WAYNE SANDERSON™ FARMS

Harnessing Data Analytics to Enhance Food Safety and Quality in Production

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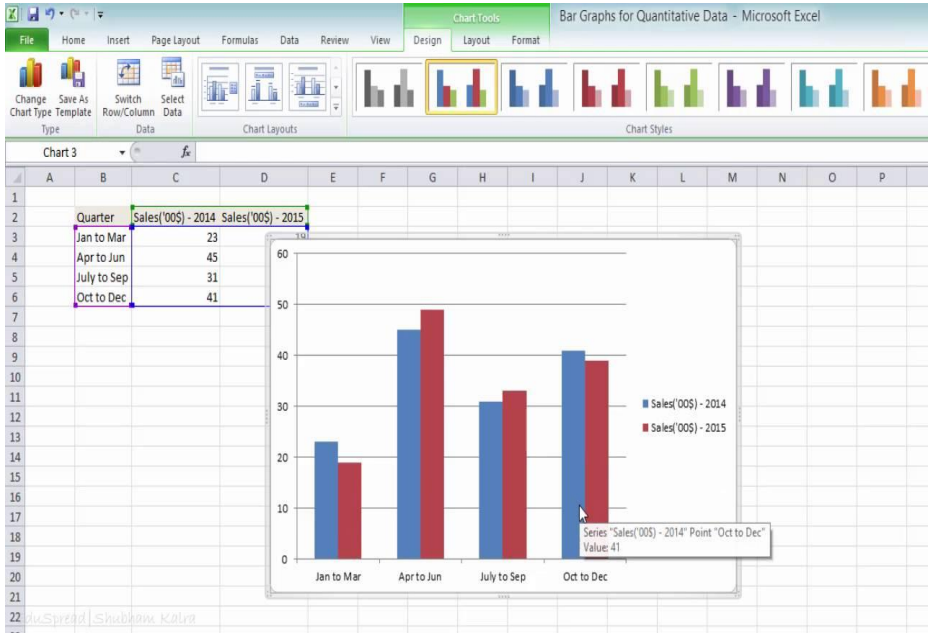
November 2025

That Title Was a Mouth Full

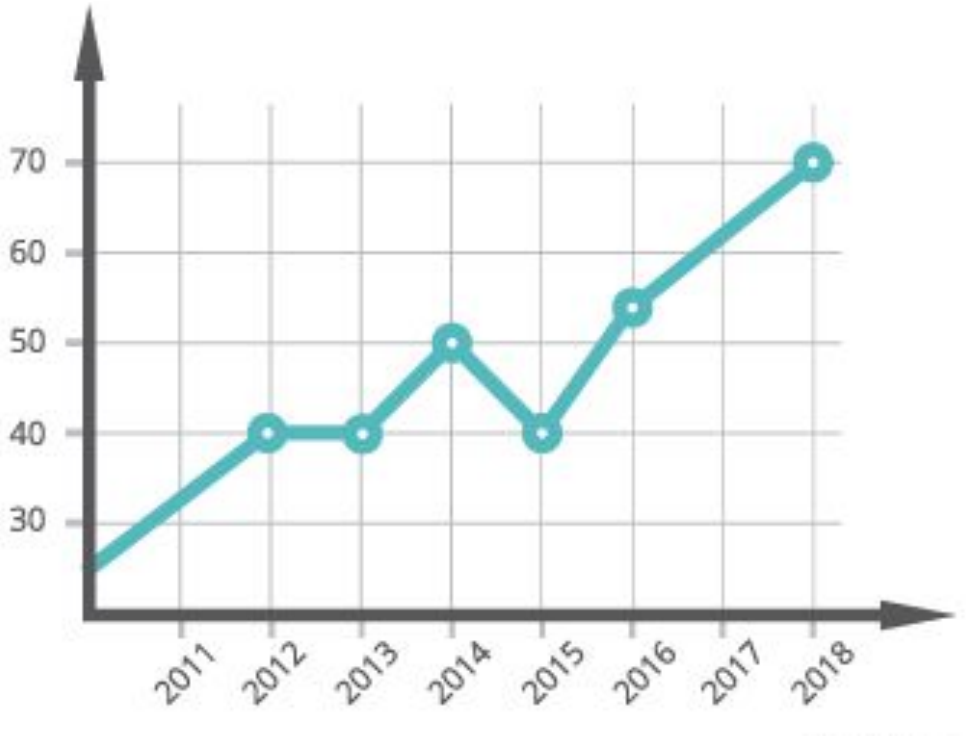
- And, all I could think of was this:

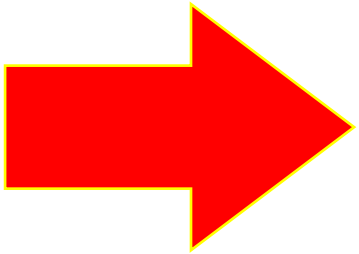
What are we Talking About?

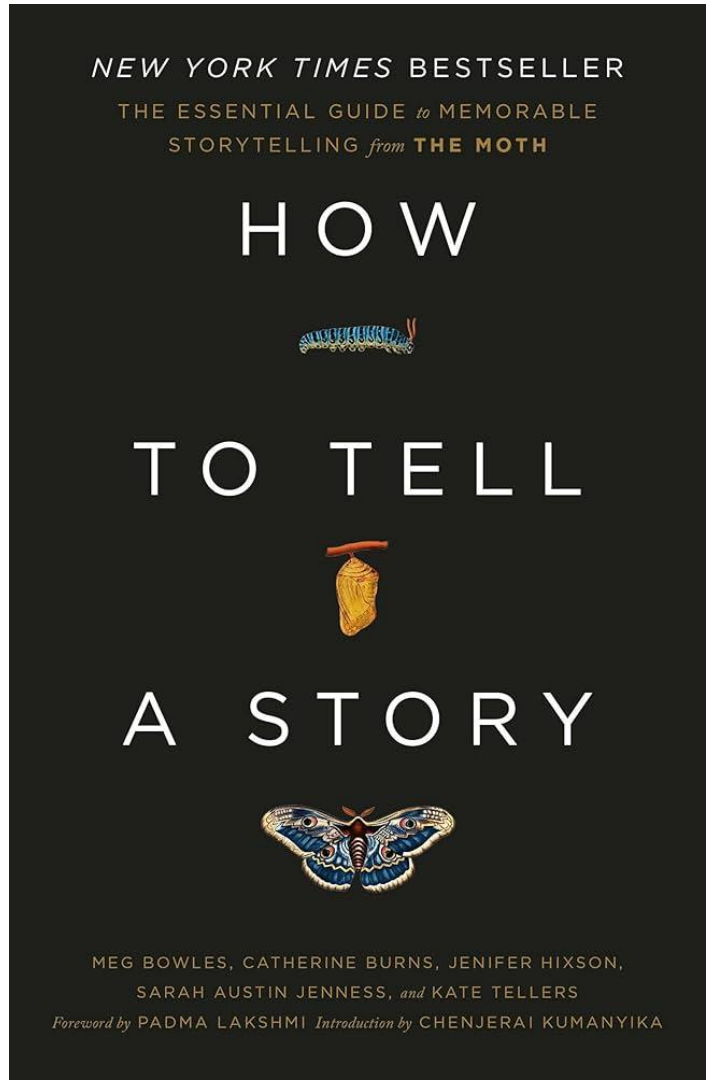


What are we Talking About?

