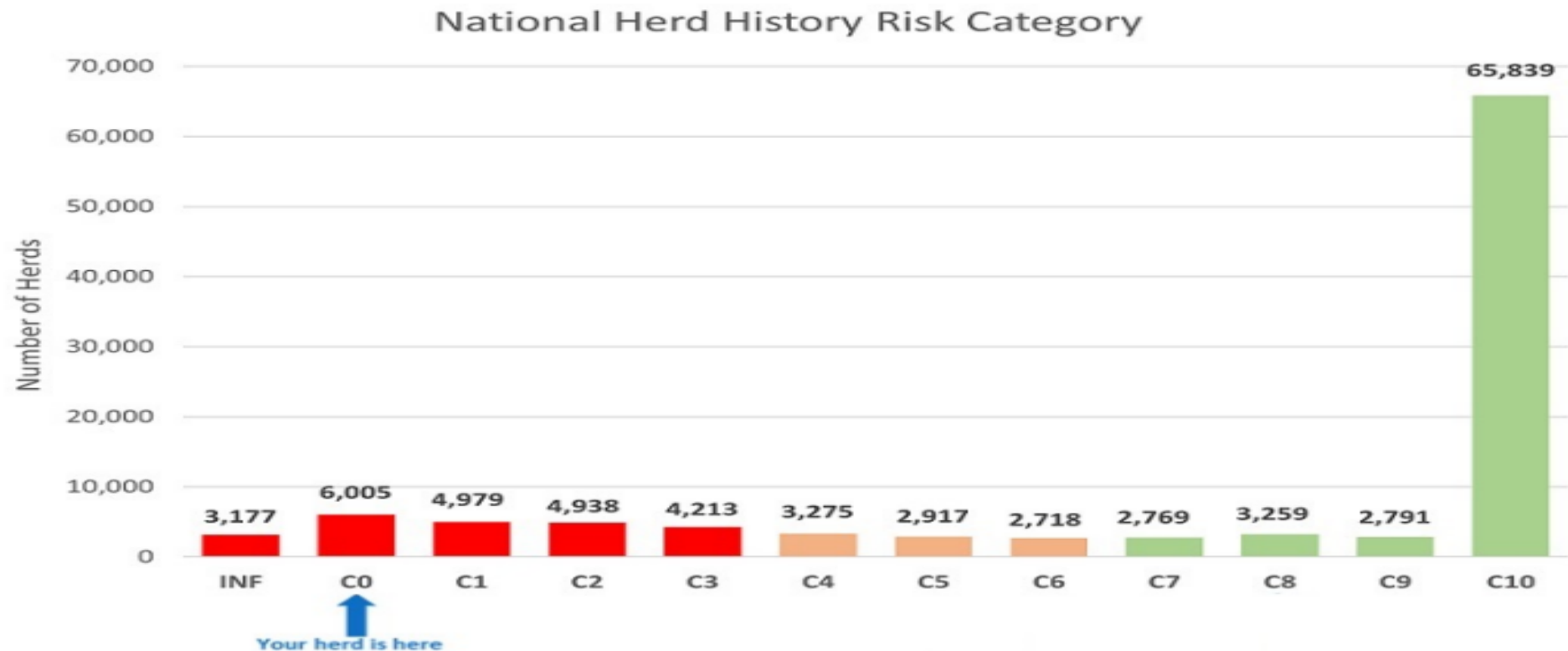
Survey- What is main source of TB spread in your area?



Survey- Your main concerns with the TB skin test?

