# Swine Disease Reporting System

## What is the SDRS?

SHIC-funded, veterinary diagnostic laboratories (VDLs) collaborative project, with goal to aggregate swine diagnostic data from participating VDLs, and report in an intuitive format (monthly report and web dashboards), describing dynamics of disease detection by pathogen or disease syndrome over time, specimen, age group, and geographical space.

For this report, data is from the Iowa State University VDL and South Dakota State University ADRDL, University of Minnesota VDL and Kansas State University VDL. Specifically, for PRRSV RFLP data, and syndromic information the results are from the ISU-VDL.

For all "2019 predictive graphs," the expected value was calculated using a statistical model that considers the results from three previous years. The intent of the model is not to compare the recent data (2019) to individual weeks of previous years. The intent is to estimate expected levels of percent positive cases based on patterns observed in the past data, and define if observed percentage positive values are above or below the expected based on historic trends.

*Collaborators:*

*Iowa State University*: Giovani Trevisan*, Edison Magalhães, Leticia Linhares, Bret Crim; Poonam Dubey, Kent Schwartz, Eric Burrough; Rodger Main, Daniel Linhares**.

*University of Minnesota*: Mary Thurn, Paulo Lages, Cesar Corzo, Jerry Torrison.

*Kansas State University*: Rob McGaughey, Jamie Henningson, Eric Herrman, Gregg Hanzlicek, Ram Raghavan, Douglas Marthaler.

*South Dakota State University*: Shivali Gupta, Jon Greseth, Travis Clement, Jane C. Hennings.

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** Daniel Linhares: Principal investigator. E-mail: linhares@iastate.edu.

## Advisory Council:

The advisory group reviews the data to discuss it and provide their comments to try to give the data some context and thoughts about its interpretation: Clayton Johnson, Emily Byers, Mark Schwartz, Paul Sundberg, Paul Yeske, Rebecca Robbins, Tara Donovan, Deborah Murray, Scott Dee, Melissa Hensch.

**This report is an abbreviated version of the dashboards that are available online.**

To access the full data and hear the podcast for the reports, use your computer, tablet, or phone and go to:
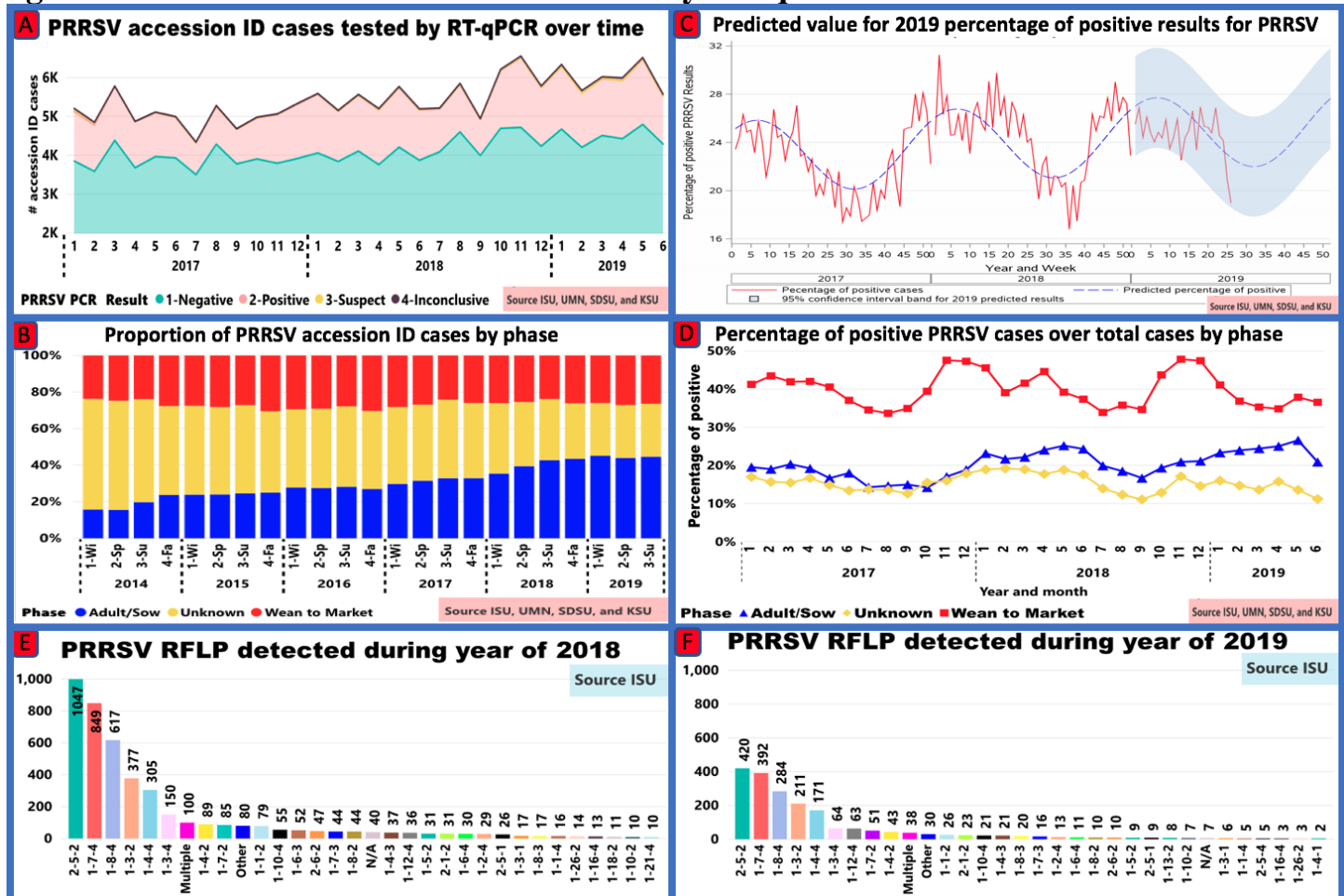https://fieldepi.research.cvm.iastate.edu/swine-disease-reporting-system/