- Furthermore…

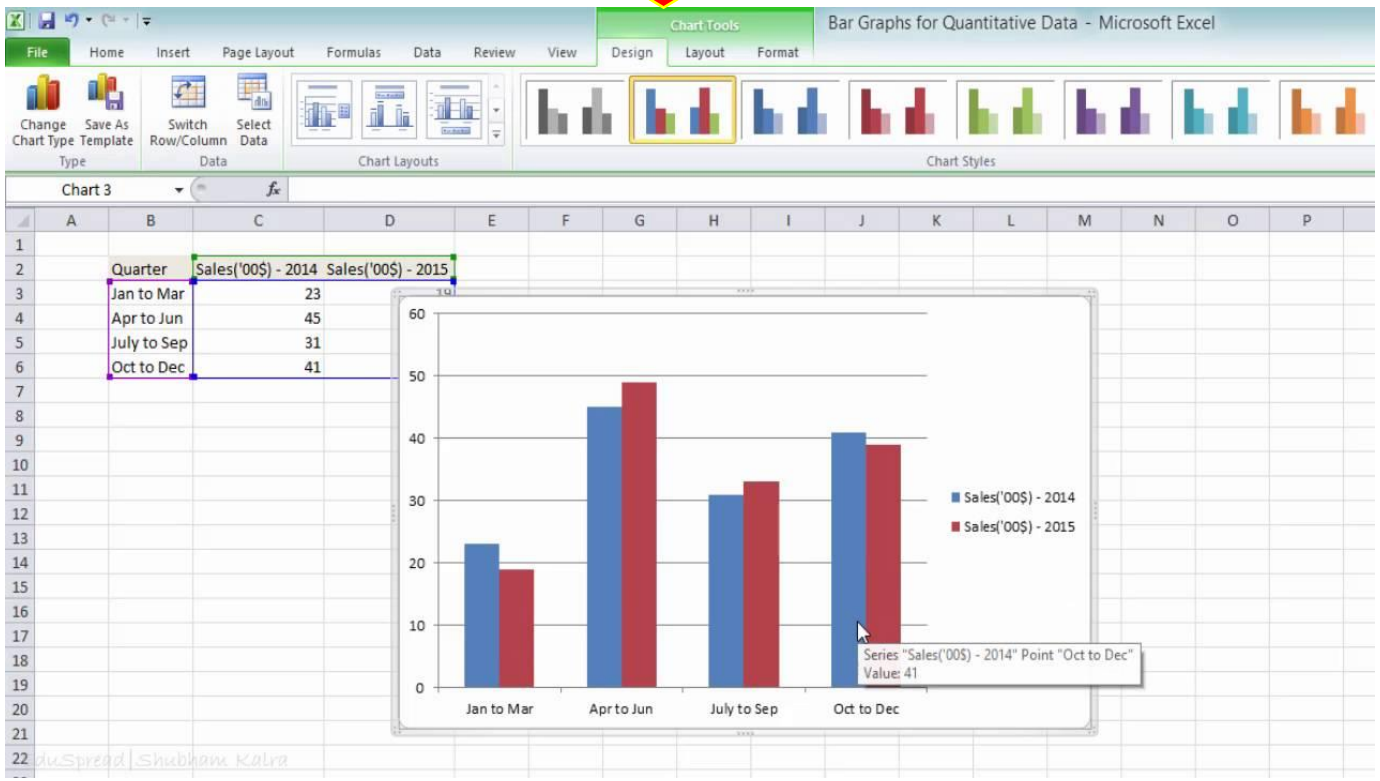






What are we REALLY Talking About?

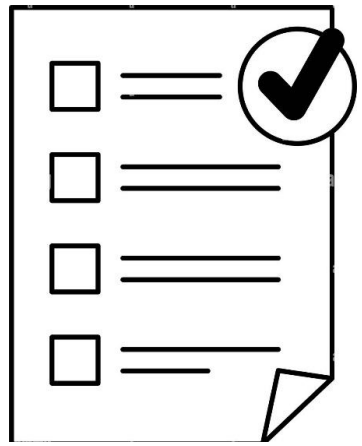
- DATA DIGITALIZATION – **what is <u>not</u>?**
- Part of the past
- What are these bars telling us?
- Data analysis (?)



DATA ANALYSIS: More than a graph…

The Fun Starts with a DECISION

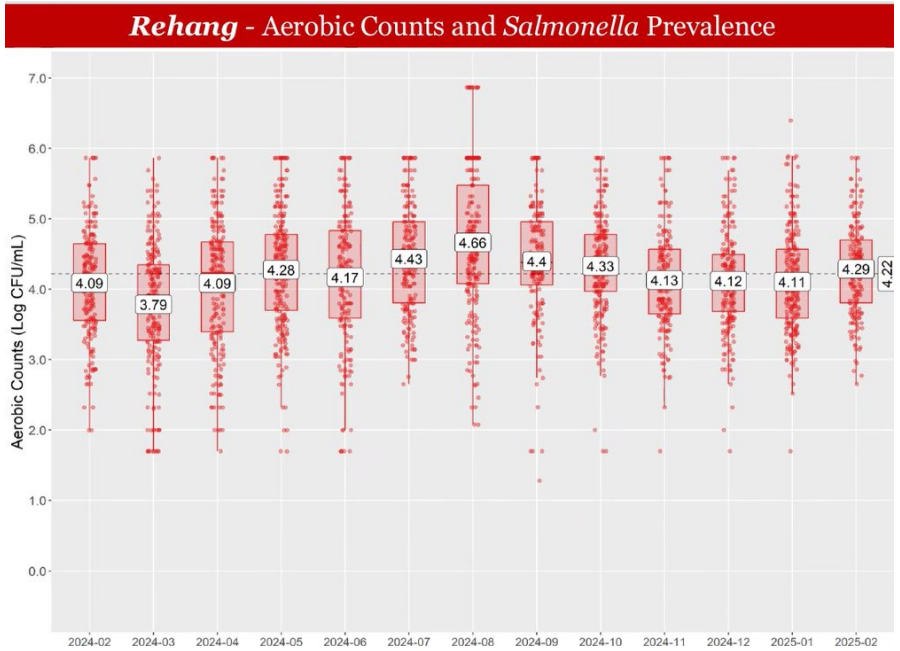
- **DECISION**: digitalize all data collection for QA/FS
  - ✔ “Problem” or “Opportunity”



- Initial investment
- Form/Checklist creation – ***who does it?***
  - ✔ Champion at each plant?
- Wi-Fi connectivity (processing plant problem)
- Establish **DEADLINES**
- **<u>Execute</u>**

The Fun Ends with a DREAM

- What's the end goal?