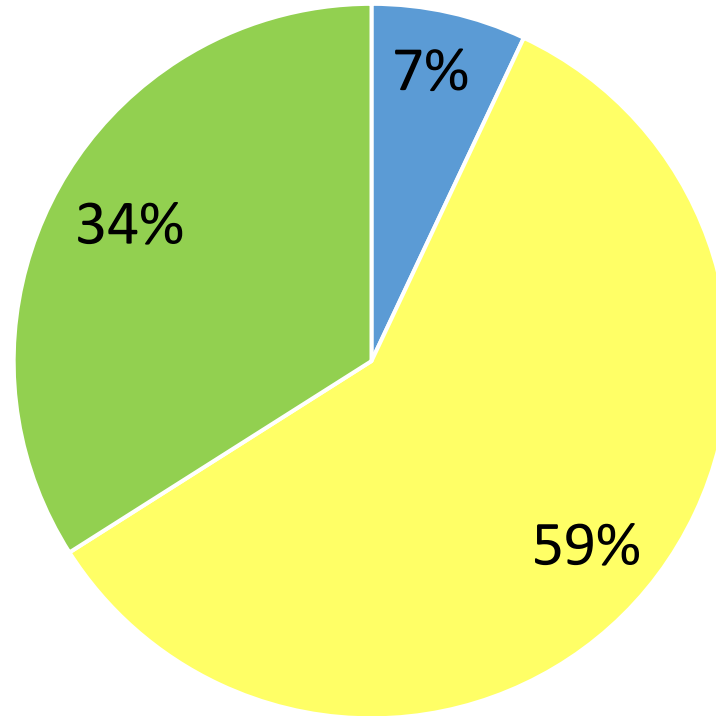


TB Risk Statement- Example



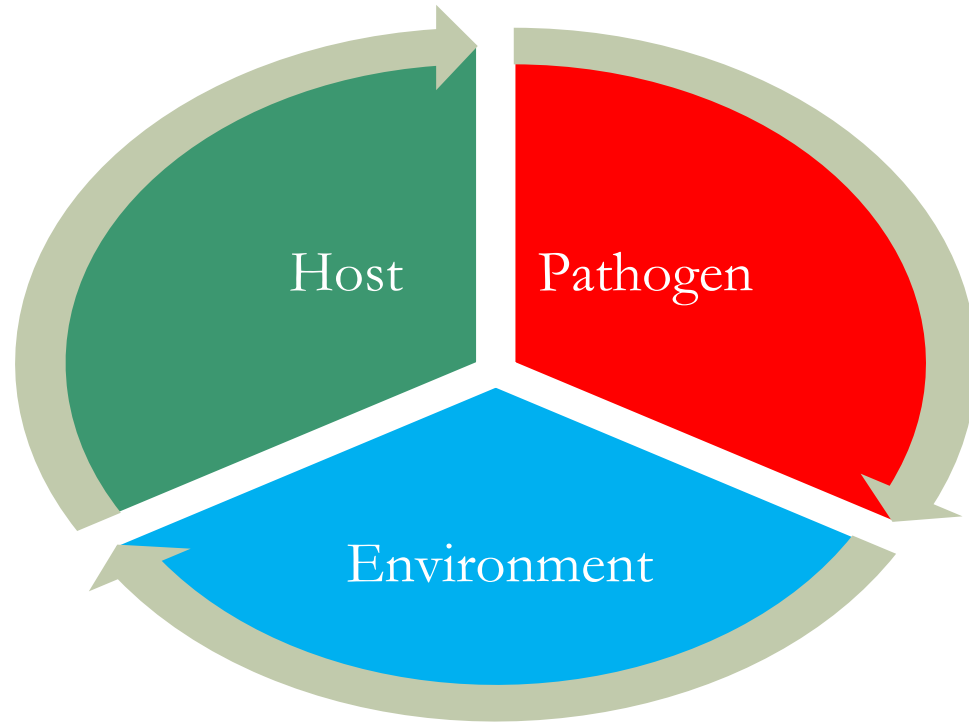
Status Codes			
INF	Herds currently restricted	C5	Herds TB clear for 5 years
C0	Herds TB clear for less than 1 year	C6	Herds TB clear for 6 years
C1	Herds TB clear for 1 year	C7	Herds TB clear for 7 years
C2	Herds TB clear for 2 years	C8	Herds TB clear for 8 years
C3	Herds TB clear for 3 years	C9	Herds TB clear for 9 years
C4	Herds TB clear for 4 years	C10	Herds TB clear for 10 years or more

Did you ask for a TB statement the last time you bought stock?

