

Animal Health Surveillance in the U.S.

How do we go from good to great?

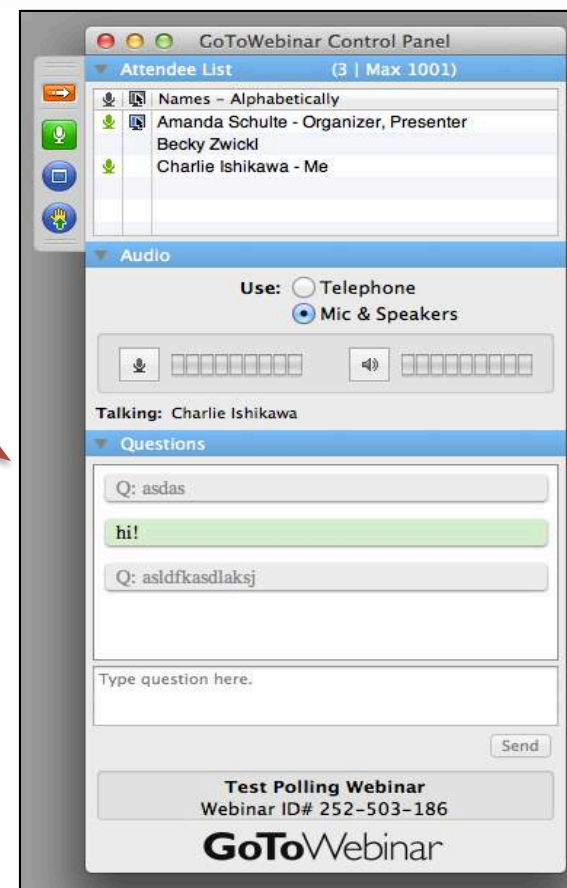
November 20, 2014

Dr. Brian McCluskey, Chief
Epidemiologist, USDA, APHIS,
Veterinary Services



Webinar Logistics

- Everyone is muted. Raise hand to speak directly. Be sure to enter audio code.
- To ask questions: type into question box on GoToWebinar control panel. OR--Click the hand icon to be unmuted to ask directly.
- Please take a few moments to answer the evaluation that pops up when you log off.
- 1 CPH recertification credit is available for viewing this webinar (be sure to complete evaluation).



Announcements



Upcoming ISDS Events

- **Meaningful Use Community Call**, Dec. 5, 2014, 1:00pm-2:00pm ET
- **Webinar: The National Syndromic Surveillance Program**, Dec. 2, 2014, 2:00pm-3:00pm ET
- **ISDS 2014 Annual Conference – Dec. 10-11th 2014 in Philadelphia, PA** (PreConference on the 9th)

Register and learn more: www.syndromic.org

Poll

What domain of public health do you primarily work in?

- Human Health
- Animal Health
- Environmental Health
- Other

Use your GotoMeeting panel to vote now!

Bacon, Chicken Wings and



Getting animal health surveillance from good to great

Brian McCluskey DVM, MS, PhD, Dip. ACVPM
Chief Epidemiologist
USDA, APHIS, Veterinary Services

Disease

Surveillance

Surveillance is a system of collecting, processing and summarizing data about disease where some directed action will be taken if the data indicate a certain disease threshold has been breached.



Surveillance Purposes

- Emerging disease detection, documentation and characterization.
- Claims of disease freedom.
- Continuity of business.
- Identifying changes in disease prevalence, temporal or geographic distribution.
- Identifying areas requiring more intensive surveillance.

Scenario – Emerging swine virus

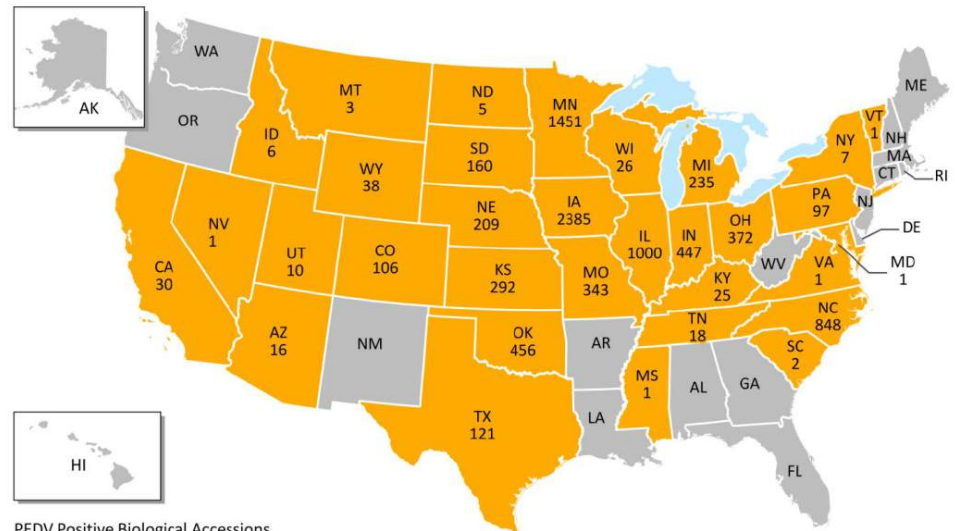


- Clinical signs:
 - Primary signs are acute watery diarrhea and vomiting
 - High morbidity in adult pigs
 - Almost 100% mortality in nursery age pigs
- Transmission
 - Fecal oral route of transmission
 - Fomites
 - Vehicles

Porcine Epidemic Diarrhea Virus (PEDv)

- First diagnosed in US in May, 2013
 - Iowa herd
- Retrospective testing indicates PEDV was present in April, 2013
- PEDV has been diagnosed in 32 states as of 11/2014
- NOT zoonotic, NO food safety issues.
 - Only swine affected
- Not an OIE listed disease