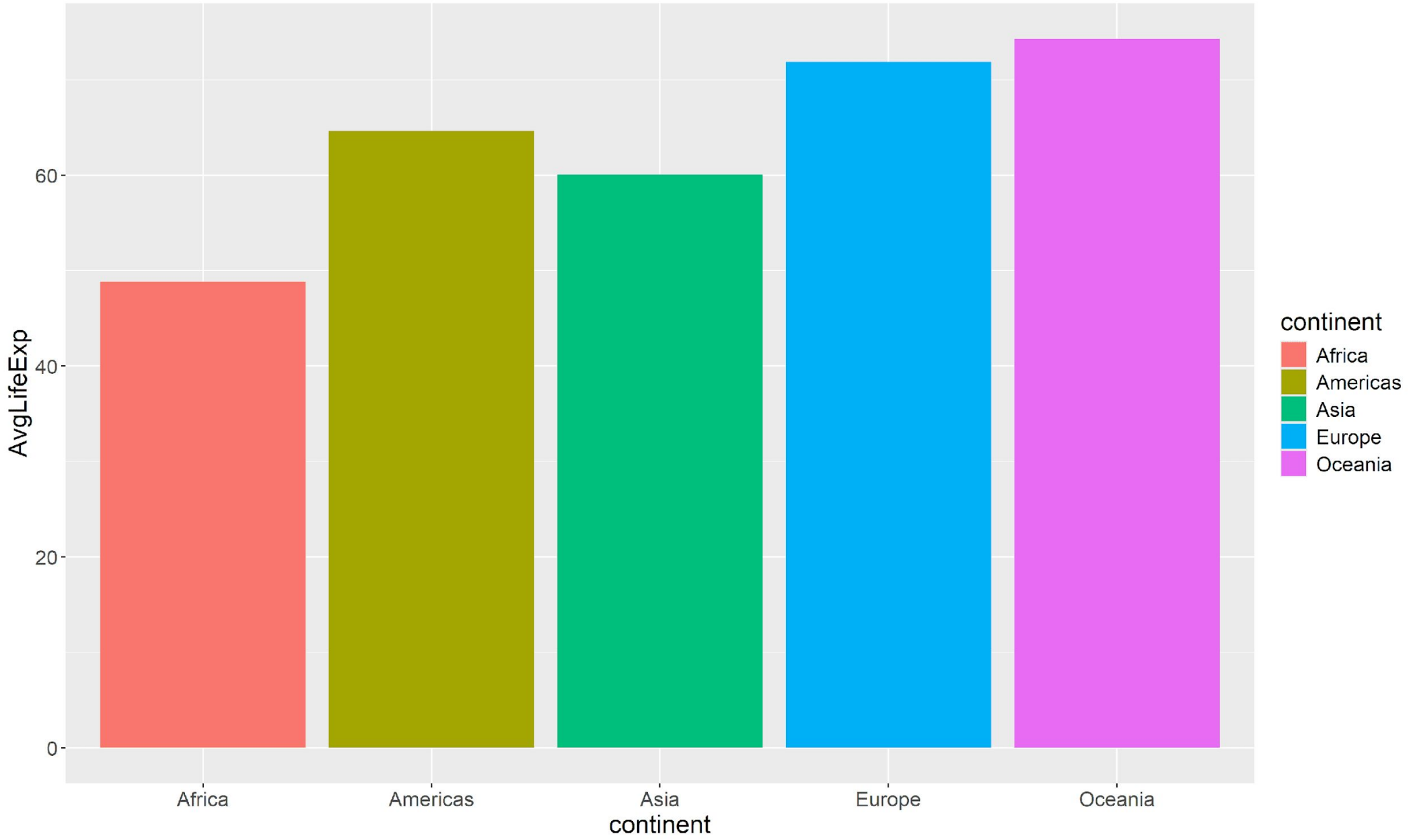


Now What? Who does the Analysis?

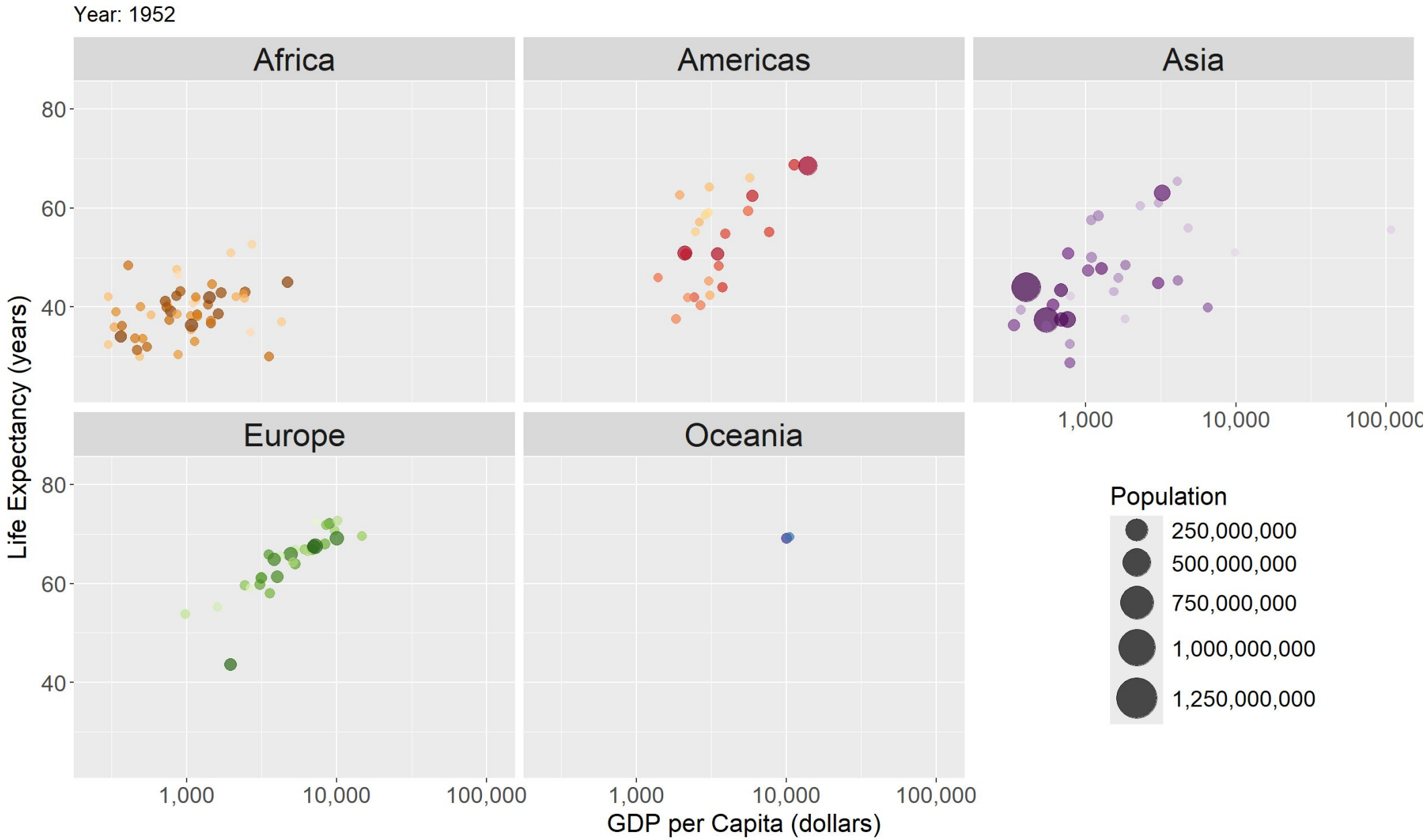
- **Added** responsibility to an existing employee?
- Employee dedicated to Data Analysis?

…takes a lot of:

Going from 0 to 100 MPH in 5 seconds



Going from 0 to 100 MPH in 5 seconds



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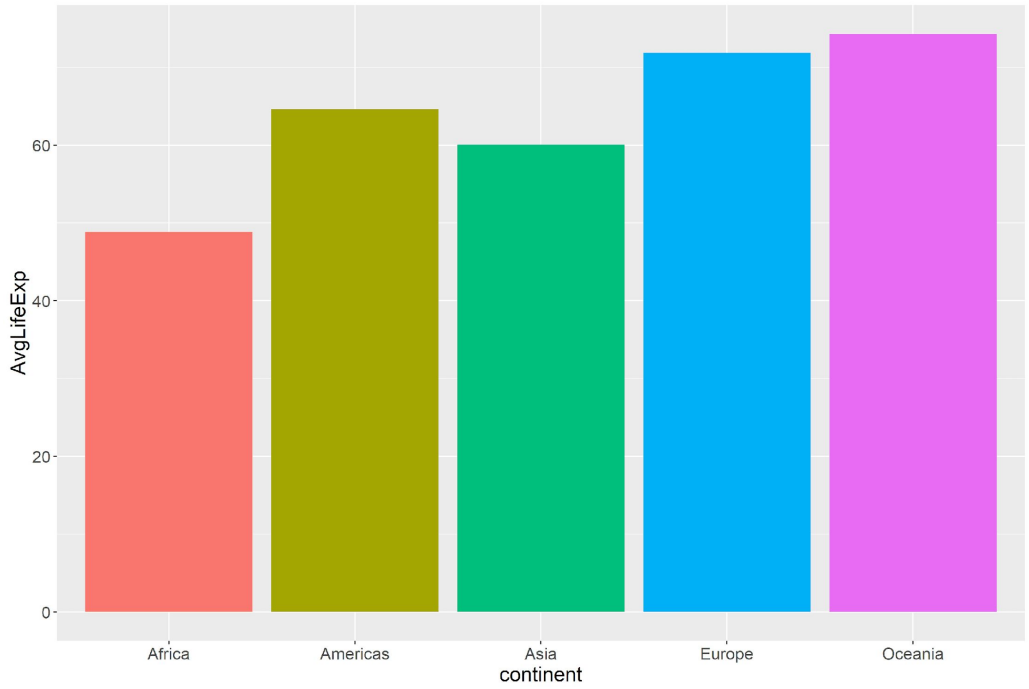
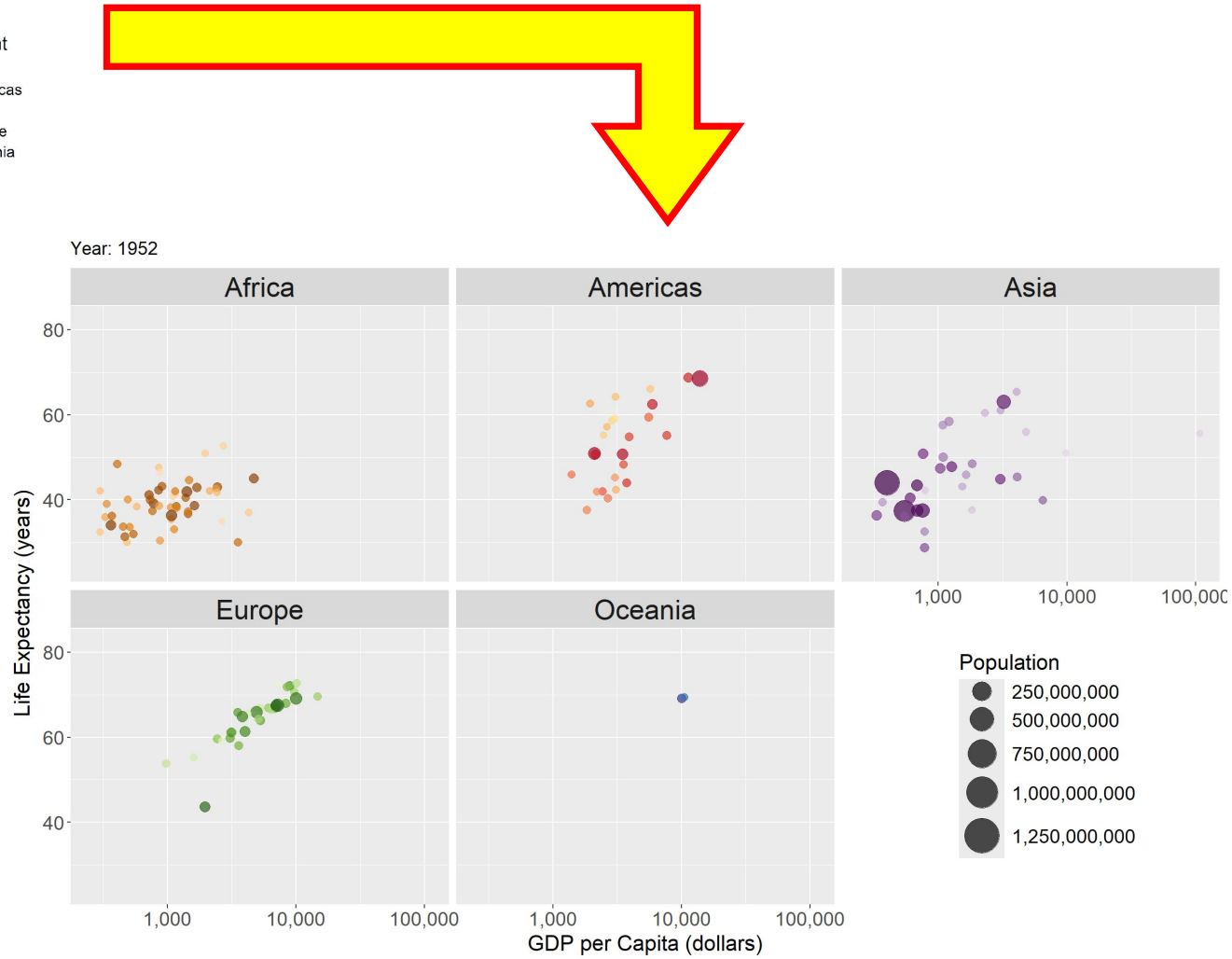


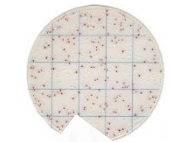


Where the Rubber Meets the Road

Rolling Window – 13 samples (every 22,000 chickens)

Standard: 12 / 51 consecutive samples (+ or -)

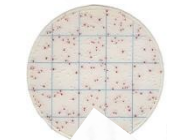
¿?



~~Rolling Window~~ – **APC o EB** (every 22,000 chickens)

Standard: 5 / 51 weekly samples (+ o -)

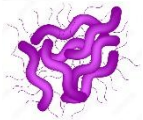
(Whole Bird and Parts)



~~Rolling Window~~ – **APC** (every 22,000 chickens)

Standard: 5 / 51 weekly samples (+ o -)

y CATEGORIES



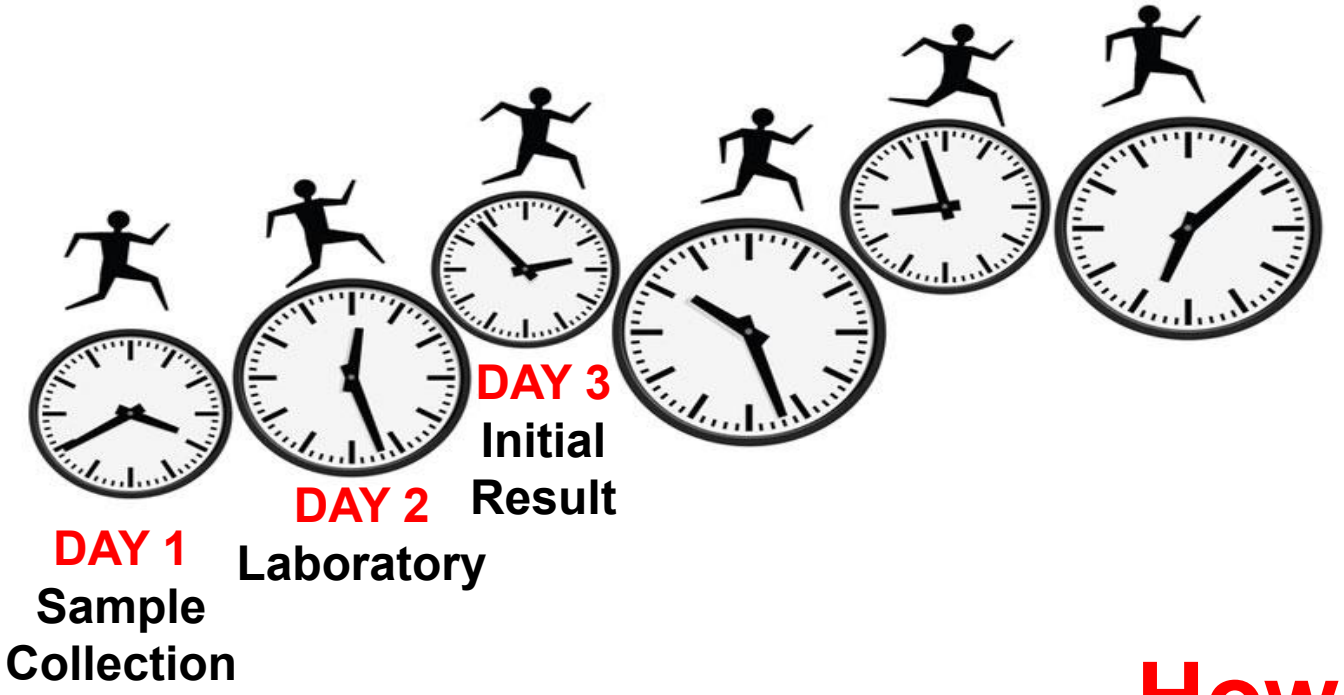
Product	Performance Standard	
	Salmonella	*Campylobacter*
Broiler Carcasses^	5 of 51	8 of 51
Chicken Parts*	8 of 52	4 of 52