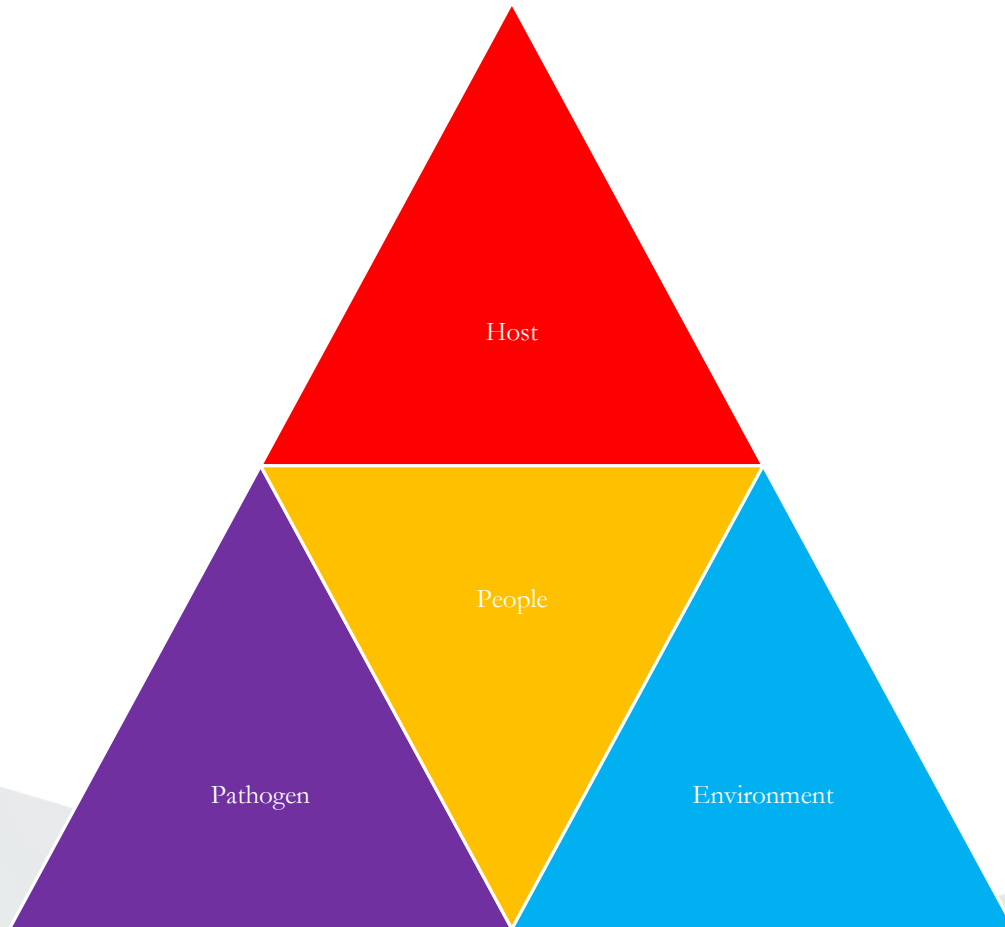


■ Yes ■ No ■ Wasn't Aware

Epidemiology Triangle



With an added social dimension...



