USDA Influenza A Virus Surveillance Program in Swine

Presented to:

OFFLU Swine Influenza Group

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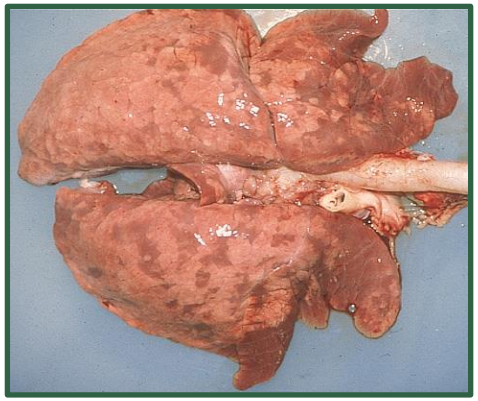
Sabrina Swenson DVM, PhD
USDA-APHIS-VS-NVSL
Diagnostic Virology Laboratory
&
Ellen Kasari MS, DVM
USDA-APHIS-VS-SPRS

Safeguarding Animal Health

Veterinary Services

3 Streams:

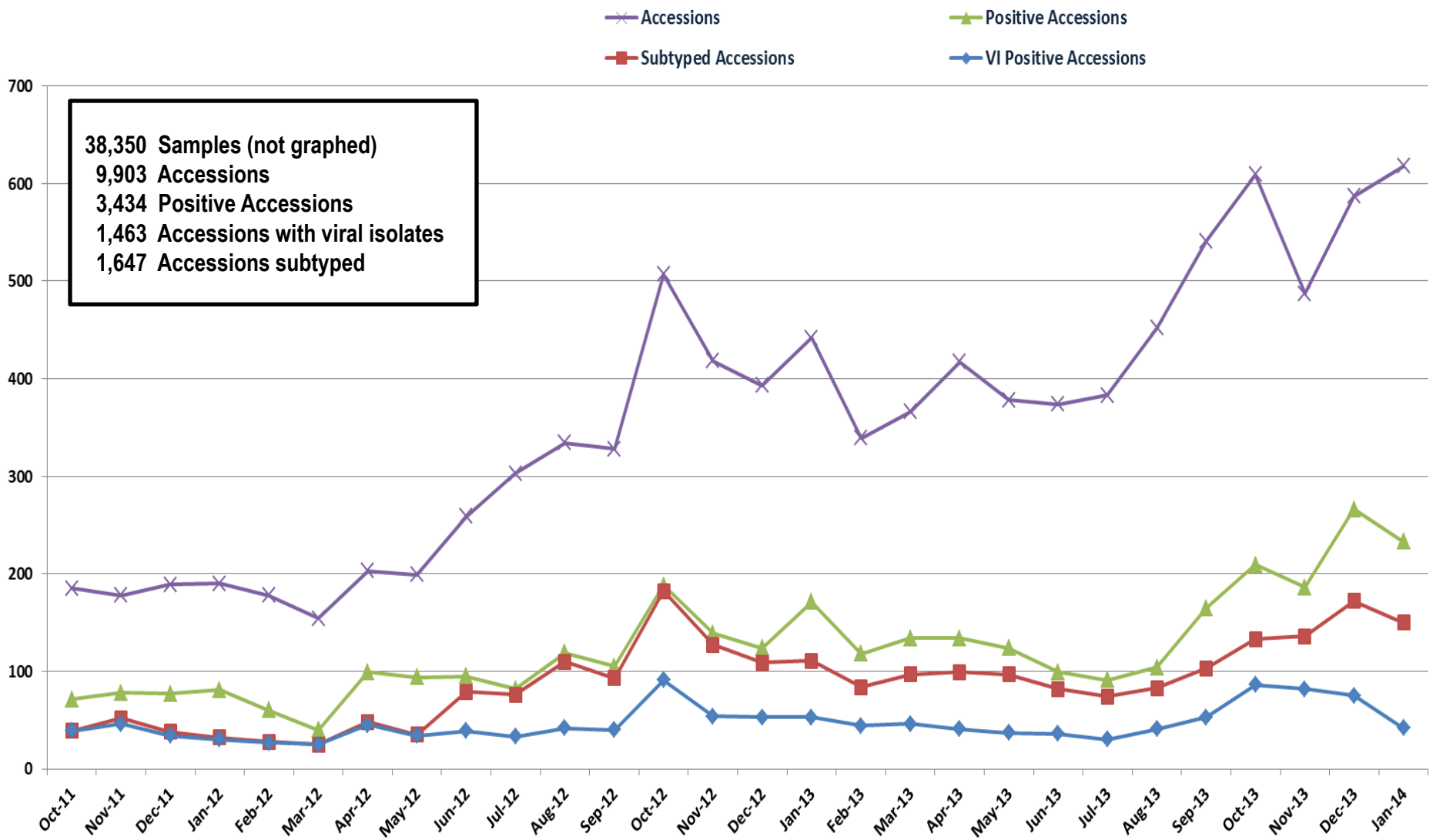
1. **Sick pig submissions – NAHLN system – 99+%**
2. **Pigs related to PH investigations of novel flu cases**
3. **Swine exhibiting ILI at commingling events such as auctions, markets, fairs, or other swine exhibition events.**