CAT 1 2 / 52	CAT 1 4 / 52
CAT 2 3 - 5 / 52	CAT 2 5 - 8 / 52
CAT 3 >5 / 52	CAT 3 >8 / 52

What's the Problem(s)?

ADULTERANT:

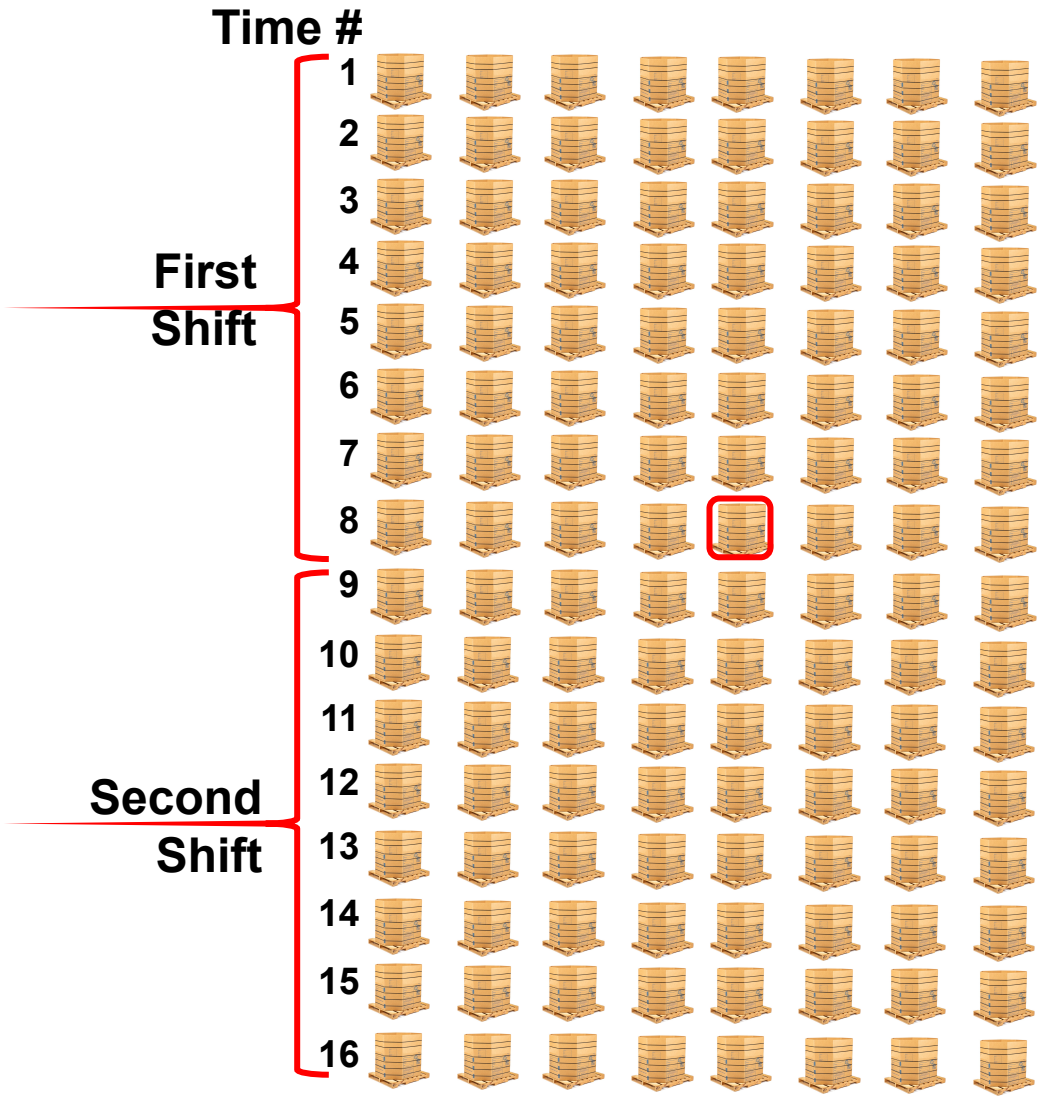
a. Positive
b. 10 CFU/ml
c. ST, SE, SE monophasic



How much product to HOLD?

Why is the Amount to Hold Important?

2,000 lbs.



What and How much Product to Hold?

What did we Do?