PEDV Positive Biological Accessions

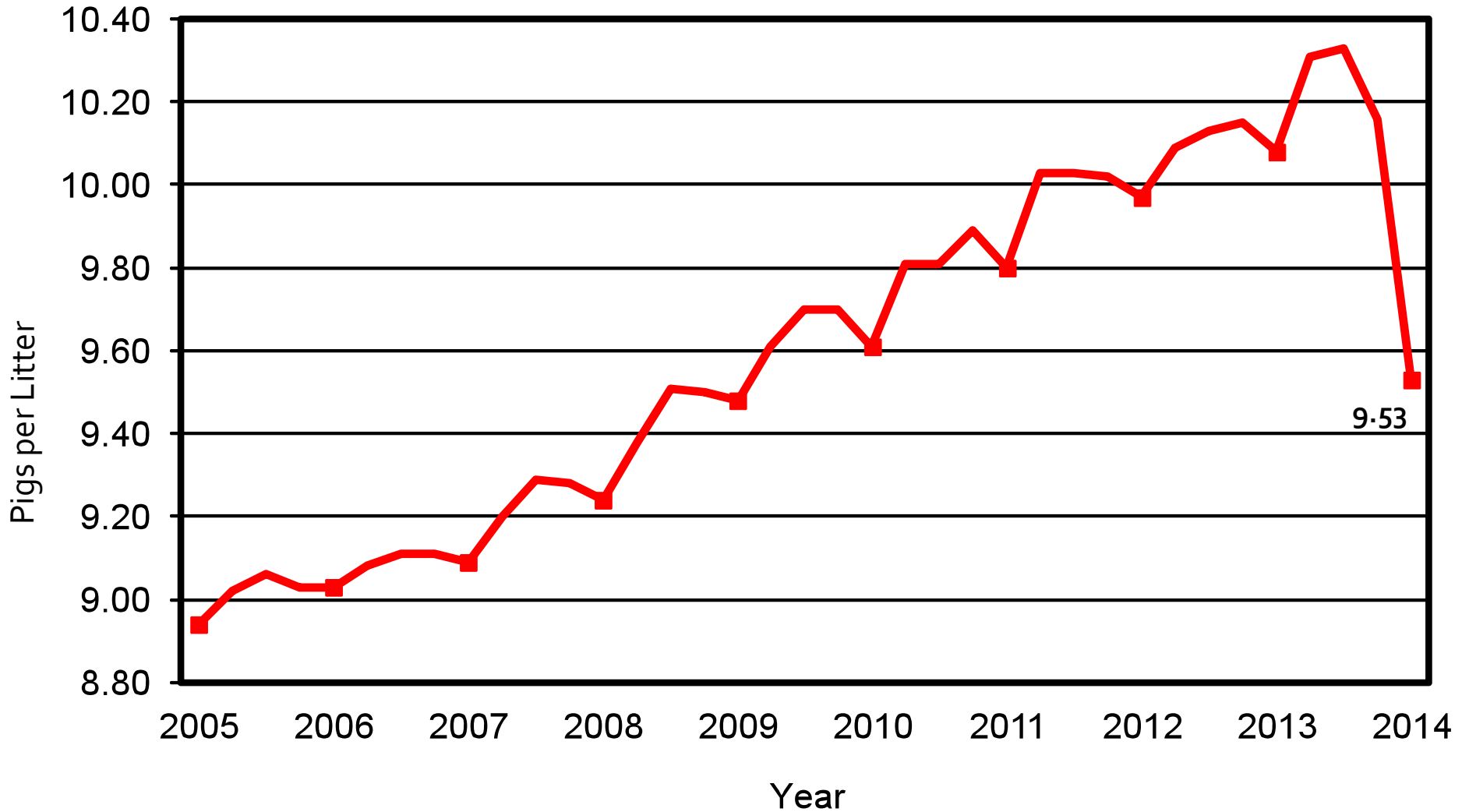


PEDV Positive Biological Accessions
Created: November 5, 2014

Positive Accessions with No State Recorded: 91



U.S. Quarterly Pigs per Litter December - February



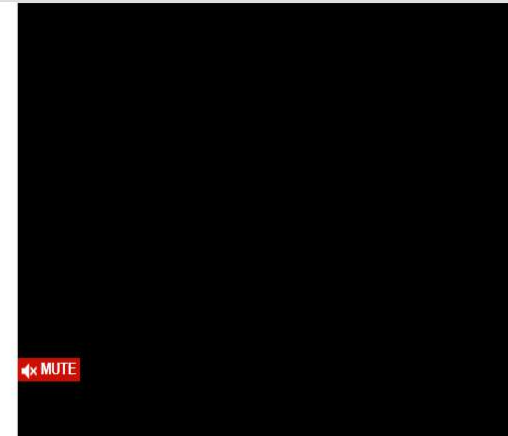
COMPANIES RETAIL/CONSUMER GOODS

Bacon Prices At All-Time High: Is A Shortage Or The Dreaded 'Baconpocalypse' On The Horizon?

By **Nadine DeNinno** @nadedeninno n.deninno@ibtimes.com on August 04 2014 1:54 PM

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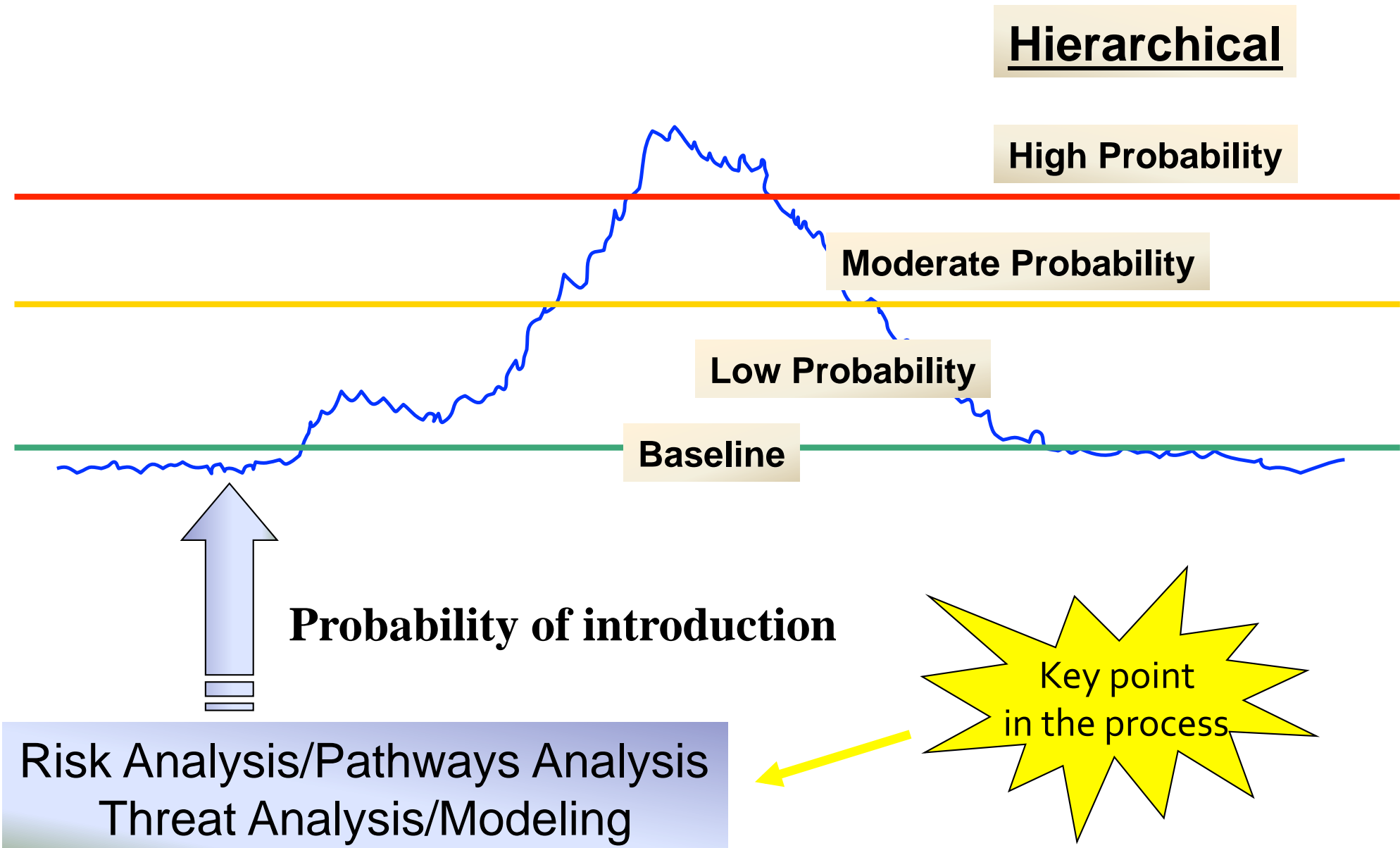
Share icons



*

Probability Based Surveillance

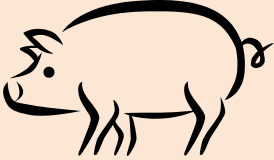
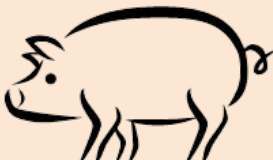
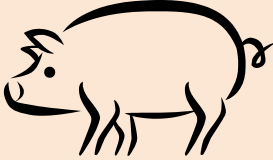
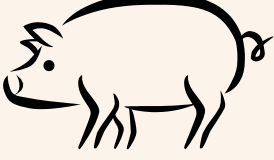
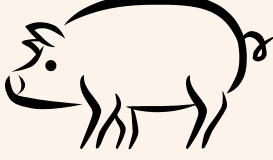
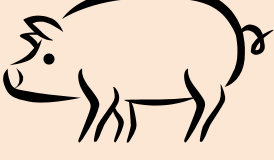
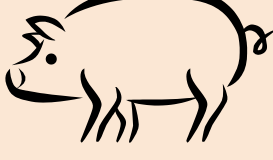
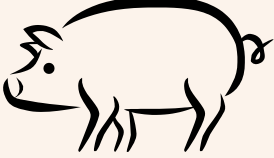
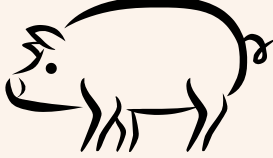
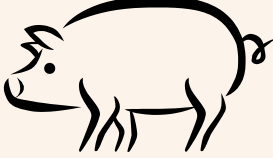
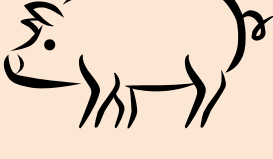
* Bates and Thurmond, 2003