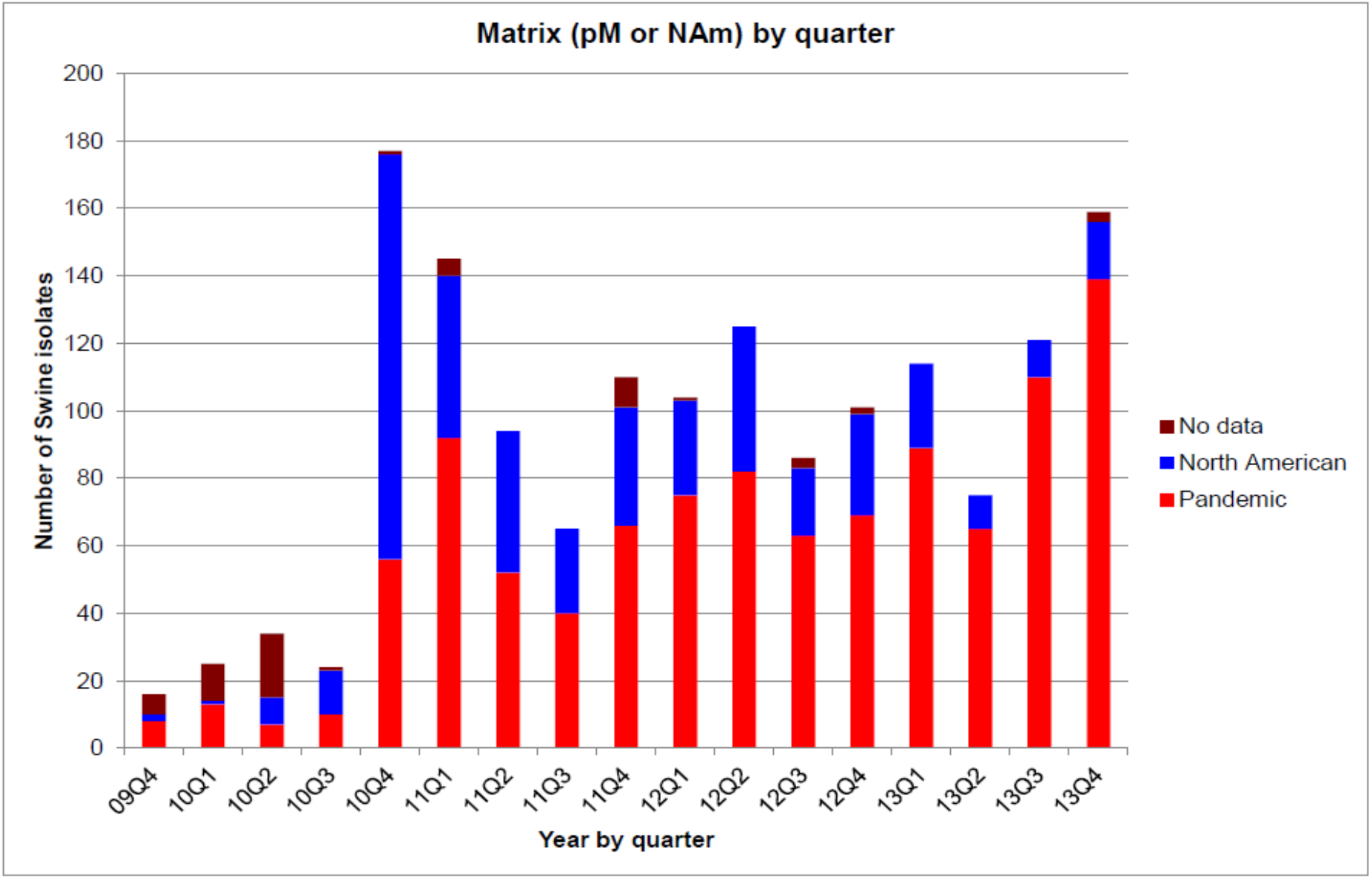
Data Disclaimers:

1. **Surveillance is voluntary, passive, and anonymous**
2. **Majority of samples submitted are anonymous (known only by state of origin)**
3. **Does not indicate disease prevalence by**
   a. **time**
   b. **location**
   c. **subtype**
4. **State-level data summaries are not disclosed externally (internal state stakeholders may get state-specific data)**