Microbiological Independence

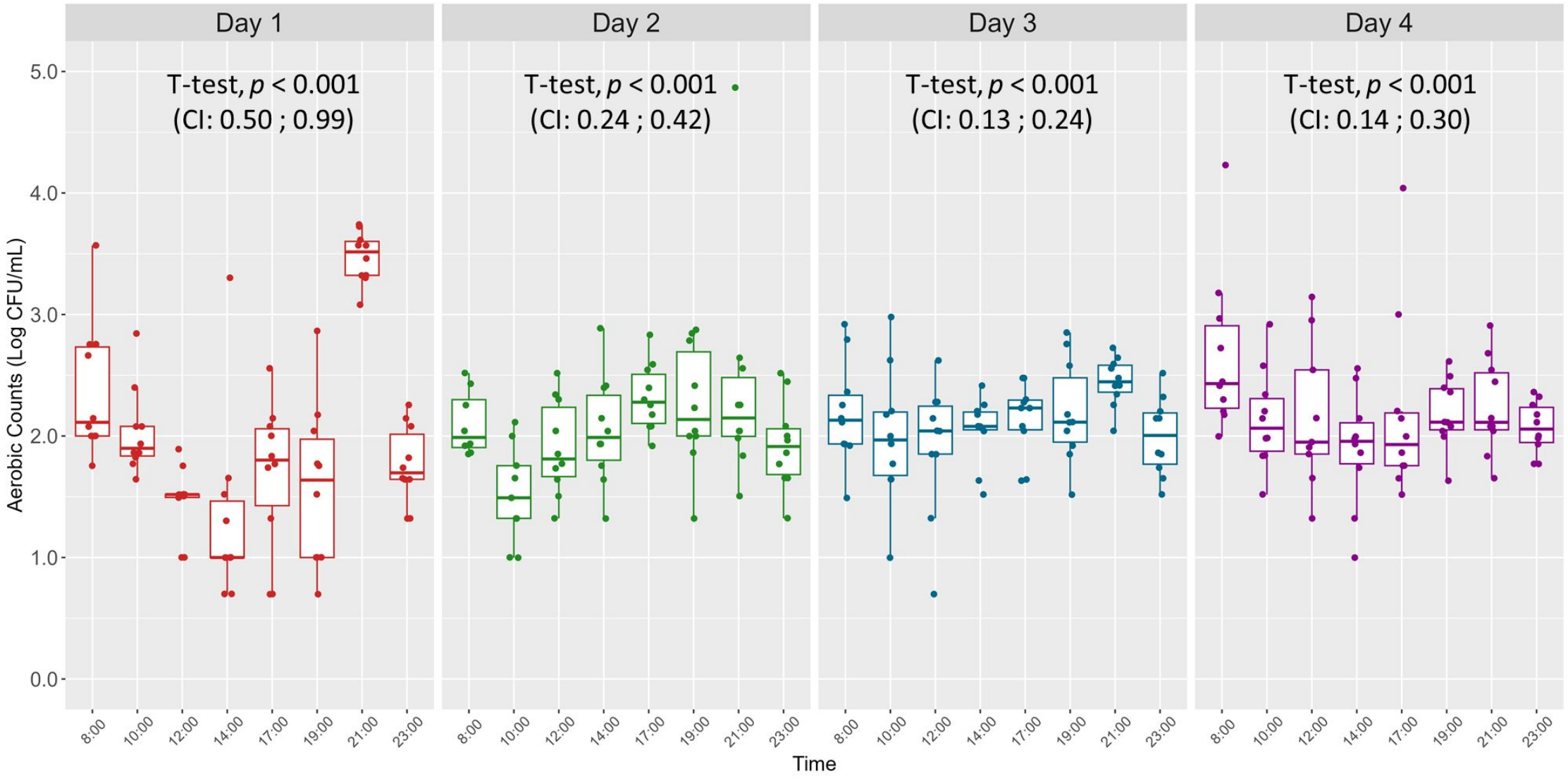
…of ~~samples~~

…of Lots

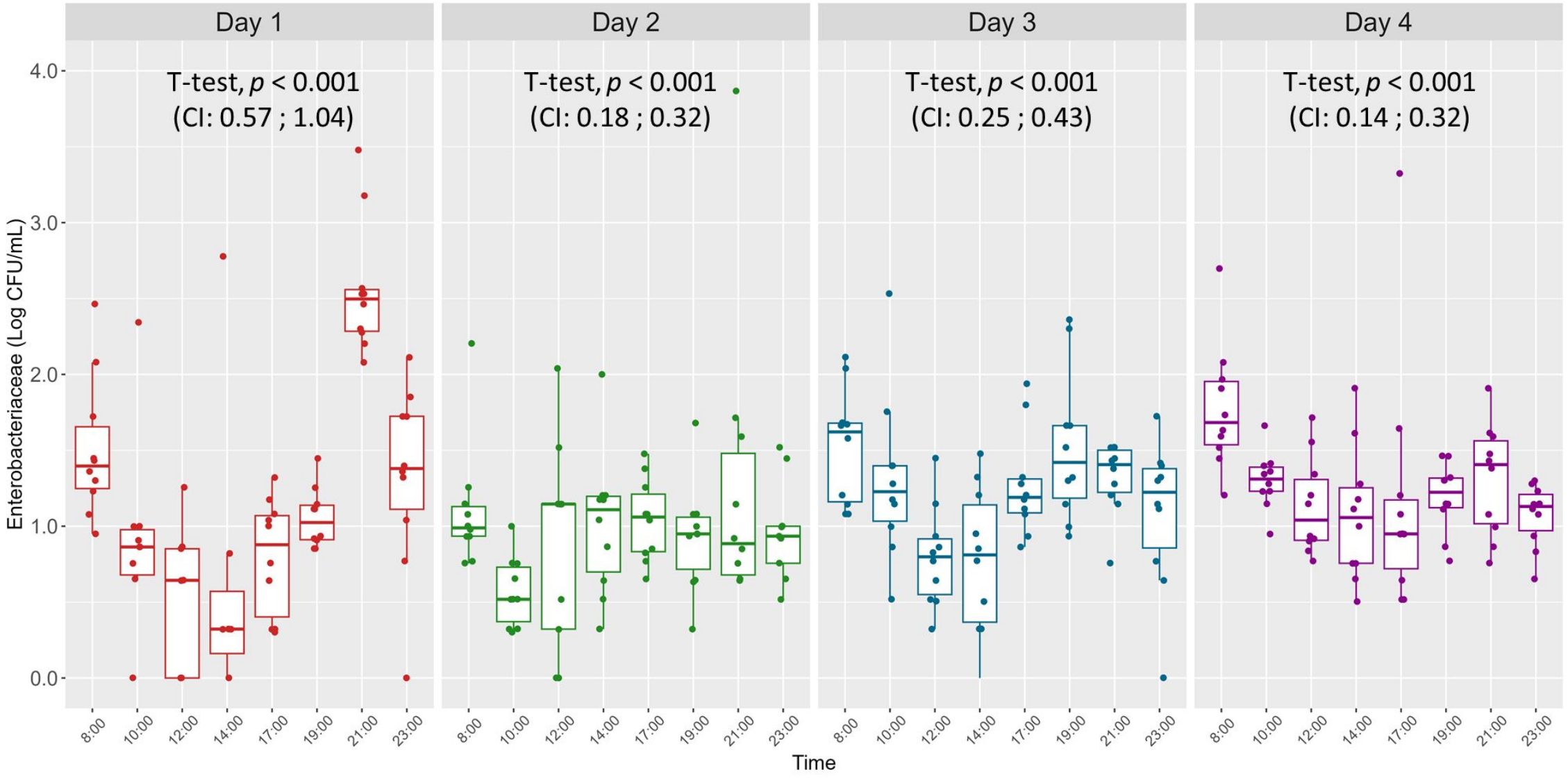
PROTOCOL

- ✓ n = 10 samples per lot
- ✓ 8 lots per day
- ✓ 4 days
- ✓ AC, EB and *Salmonella*