and explore the dashboard corresponding to each pathogen or syndrome.

**Swine Disease Reporting System**

IOWA STATE UNIVERSITY Veterinary Diagnostic Laboratory — UNIVERSITY OF MINNESOTA VETERINARY DIAGNOSTIC LAB — Kansas State Veterinary DIAGNOSTIC LABORATORY — SOUTH DAKOTA ADRDL ANIMAL DISEASE RESEARCH & DIAGNOSTIC LABORATORY, BROOKINGS, SOUTH DAKOTA — SHIC Swine Health Information Center

## Page 1 – Detection of PRRSV RNA over time by RT-qPCR.

**A: PRRSV accession ID cases tested by RT-qPCR over time**
PRRSV PCR Result: 1-Negative, 2-Positive, 3-Suspect, 4-Inconclusive. Source ISU, UMN, SDSU, and KSU.

**C: Predicted value for 2019 percentage of positive results for PRRSV**
Percentage of positive cases — Predicted percentage of positive — 95% confidence interval band for 2019 predicted results. Source ISU, UMN, SDSU, and KSU.

**B: Proportion of PRRSV accession ID cases by phase**
Phase: Adult/Sow, Unknown, Wean to Market. Source ISU, UMN, SDSU, and KSU.

**D: Percentage of positive PRRSV cases over total cases by phase**
Phase: Adult/Sow, Unknown, Wean to Market. Source ISU, UMN, SDSU, and KSU.

**E: PRRSV RFLP detected during year of 2018** — Source ISU
2-5-2: 1047, 1-7-4: 849, 1-8-4: 617, 1-3-2: 377, 1-4-4: 305, 1-3-4: 150, Multiple: 100, 1-4-2: 89, 1-7-2: 85, Other: 80, 1-1-2: 79, 1-10-4: 55, 1-6-3: 52, 2-6-2: 47, 1-7-3: 44, N/A: 44, 1-4-3: 40, 1-12-4: 37, 1-5-2: 36, 2-1-1: 31, 1-6-4: 31, 1-2-4: 30, 2-5-1: 29, 1-3-1: 26, 1-8-3: 17, 1-1-4: 17, 1-26-2: 16, 1-16-4: 14, 1-18-2: 13, 1-10-2: 11, 1-21-4: 10, : 10

**F: PRRSV RFLP detected during year of 2019** — Source ISU
2-5-2: 420, 1-7-4: 392, 1-8-4: 284, 1-3-2: 211, 1-4-4: 171, 1-3-4: 64, 1-12-4: 63, 1-7-2: 51, 1-4-2: 43, Multiple: 38, Other: 30, 1-1-2: 26, 2-1-2: 23, 1-10-4: 21, 1-4-3: 21, 1-8-3: 20, 1-7-3: 16, 1-2-4: 13, 1-6-4: 11, 1-8-2: 10, 2-6-2: 10, 1-5-2: 9, 2-5-1: 9, 1-13-2: 8, 1-10-2: 7, N/A: 7, 1-3-1: 6, 1-1-4: 5, 2-5-4: 5, 1-16-4: 3, 1-26-2: 3, 1-4-1: 2