Targeted Surveillance

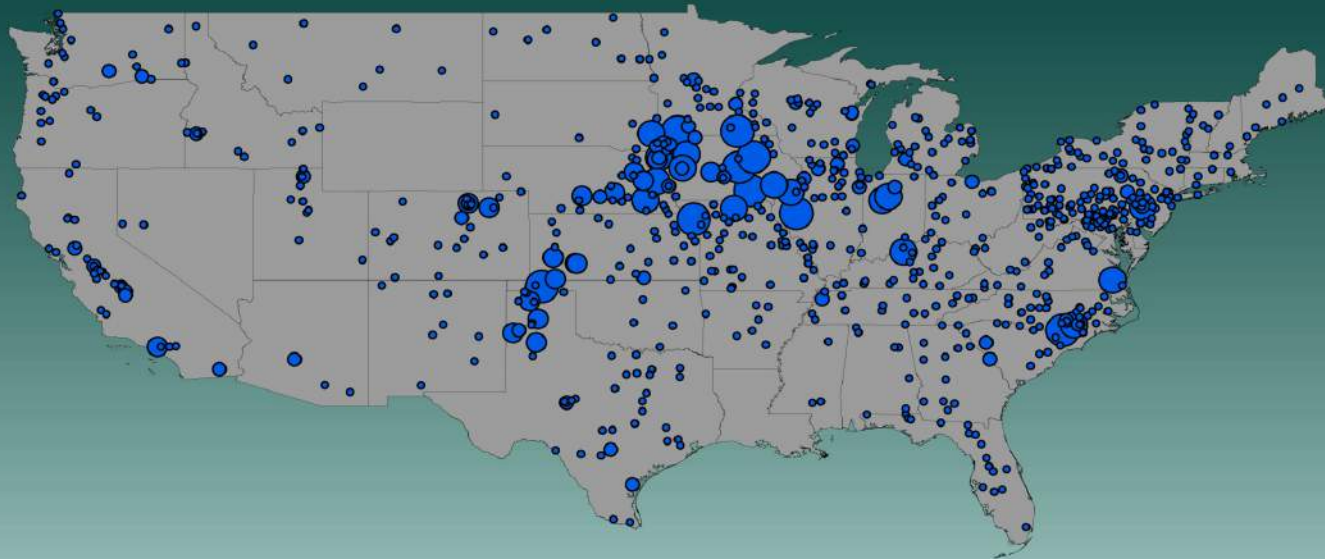
Collection of samples and associated data from specifically identified at risk populations through identified sampling streams



Stream	Pseudorabies	Brucellosis	Classical Swine Fever
Slaughter			
Markets			✗
Herd Testing			✗
Clinical Observation			
Laboratory Network	✗	✗	

Slaughter

FSIS Inspected Plants Number of Head Slaughtered: All Species



FSIS Slaughter: All Species Slaughtered 04/09 to 03/10



Markets

Approved Livestock Markets*



VS
Veterinary Services

• Approved US Livestock Markets

*Livestock can be transported across state lines when they are purchased from an approved market.