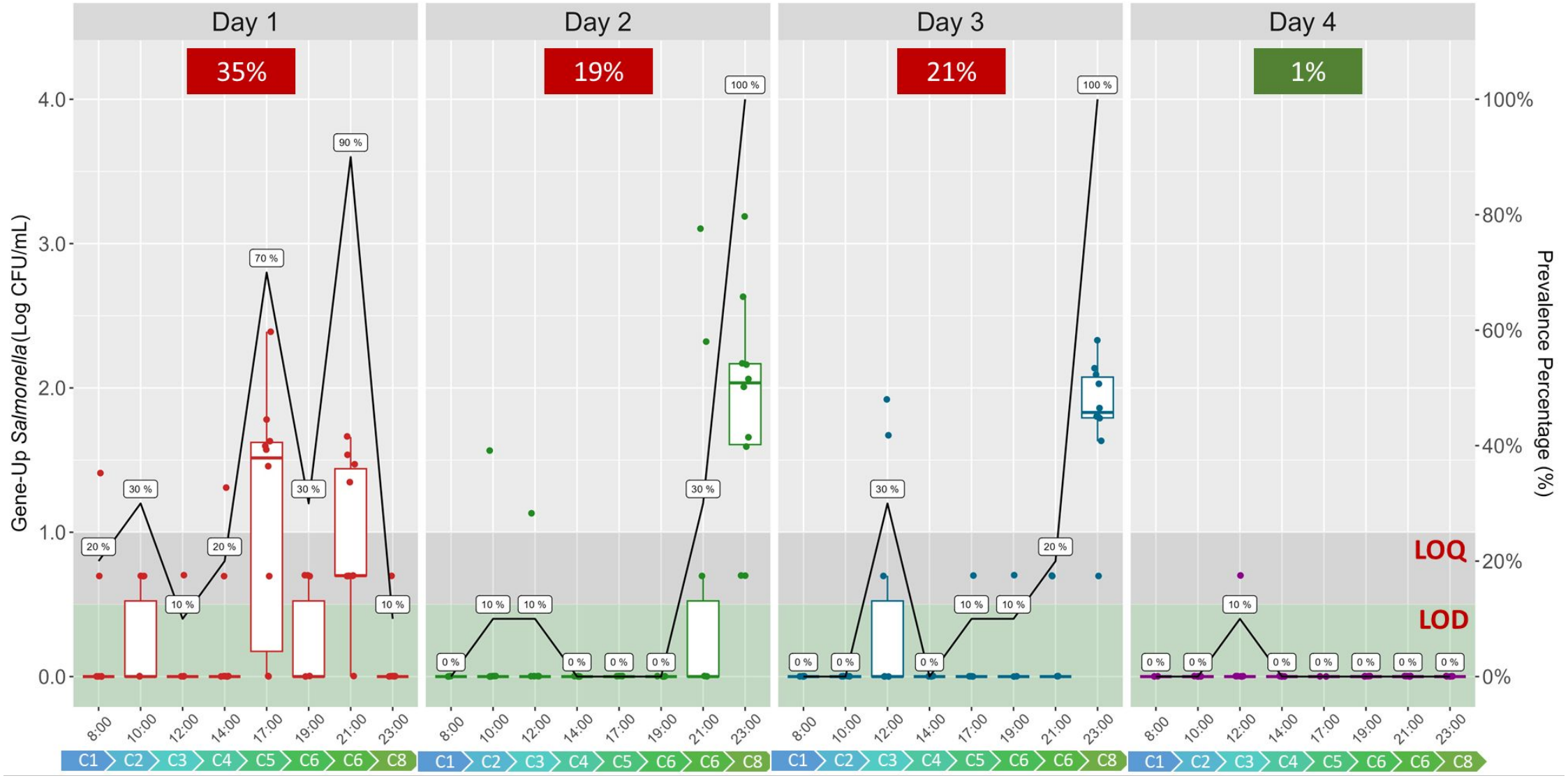
What did we Do? AC Results



What did we Do? EB Results



What did we Do? *Salmonella* Results



What did we Do? Conclusion - SAMPLE

Microbiological Independence of SAMPLES

- There is an statistical microbiological independence between samples within a Lot
- Therefore, if sample #5 is collected, it does NOT have any statistical relationship with sample #4 or #6
- Therefore, if FSIS collects a sample, only that amount would be affected **(?)**
- **KEY: What can be justified….**

What did we Do? Conclusion - LOT

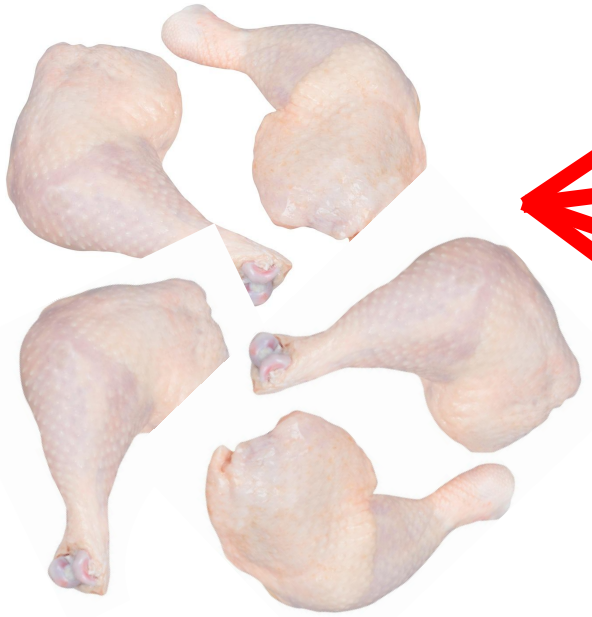
Microbiological Independence of LOTS

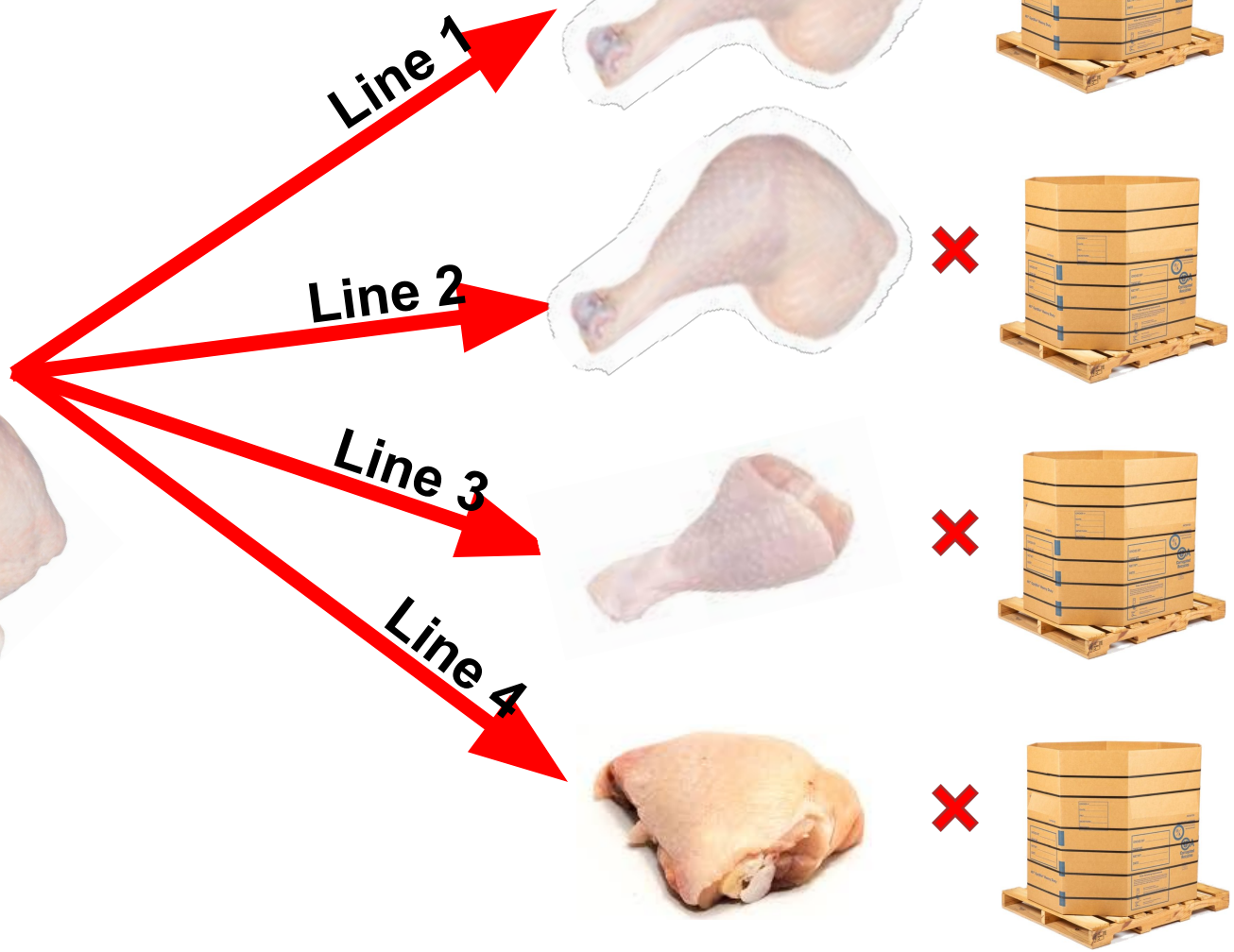
- There is an statistical microbiological Independence among lots
- Lot #5 does NOT have an statistical relationship with Lots #4 or #6

…What else?