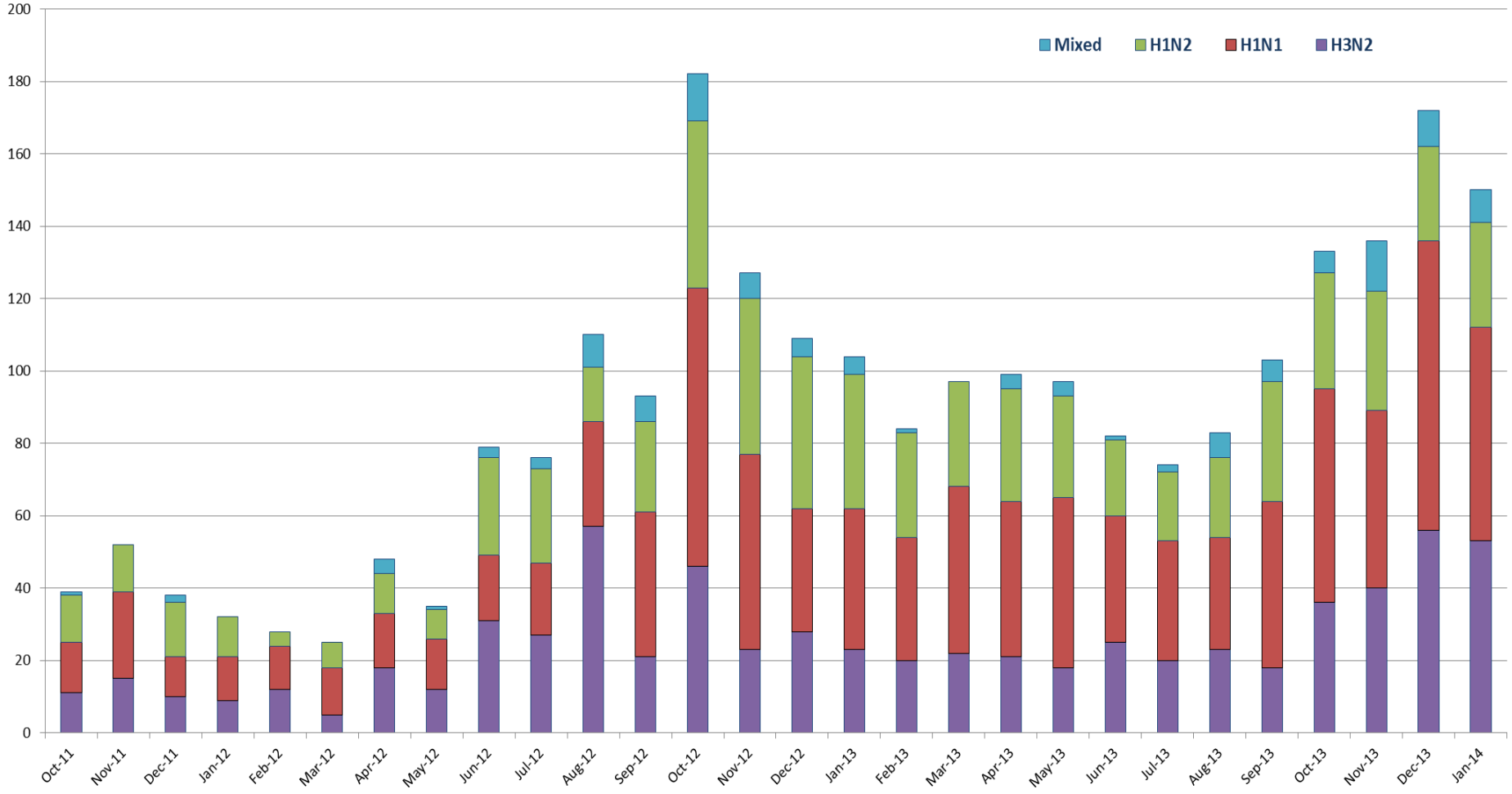
USDA IAV-Swine Surveillance Program Isolation and Characterization Activities - 10/1/2011 - 1/31/2014