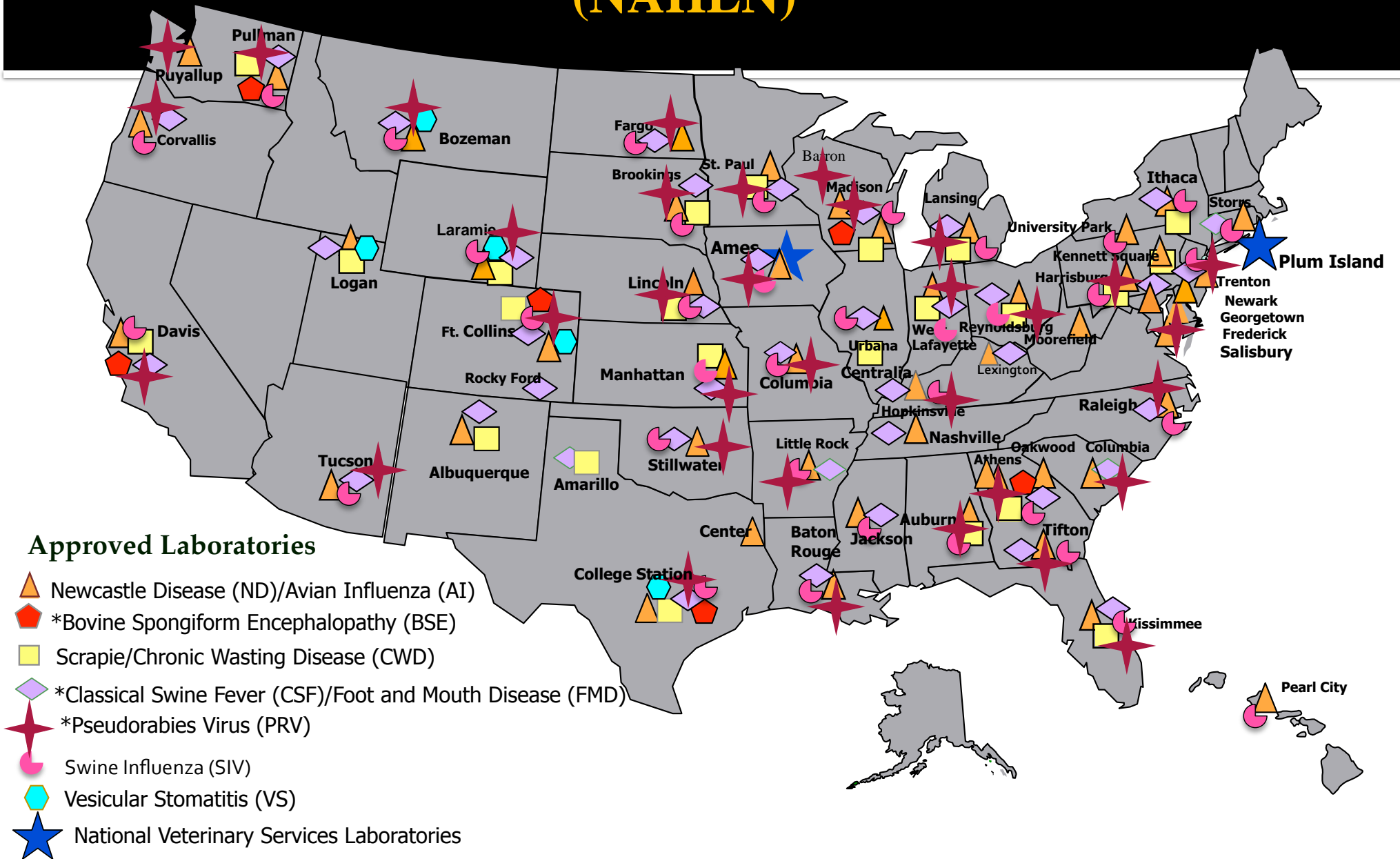
Herd Testing

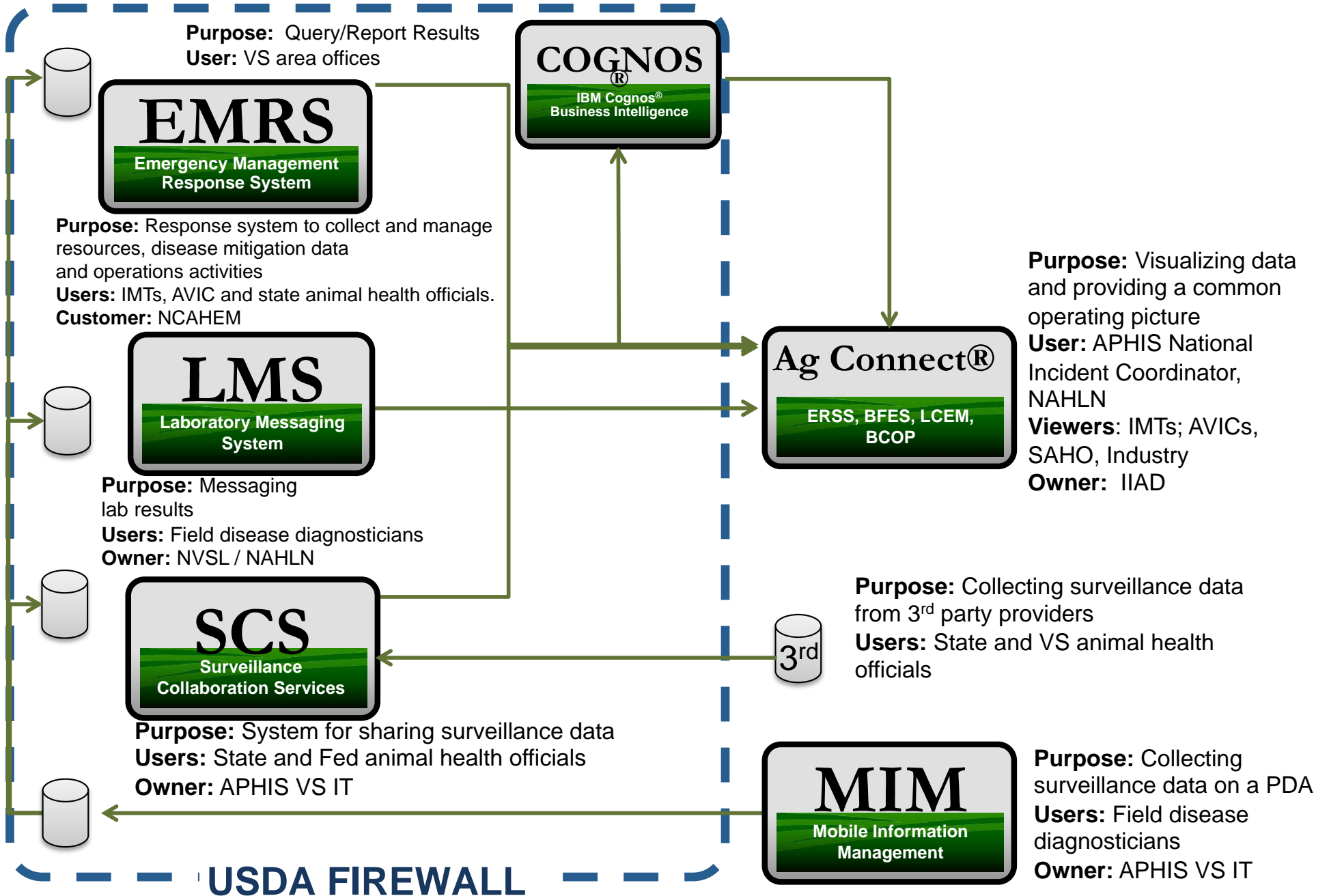


Clinical Observation



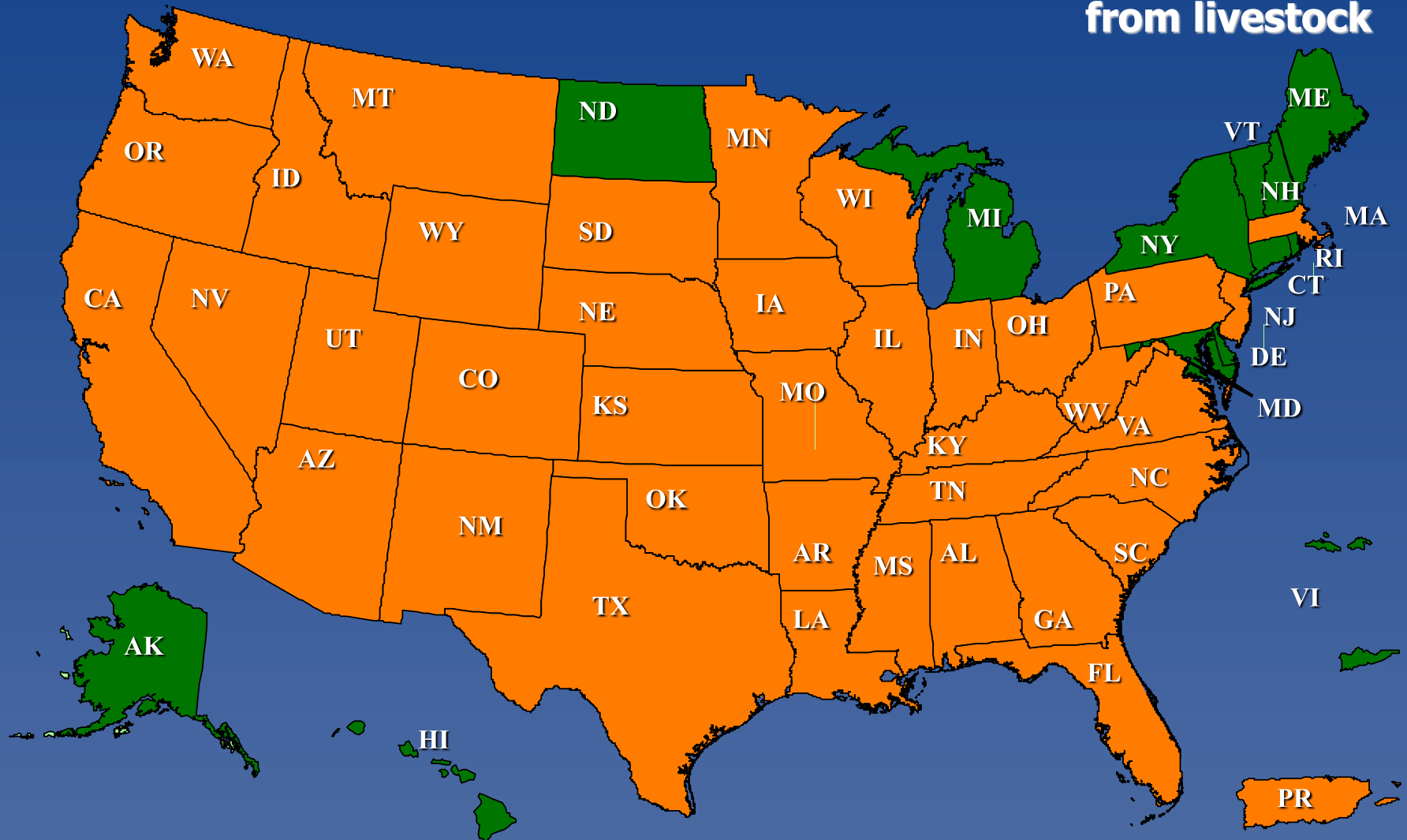
National Animal Health Laboratory Network (NAHLN)





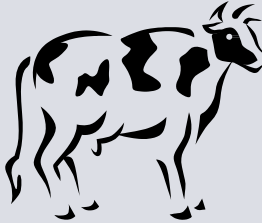
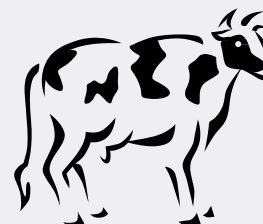





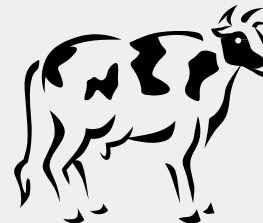

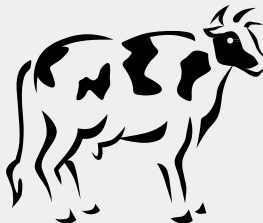



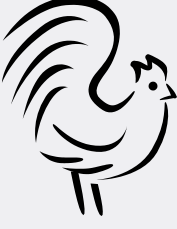


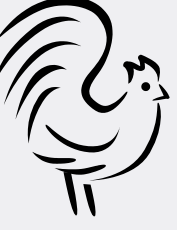
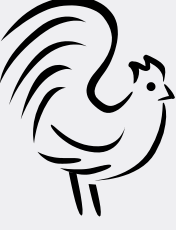