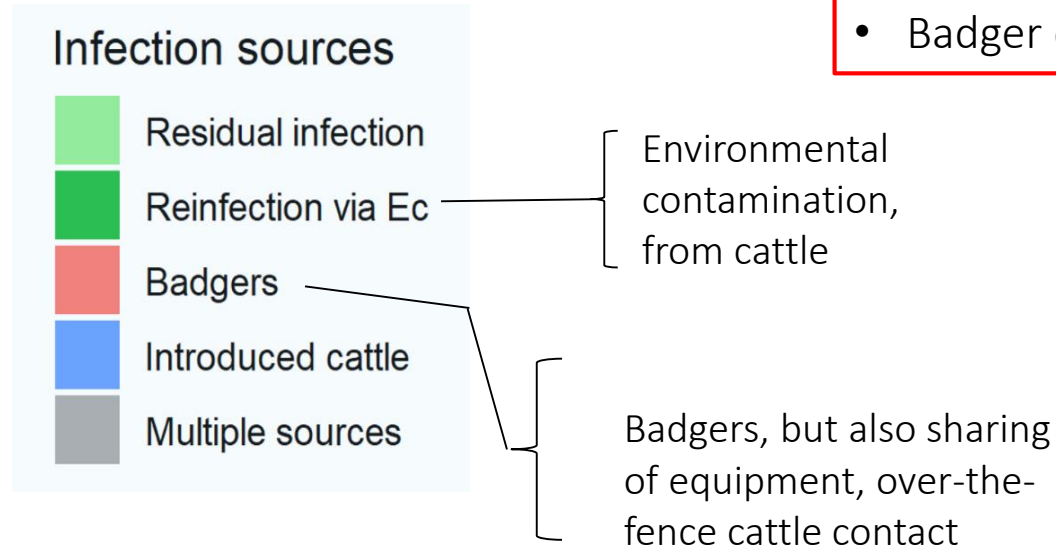
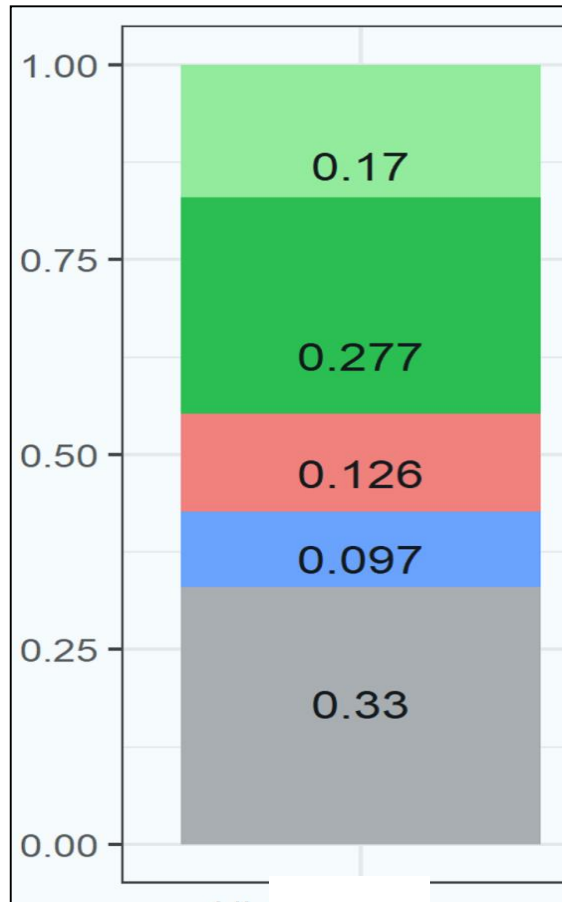
It is a riddle,
wrapped in a
mystery, inside an
enigma.

Winston Churchill

 wonderful quote



Relative contribution of infection sources



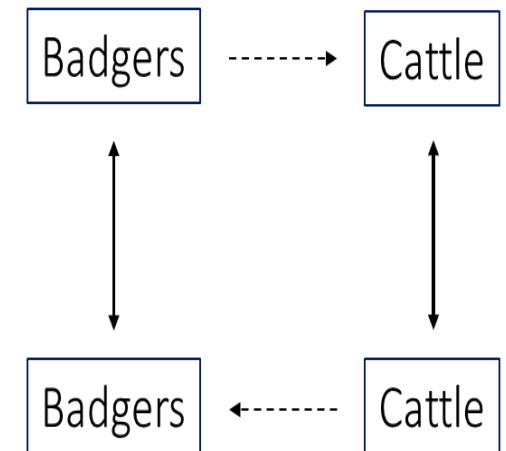
Varying assumptions

- Environmental persistence
- Badger latent period
- Skin test sensitivity
- Badger density