Brainstorming: LINE INDEPENDENCE?

Example:
Leg Quarter





QUESTION:

If a samples is collected in Line #1, are the products in lines 2, 3 and 4 also affected?

Brainstorming: PROBABILITY

What is the probability that TWO (2) samples collected side by side from the same lot are >10 CFU/ml for *Salmonella*?

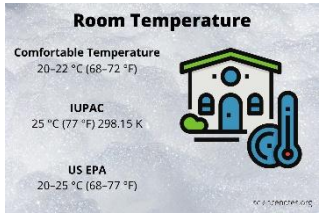
5.45%

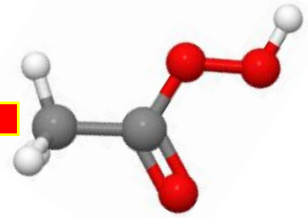
...statistically, using industry data (actual prevalence), it would be necessary to collect 38 samples per lot (~1,800 lbs.) for a false negative rate of 5%

What's Coming up? VALUE ADDED

DASHBOARD

What's Coming up? VALUE ADDED – Variables





PREDICTIVE ANALYTICS

What's Coming up? VALUE ADDED

- Cannot "predict" when we will have a Salmonella positive or as "high" quantitative value

BUT

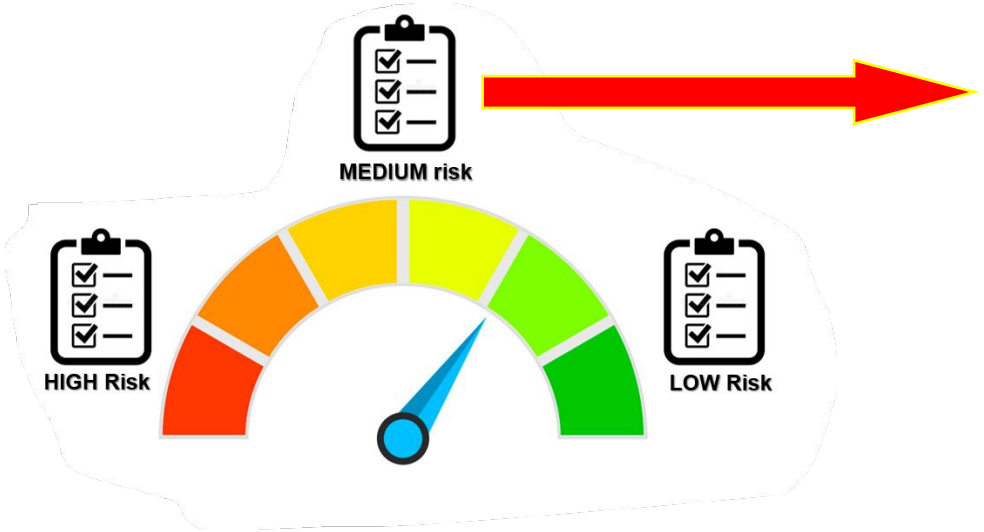
- Can "predict" the risk of, base don the variables and historical microbial data

What's Coming up? VALUE ADDED – Risk

PHASE #1

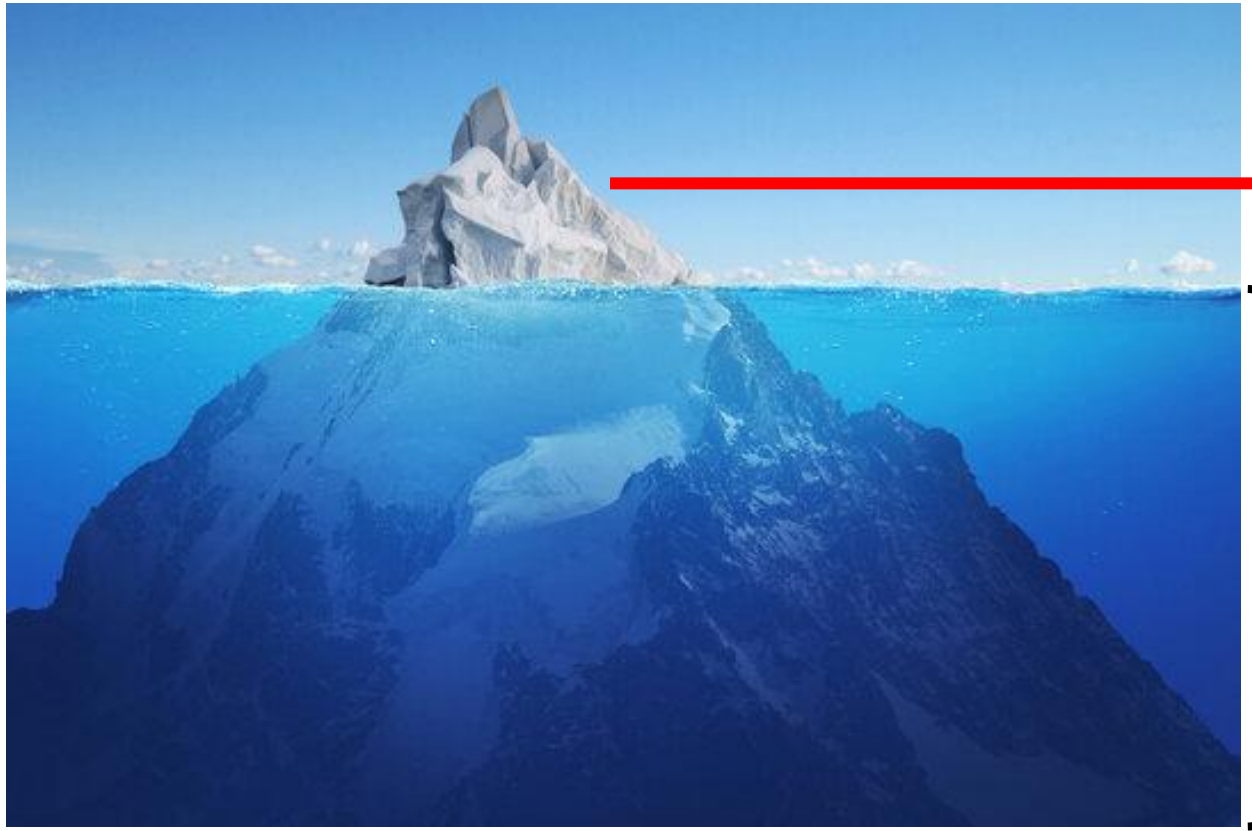
What's Coming up? VALUE ADDED – Action Steps

PHASE #2



- Increase antimicrobial concentration
- Increase cleaning frequency
- Mid-shift washdown?
- Extra monitoring of GMPs
- Increase/Decrease temperature of various processing steps

However...



Data/Predictive Analytics

- Consistent specification
  Breast **vs.** Brst **vs.** B/S Brst
- Nomenclature in Sanitary Dressing checks
  Uncut **vs.** Partial **vs.** No Cut

DATA SCRUBBING

Looking into the Future

- AI, Machine Learning, GPT, Vision Systems, etc., etc.
- The programing used by our analyst is already AI
- We need to learn more and more about the data: **CONSISTENCY**
- More “**predictive**” analytics
- Risk assessment and models
- We need to think beyond what we are used to (challenge the ***status quo***)

THANKS