Eliminating Brucellosis

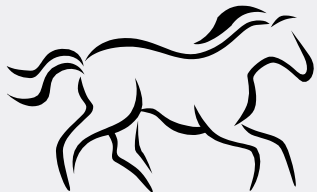
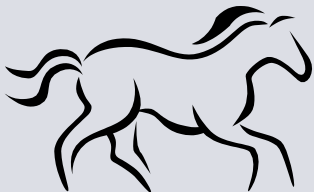
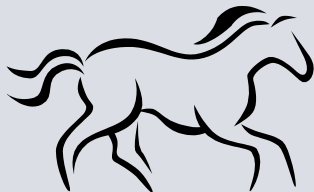
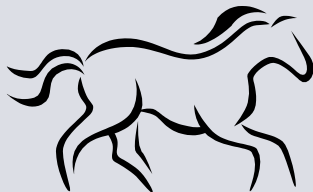
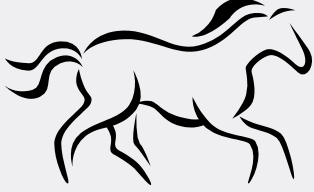
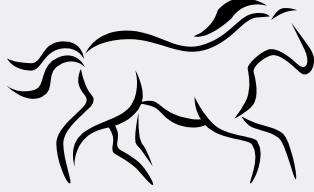
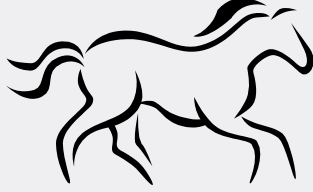
**Class Free Status: 2008: Eliminated
from livestock**



United States Department of Agriculture
Animal and Plant Health Inspection Service

Stream	Brucellosis	Tuberculosis	BSE
Slaughter			
Markets			
Herd Testing			
Clinical Observation			

Stream	Avian Influenza	Exotic Newcastle	Mycoplasma, Salmonella
Slaughter		✗	✗
Markets		✗	✗
Flock Testing		✗	
Clinical Observation			
Laboratory Network			✗

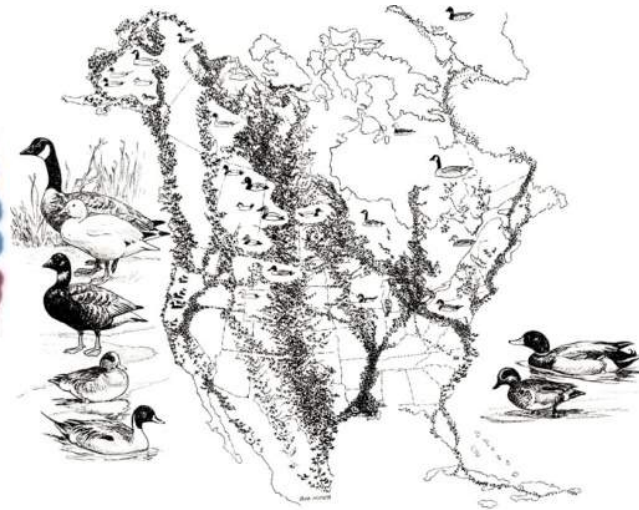
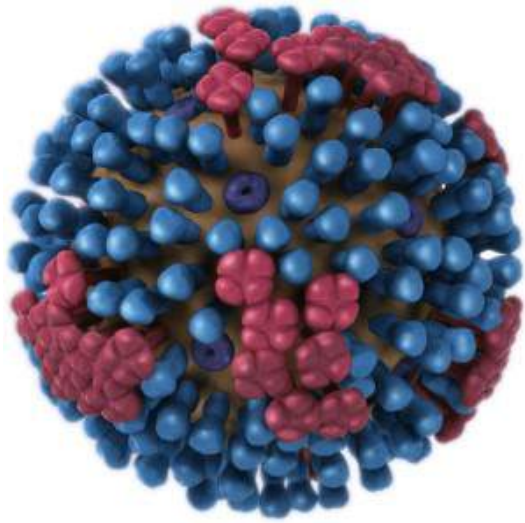
Stream	Contagious Equine Metritis	Piroplasmosis	Equine Infectious Anemia
Slaughter	✗	✗	✗
Markets	✗	✗	
On-farm testing			
Clinical Observation			
Laboratory Network	✗	✗	✗



Influenza Surveillance In the United States

Economic Welfare Impacts

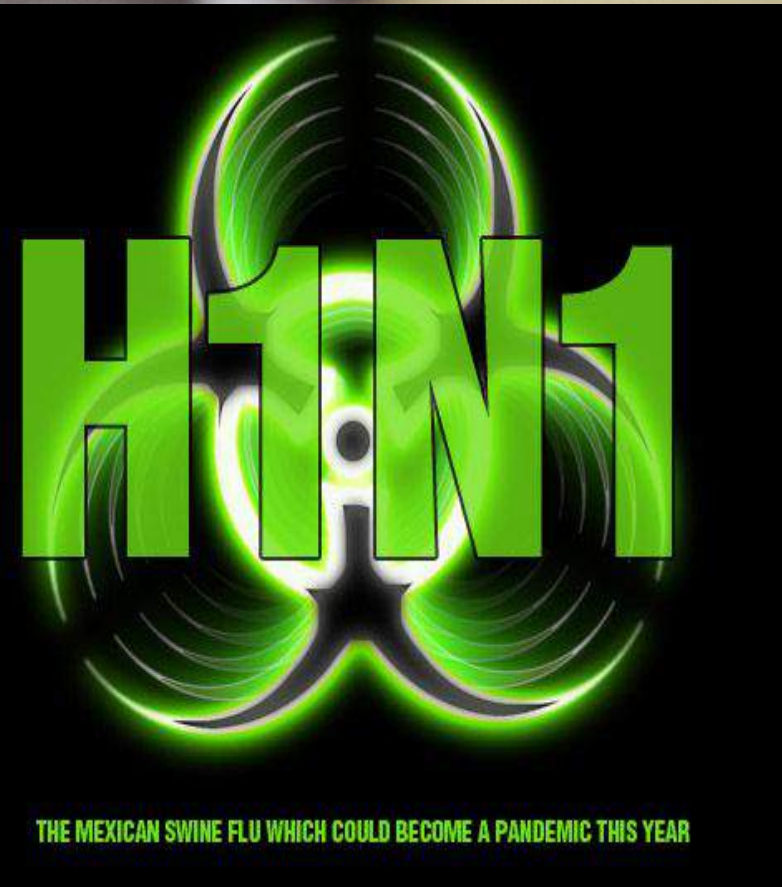




WATERFOWL FLYWAYS OF NORTH AMERICA



**New Influenza A (H1N1),
Number of laboratory confirmed cases as reported to WHO**



THE MEXICAN SWINE FLU WHICH COULD BECOME A PANDEMIC THIS YEAR

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Map produced: 03 June 2009 07:28 GMT

Data Source: World Health Organization
Map Production: Public Health Information and Geographic Information Systems (GIS)
World Health Organization



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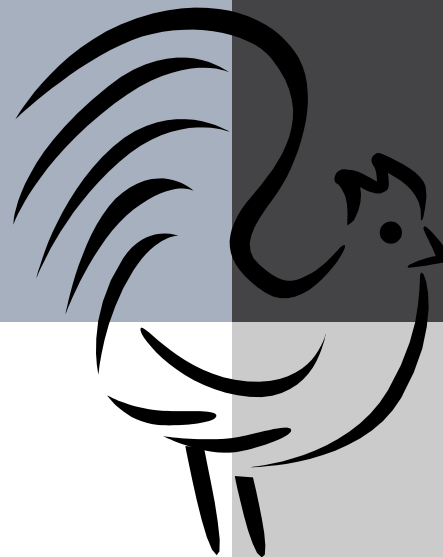
Surveillance for Influenza - Avian

Markets

On-farm

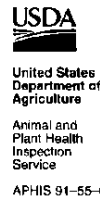
Labs

Outbreak



Markets

- ✓ Licensing
- ✓ Bird testing and recordkeeping
- ✓ Sanitation and biosecurity
- ✓ Surveillance
- ✓ Response