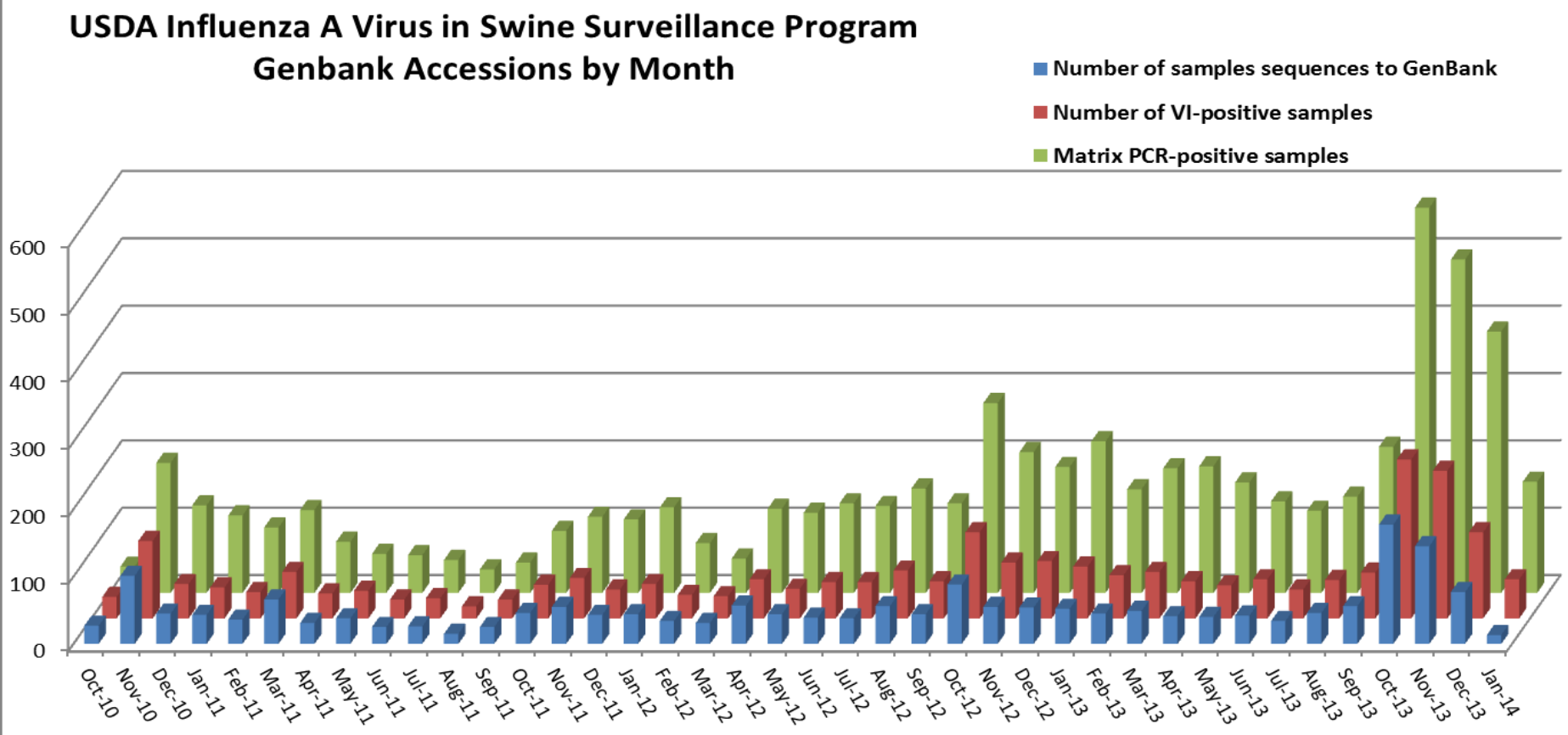


Matrix lineage 2009-2013



USDA IAV-Swine Surveillance Program- Subtypes Identified by Month - 10/1/2011 through 1/31/2014





Totals through January 31, 2014:

Matrix Positive Samples:	12,084	
VI Positive Samples:	2,699	(22.3%)
Sequenced Samples:	2,131	(79.0%)

NVSL Roles

Repository

- ~2400 viruses
- Shipped-international, biologics companies, research, PH

Full genome sequencing

- Random viruses received
- Representatives of each subtype (H1N1, H3N2, H1N2)
- Representatives from each submitted state

Confirmatory testing

Public health investigations

Gaps in Current Effort

- Data representativeness
  - By geography – farm-state-U.S.
  - By veterinary clinic
  - By production system (interstate movement not tracked)
- Isolated data - cannot observe changes over time within populations
- Many sequences still not shared – autogenous vaccines, non-participants

Summary:

- Influenza A in swine currently very dynamic
- Multiple insertions of human-origin strains into the U.S. swine IAV population since 1998
- Widespread reassortment documented
- The USDA IAV-S Surveillance Program is an opportunity to monitor changes nationally
- Genomic analysis of collected data is intensifying
- Better understanding of within herd and area IAV ecology needed but is not a current function of this program

It Takes A Village…..Thank You!

- **Producers, practitioners, NAHLN labs for supporting the surveillance and fair investigations**
- **State Animal Health Officials**
- **Local, State, and Federal Public Health**
- **Veterinary Services personnel**
- **Agricultural Research Services personnel**

Veterinary Services