**Figure 1. A**: Results of PRRS RT-qPCR cases over time. **B**: Proportion of accession ID cases tested for PRRSV by age group per year and season. **C**: expected percentage of positive results for PRRSV RNA by RT-qPCR, with 95% confidence interval band for predicted results. **D**: percentage of PRRS PCR-positive results, by age category over time. Wean to market corresponds to nursery and grow-finish. Adult/Sow correspond to Adult, boar stud, breeding herd, replacement, and suckling piglets. Unknown corresponds to not informed site type or farm category. **E**: RFLP type detected during year of 2019. **F**: RFLP type detected during year of 2018. RFLPs indicated as N/A represents not detected or European PRRSV type.
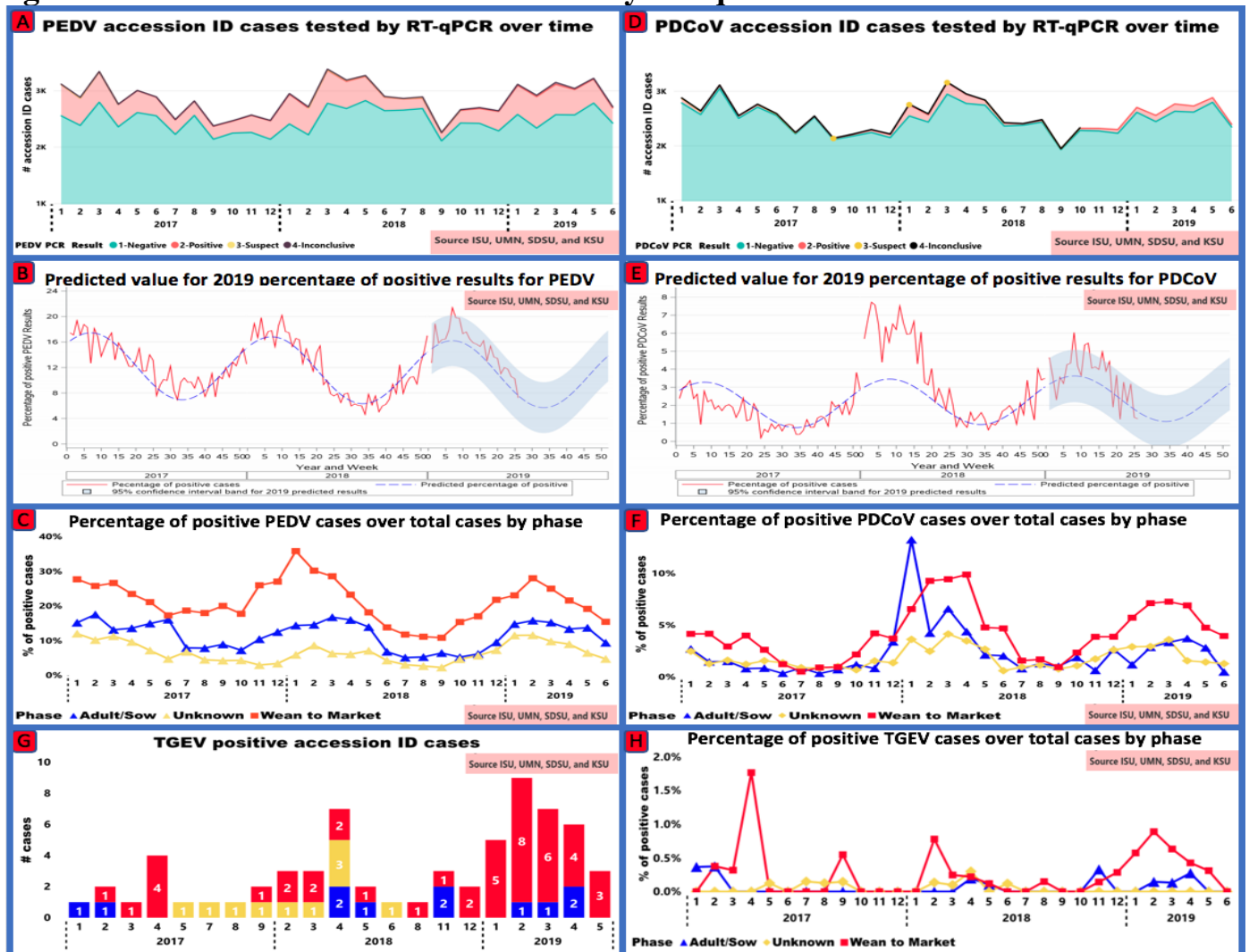
SDRS Advisory Council highlights:
- PRRSV activity remains within the predicted values for 2019;
- The percentage of positive cases in wean-to-market decreased from 37.81% in May to 36.52% in June. However, during the week 23 (June 2nd to June 8th) it increased to 44.53%, mostly due to data from cases in North Carolina and Iowa;
- The percentage of positive cases in adult/sow decreased from 26.57% in May to 20.87% in June. This level of detection is the lowest for the year of 2019 in this phase.