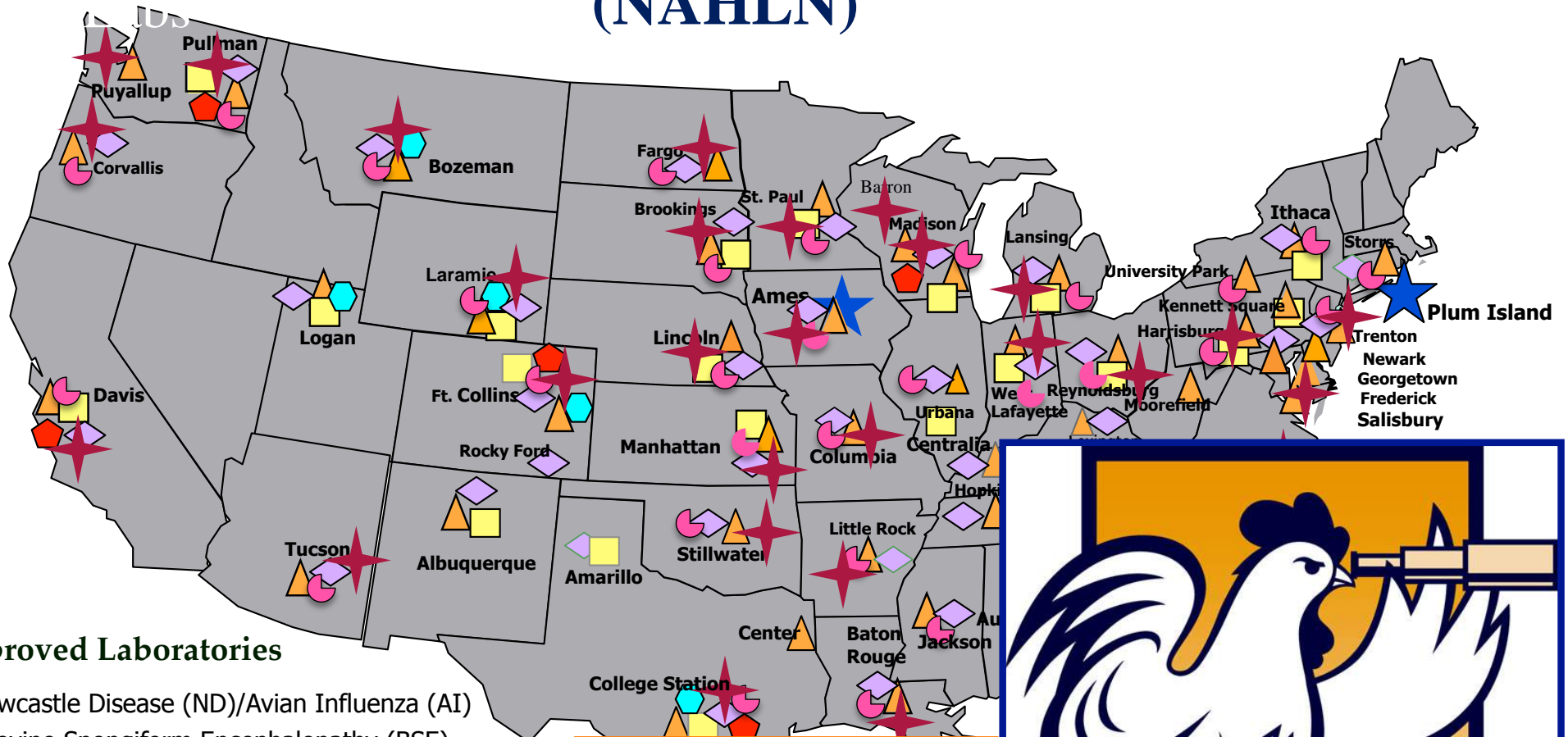
Prevention and Control of H5 and H7 Low Pathogenicity Avian Influenza in the Live Bird Marketing System

Uniform Standards for a State–Federal–Industry Cooperative Program
Effective October 20, 2004.









“LBMs must comply with all other applicable public health laws and regulations”



National Animal Health Laboratory Network (NAHLN)



Approved Laboratories

-  Newcastle Disease (ND)/Avian Influenza (AI)
-  *Bovine Spongiform Encephalopathy (BSE)
-  Scrapie/Chronic Wasting Disease (CWD)
-  *Classical Swine Fever (CSF)/Foot and Mouth Disease
-  *Pseudorabies Virus (PRV)
-  Swine Influenza (SIV)
-  Vesicular Stomatitis (VS)
-  National Veterinary Services Laboratories

*For specified agents, not all laboratories are currently participating




BIOSECURITY
FOR THE BIRDS

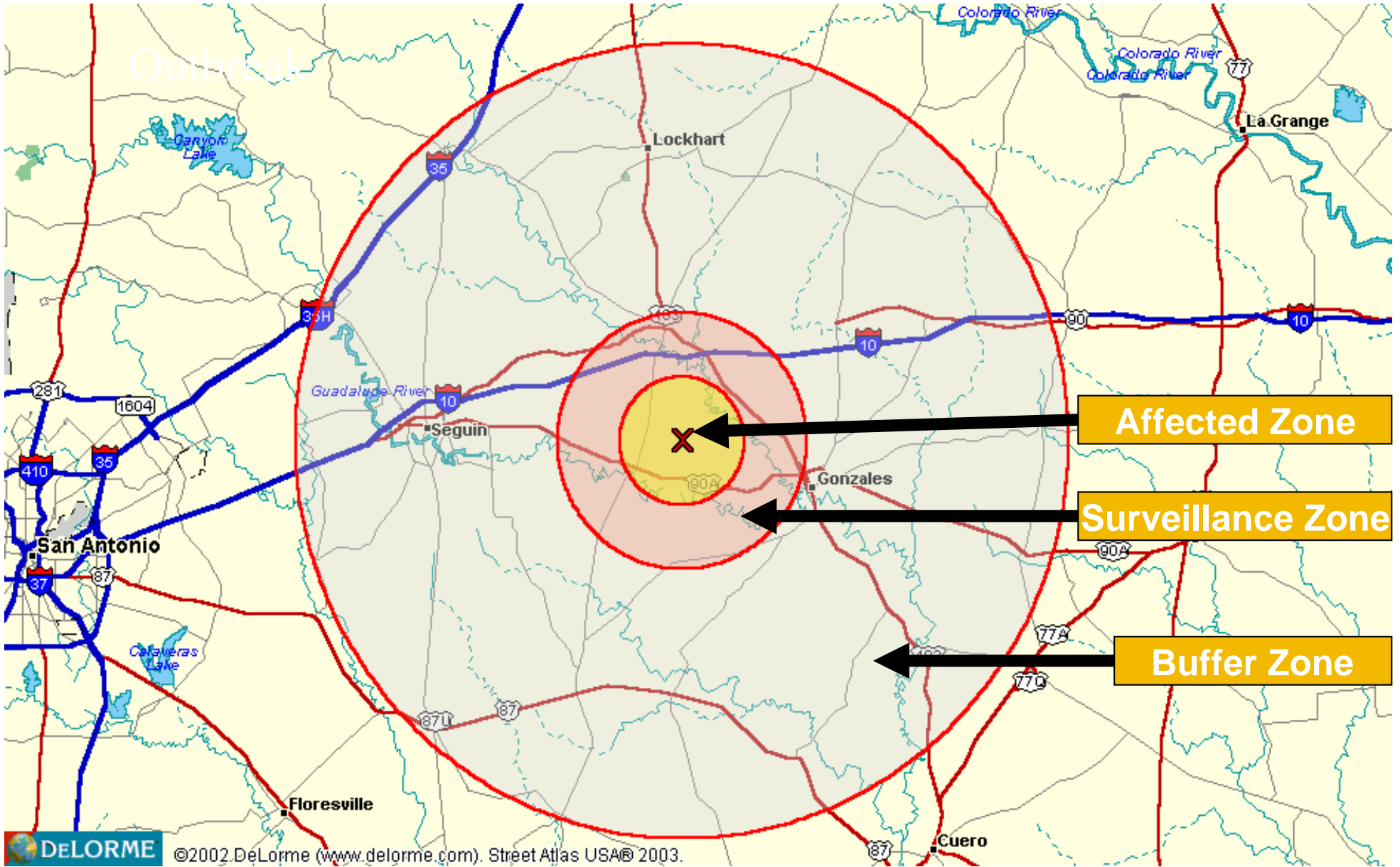
On farm

Summary of AI testing under NPIP

Breeder Type	Flocks	Birds	Annual Tests
Egg-type Chicken	261	3,283,982	26,156
Primary Broiler	1,058	10,157,252	215,488
Meat-type Chicken	4,991	76,101,809	279,845
Turkey Breeder	648	4,956,140	72,642
Total	6,958	94,499,183	594,131



Outbreak



Affected Zone

Surveillance Zone

Buffer Zone

Surveillance Strategy

	Week 1		Week 2		Week 3		Week 4	
	Serum -swab		Serum -swab		Serum -swab		Serum -swab	
Affected Zone	Y	Y	N	Y	N	Y	N	Y
Surv. Zone	Y	Y	N	N	N	N	N	Y
Buffer Zone	N	N	N	N	Swab only			