Two Host system

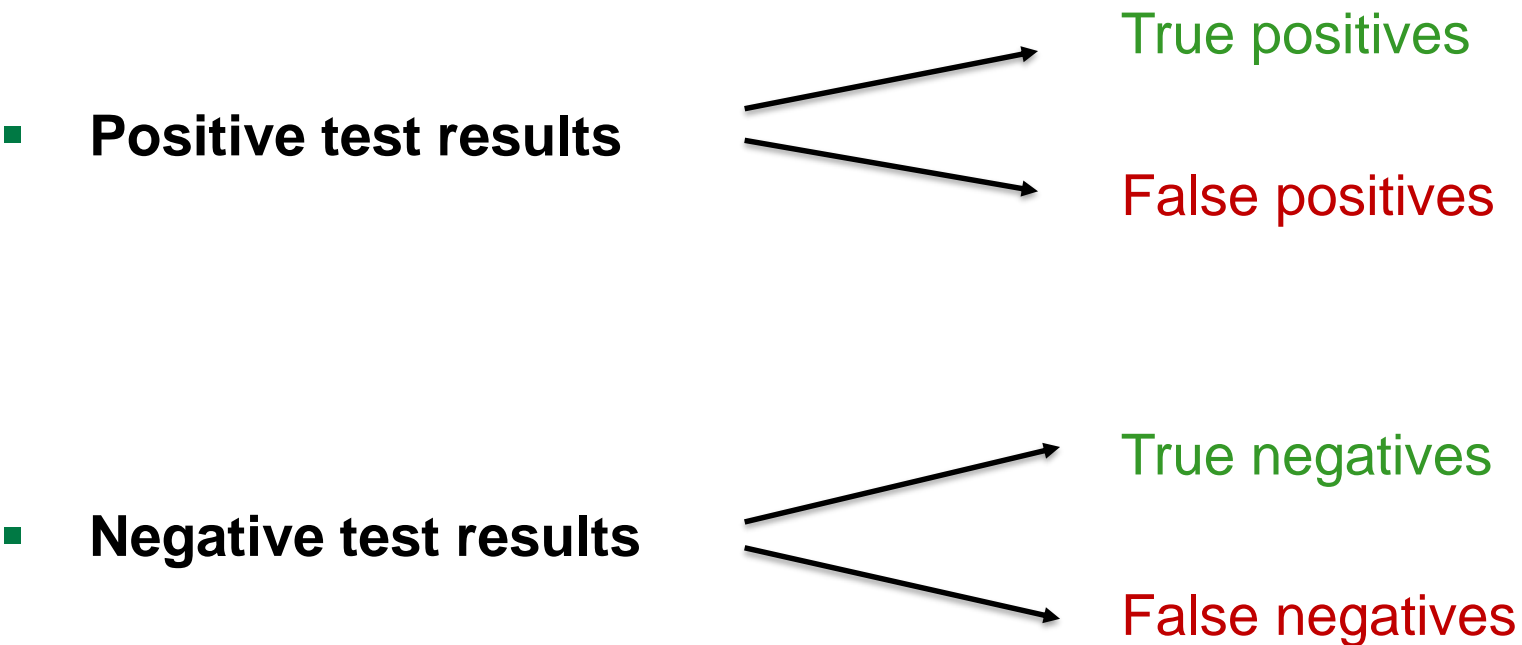
- TB is spilling over and spilling back between cattle and badgers
- What pathway is driving the disease?
- *Herd size* can contribute to increased cattle to cattle risk