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## Page 2 – Detection of enteric coronaviruses by RT-qPCR



**Figure 2. A**: results of PEDV RT-qPCR cases over time. **B**: expected percentage of positive results for PEDV by RT-qPCR and 95% confidence interval for 2019 predicted value. **C:** percentage of PEDV PCR-positive results, by category over time. **D**: results of PDCoV RT-qPCR cases over time. **E**: expected percentage of positive results for PDCoV by RT-qPCR and 95% confidence interval for 2019 predicted value. **F:** percentage of PDCoV PCR-positive results, by age category over time. **G**: number of PCR-positive accession ID results of TGEV by age category. **H**: percentage of PCR-positive results for TGEV by age category. Each color represents one distinct age category.
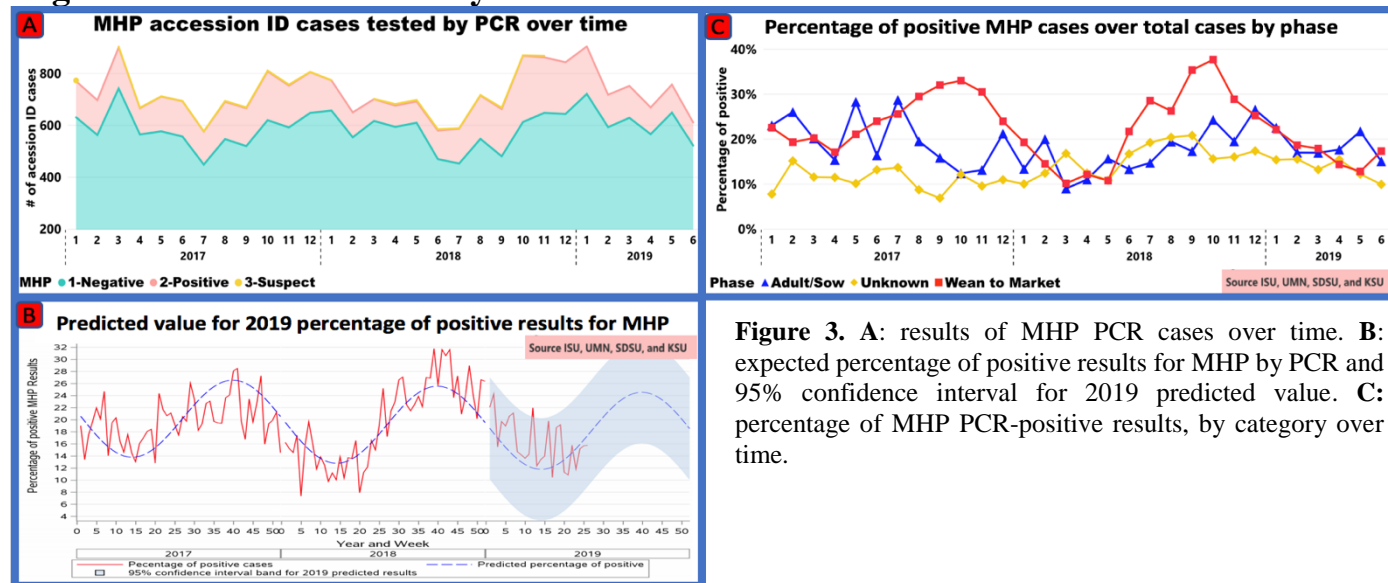
SDRS Advisory Council highlights:
- The level of detection of PEDV RNA, and of PDCoV RNA were both within the expected values for June, with decreased detection in all age categories;
- There were 2,288 cases tested for TGEV in June of 2019. There were no positive results.

## Page 3 – Detection of MHP by PCR

**A: MHP accession ID cases tested by PCR over time**

MHP ● 1-Negative ● 2-Positive ● 3-Suspect

**B: Predicted value for 2019 percentage of positive results for MHP**

Source ISU, UMN, SDSU, and KSU

2017 2018 2019
Percentage of positive cases — Predicted percentage of positive
95% confidence interval band for 2019 predicted results

**C: Percentage of positive MHP cases over total cases by phase**

Phase ▲ Adult/Sow ◆ Unknown ■ Wean to Market          Source ISU, UMN, SDSU, and KSU

**Figure 3. A**: results of MHP PCR cases over time. **B**: expected percentage of positive results for MHP by PCR and 95% confidence interval for 2019 predicted value. **C**: percentage of MHP PCR-positive results, by category over time.

SDRS Advisory Council highlights:
▪ Level of detection of MHP DNA was within the expected value for June.

NOTE: The ISU-VDL team is making improvements in the way it records and reports diagnostic codes. To ensure data consistency in the SDRS reports, the syndromic pages (enteric, respiratory, and CNS disease) will be unavailable in the Report # 17. The online dashboards will be updated once the new system is in place, which is expected for July 2019.