**Premises
Tested**

368

Serologic Tests

3,608

Swab Tests

3,685



Case-compatible swine lab accessions



Swine exhibiting ILI at points of concentration



Swine populations linked to human SIV isolation



Feral Swine populations



Number of accessions with each IAV-S virus subtype present by month, FY 2010-2014

Influenza A Virus in Swine Surveillance Quarterly Report for FY 2014, Third Quarter

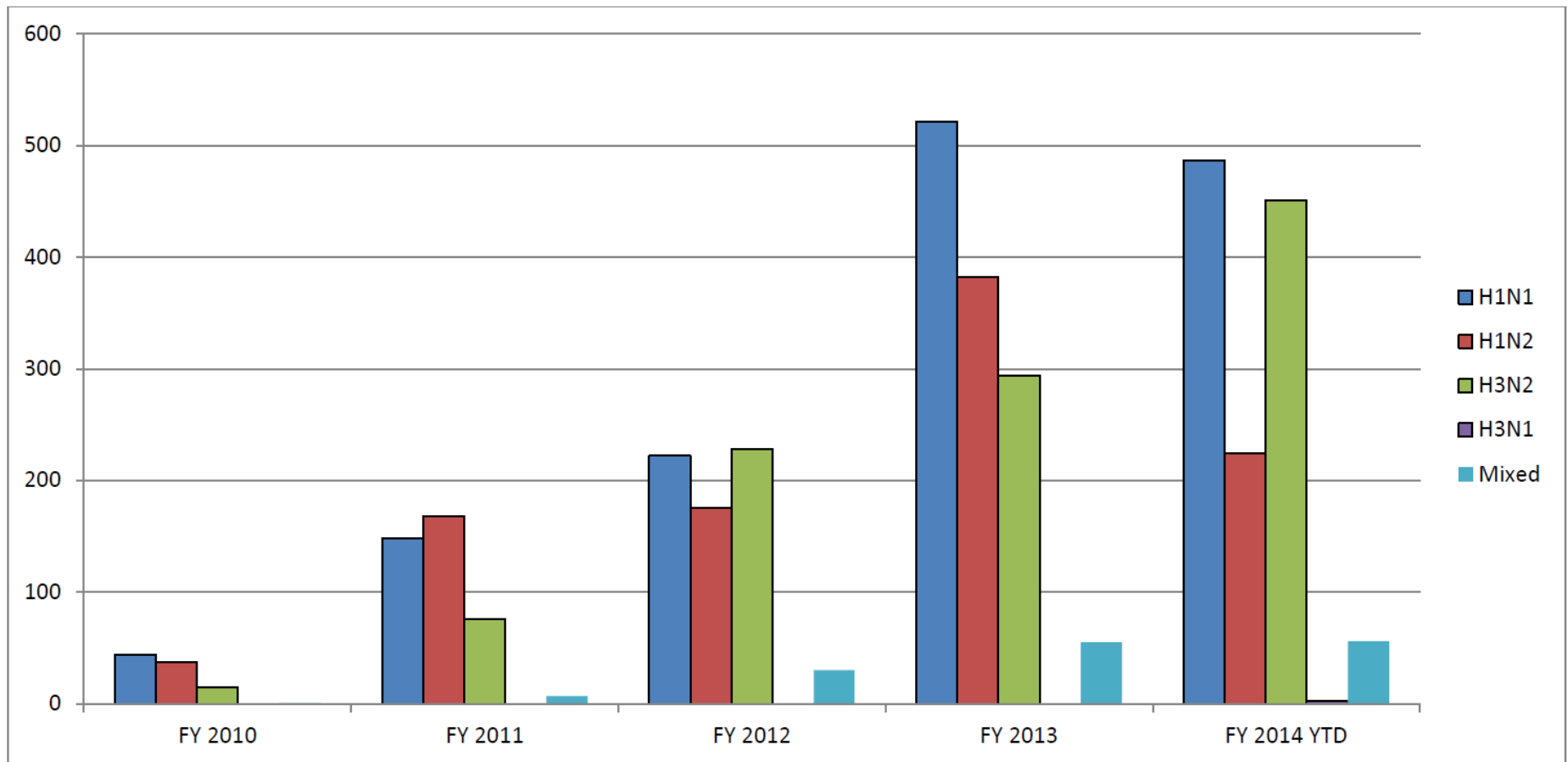


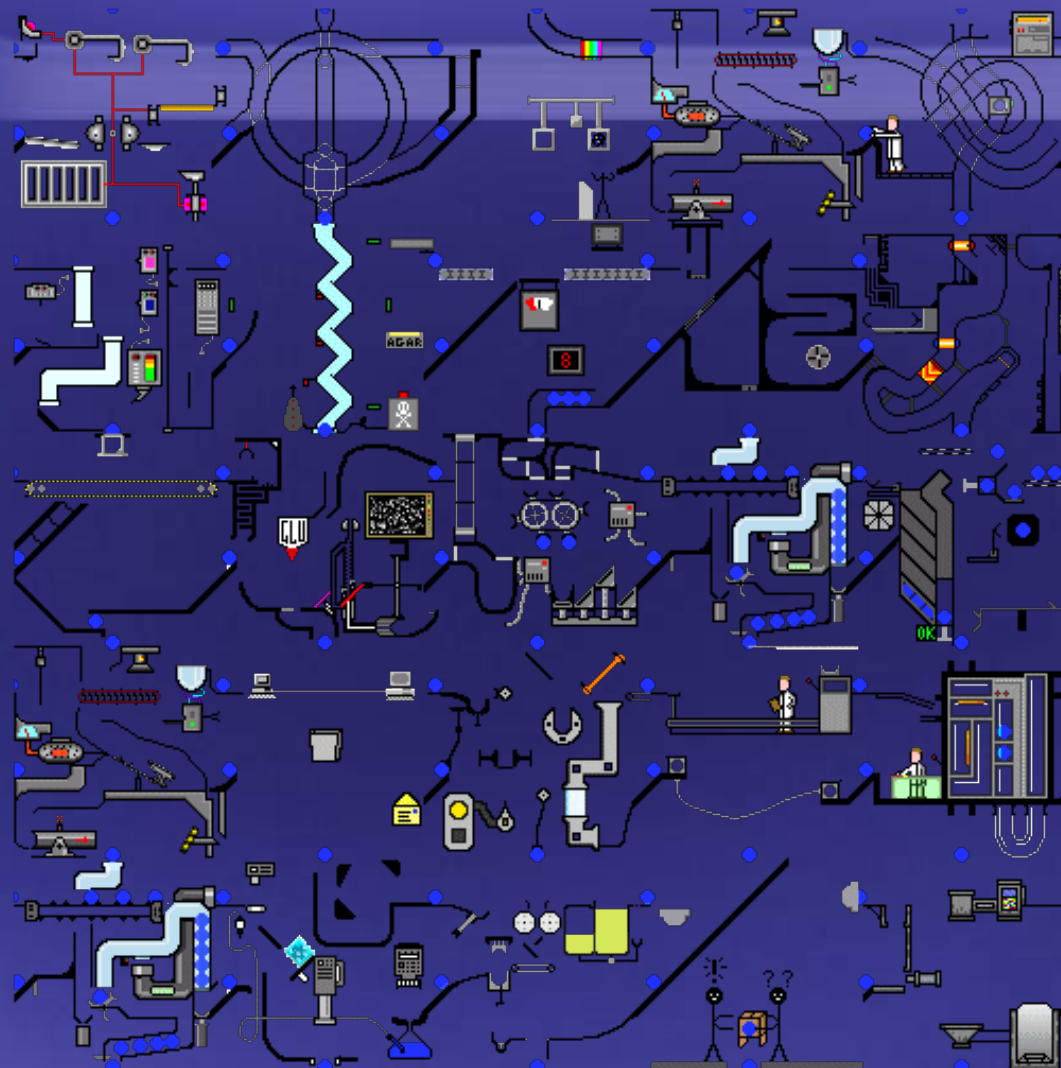
Figure 2. USDA Surveillance for IAV in Swine: Number of accessions with each virus sub-type present, FY 2010 through FY 2014 YTD.