	Rate of transmission	
Cattle to Cattle	17 times	Badger to Cattle
Cattle to Cattle	4.9 times	Cattle to Badger
Badger to Badger	4.7 times	Badger to Cattle
Badger to Badger	4.5 times	Cattle to Badger



Test performance

- **Sensitivity 80%:** Proportion of diseased animals that test positive using the test
- **Specificity 99.9%:** Proportion of healthy animals that test negative using the test



Example: 100 cow herd, 10 cows bTB-infected

TB tested with skin test (sensitivity ~80%; specificity ~99.98%)

	Infected animals	Non-infected animals
Skin positive	~8 true positive	~0 false positive (1/5000 chance)
Skin negative	~2 false negative	~90 true negative

Two weeks later: 92 cow herd, 2 bTB-infected

TB tested with blood (sensitivity ~90%; specificity ~97%)

	Infected animals	Non-infected animals
Blood positive	~2 true positive	~3 false positive
Blood negative	~0 false negative (1/10 chance)	~87 true negative

Research projects: BoviTB + MetabTB

- Stress (metabolic, nutritional, disease) can lead to immunosuppression
- Want to investigate the impact of stress on:
 - The TB skin test
 - The incidence and size of TB breakdowns
- Retrospective data analysis
- Blood sampling of herds with recent breakdowns and similar herds that are TB free



Pallaskenry College Dairy Herd- TB Case Study



	Date	Action	Number of Reactors	
1	19 July 2022	Herd Skin Test	28	
2	Monday 25 July	Gamma Blood Test all cows		
		Gamma Blood Test Results	46	
3	13 October 2022	Herd Skin Test	11	
4	22 November 2022	Gamma Blood Test Results	6	
5	Friday 17th February 2023	Herd Skin Test	0	
	Monday 20th February 2023	Herd Skin Test Reading	0	All Clear
6	Tuesday 07th March 2023	Gamma Blood Test Results	8	
7	09 May 2023	Gif results from March	9	
8	04 August 2023	Herd Skin Test	2	
9	29 August 2023	Gamma Blood Test Results	7	
		3 would be positive based on 2022 criteria		
	12 September 2023	7 Cows Removed	7	Ashbourne Meats
10	Thursday 23rd November 2023	Herd Skin Test	4	
	28 November 2023	2 deemed Positive Based on history	2	
11	15 February 2024	Herd Skin Test	2	
	28 February 2024	Cow + Weanling Removed	2	Bronchial lesions
12	Thursday 09th May 2024	Herd Skin Test	6	
	Tuesday 21 May 2024	6 Cows Removed	6	
13	Tuesday 14th May 2024	Gamma Blood Test	10	
		7 positives + 3 voluntary. 1 with lesions + 1 of inconclusives		
14	Tuesday 13th August 2024	Herd Skin Test	0	
14	Tuesday 14th October 2024	Herd Skin Test	0	

Total	141
Skin	55
Blood	86

Need to use skin test early in outbreak

Pallaskenry College Dairy Herd- TB

Date	Skin Test		Gamma Blood		GIF Blood
July 2022	✓	28	✓	46	X
October 2022	✓	11	✓	6	X
February 2023	X	0	✓	8	✓ 9
August 2023	✓	2	✓	7	X
November 2023	✓	6	X		X
February 2024	✓	2	X		X
May 2024	✓	6	✓	10	X
August 2024	✓	0	X		X
October 2024	✓	0	X		X

60% reactors as bloods
Some inconclusive showed lesions

Breeding for TB – Herd PTA % by Category

			TB PTA			
			<8.0		<6.5	
	No	Avg	Number	%	Number	%
5 to 7	68	7.6	43	63%	15	22%
3 to 4	106	8.1	53	50%	12	11%
2	80	8.0	41	51%	15	19%
1	106	8.1	48	45%	12	11%
Incalf	137	7.8	78	57%	35	26%
Yearling	109	7.9	60	55%	21	19%

Breeding for TB resistance a key management step