Influenza Virus Surveillance in Feral Swine Conducted by Wildlife Services

August 2013



Surveillance Systems



Comprehensive Integrated Surveillance (CIS)



What is CIS?

- **Comprehensive:** multiple diseases, multiple surveillance streams/information sources, and multiple data formats
- **Integrated:** data/information collected by VS, and other partners, and includes other sources of evidence
- **Surveillance:** "...the systematic collection, collation and analysis of animal health data combined with the prompt dissemination of vital information to those who might take action"

Components/Structures/Systems/Partners/ Information Sources

- NAHLN
- Accredited veterinarians
- Import/export testing
- Slaughter surveillance
- FSIS inspections
- Certification programs
- Markets/Auctions



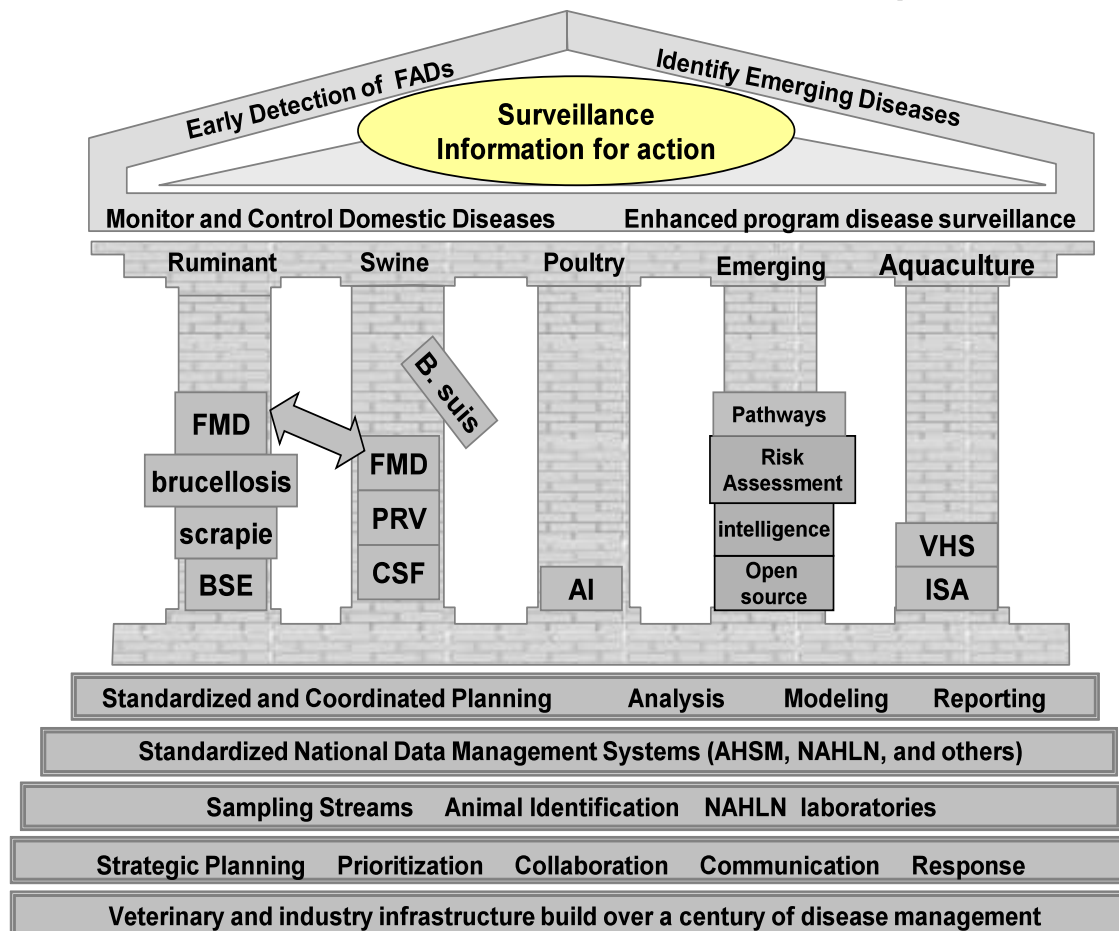
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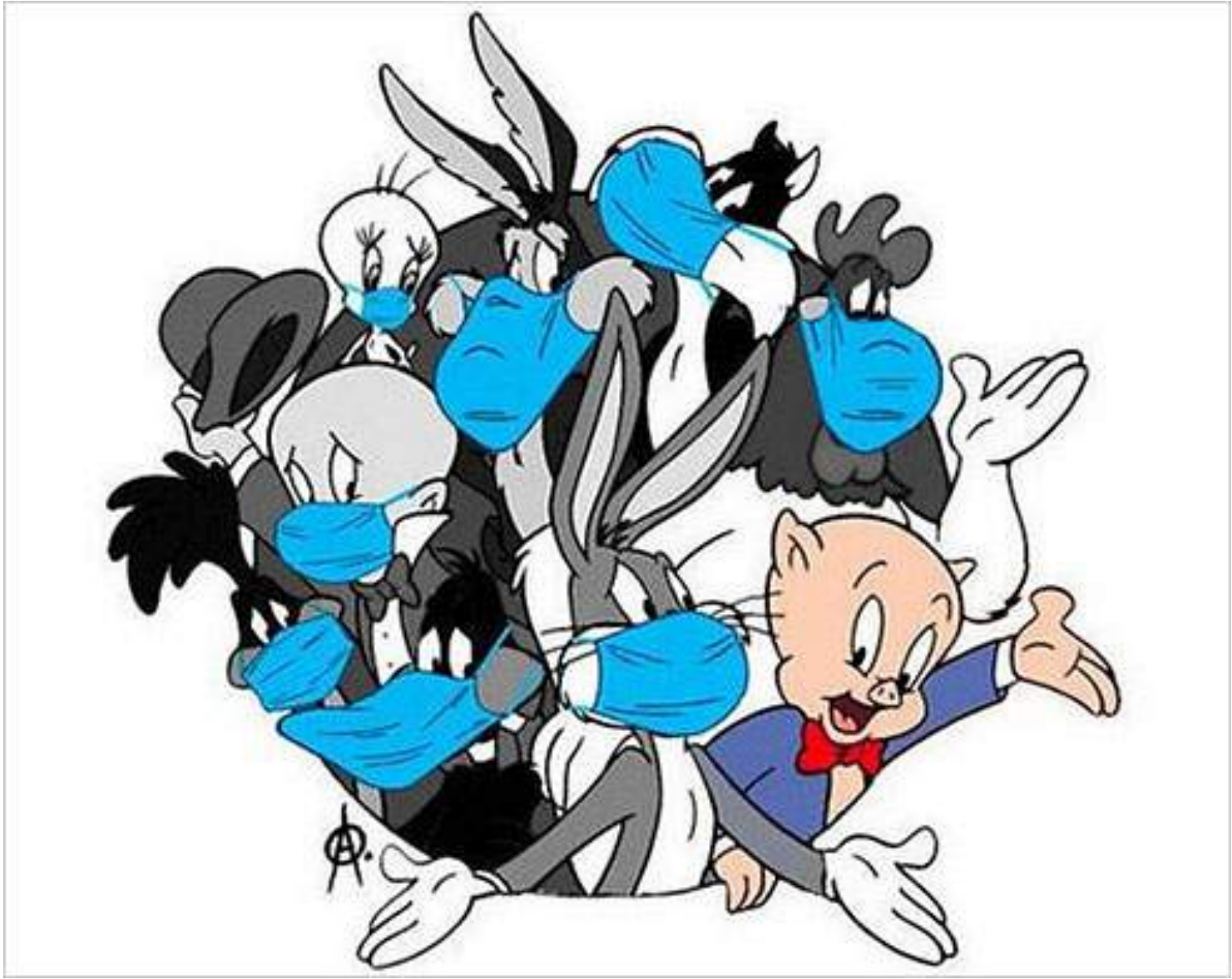
- Risk Identification
- States
- Universities
- NAHMS – CIPSEA
- NAHRS
- National List of Reportable Animal Diseases
- Many others



CIS is how we go from good to great!

Foundation for CIS began in 2003 with National Animal Health Surveillance System





Thank you for attending!



Please contact syndromic@syndromic.org with questions or comments about today's webinar.