

# **CHALLENGES TO CHANGING ANTIBIOTICS USE IN FOOD ANIMAL PRODUCTION: ECONOMICS, DATA, AND POLICY**

**National Press Club, Washington, D.C. | September 6-7, 2018**

Impacts of 2017 FDA Antibiotic Use Policies on Producers

## **VFD Implementation Impacted Pig Farmers, Their Veterinarians, and Feed Providers: Perspectives and Lessons Learned**

**Lee L. Schulz**

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**This material is based upon research that is supported in part by the Economic Research Service through USDA/ERS Cooperative Agreement # 58-6000-6-0064, entitled Economic Effects of Changing Antibiotic Use Preferences in US Livestock Production.**



## How Do Swine Producers and Veterinarians Expect the VFD to Affect Their Business?

Gary Wynne, Georgeanne Artz, Lee Schulz, and Christopher Rademacher  
[gmwynne@iastate.edu](mailto:gmwynne@iastate.edu); [gartz@iastate.edu](mailto:gartz@iastate.edu); [lschulz@iastate.edu](mailto:lschulz@iastate.edu); [cjrdvm@iastate.edu](mailto:cjrdvm@iastate.edu)

**A**NTIBIOTIC USE in livestock production is a controversial subject in the public eye.

Concerns over perceived over-use of antibiotics and antimicrobial resistance has prompted public policy debates. In response, the United States Food and Drug Administration has created new antibiotic-use guidelines in livestock. The new guidelines are: (a) Guidance 209: Judicious Use of Medically Important Antimicrobial Drugs in Food Producing Animals; (b) Guidance 213: Implementation Principles for Guidance 209; and, (c) Veterinary Feed Directive (VFD): Final Rule. The VFD final rule went into effect on October



[https://www.card.iastate.edu/ag\\_policy\\_review/article/?a=72](https://www.card.iastate.edu/ag_policy_review/article/?a=72)

- ✓ No anticipated difficulties establishing and maintaining a VCPR.
- ✓ Complying with the VFD requirements will be moderately burdensome.
- ✓ Independent producers, compared to contract producers, will incur more added costs due to the VFD requirements.

## (KSU MAB Thesis in progress) Economic Implications of the Veterinary Feed Directive Final Rule on the Swine Industry

Brittni Lamoreux | Ted Schroeder, Dustin Pendell, Joleen Hadrich, Lee Schulz (Committee)

**The revised Veterinary Feed Directive (VFD)  
final rule went into affect on October 1, 2015,  
and label changes requested in GFIs 209, 213  
took affect on January 1, 2017**

ISU swine extension  
specialists conducted  
interviews:

- Independents
- Contract growers
- Integrators
- Veterinarians
- Nutritionists

Fall 2016 (Pre)  
Preparation

Anticipated and  
experienced  
changes in  
business  
operations

Expected and  
incurred  
economic  
impacts

Fall 2017 (Post)  
Actual impacts  
and adjustments  
made to comply

Impacts on  
production  
decisions and  
management

Assess how well the  
interviews support or  
refute possible  
implications of the  
new antibiotic use  
guidelines

**Pre- and post-interviews and existing literature help to  
develop hypothesized causal relationships, or propositions**

“Published research data clearly show that the use of antibiotics during all phases of growth benefits the rate and efficiency of body weight gain, reduces mortality and morbidity, reduces subclinical disease, and improves health in pigs.”

“The economic benefits are several-fold greater than the cost of the antibiotic when a cost-effective antibiotic is used for this purpose.”

Cromwell, G.L. 2002. Why and How Antibiotics are Used in Swine Production. *Animal Biotechnology* 13(1):7-27

“... it may be possible for producers to somewhat offset productivity impacts by using improved management techniques...”

Miller, G.Y., X. Liu, P.E. McNamara, and E.J. Bush. 2005. Farm-Level Impacts of Banning Growth-Promoting Antibiotic Use in U.S. Pig Grower/Finisher Operations. *Journal of Agribusiness* 23(2):147-162.

McBride, W.D., N. Key, K.H. Mathews. 2008. Subtherapeutic Antibiotics and Productivity in U.S. Hog Production. *Review of Agricultural Economics* 30(2):270-288.

# More on economic benefits...

“Risk is reduced and profits are increased from use of AGP. Combined impacts of increased average daily gain and decreased variability in live weight increase producer profits by \$2.99 per pig marketed.”

Liu, X. G.Y. Miller, and P.E. McNamara. 2005. Do Antibiotics Reduce Production Risk for U.S. Pork Producers. *Journal of Agricultural and Applied Economics* 37(3):565-575.

“Pig productivity improves with use of AGP. Relative to current use, a complete ban would decrease producer profits by \$1,400 per 1,020-head barn, and profits increase \$1,992 per barn when fed AGP for 61 to 90 days.”

Miller, G.Y., X. Liu, P.E. McNamara, and E.J. Bush. 2005. Farm-Level Impacts of Banning Growth-Promoting Antibiotic Use in U.S. Pig Grower/Finisher Operations. *Journal of Agribusiness* 23(2):147-162.

“Productivity was significantly improved when STA were fed to nursery pigs. Restrictions on feeding STA during the nursery phase would likely impose significant economic costs on U.S. hog producers.”

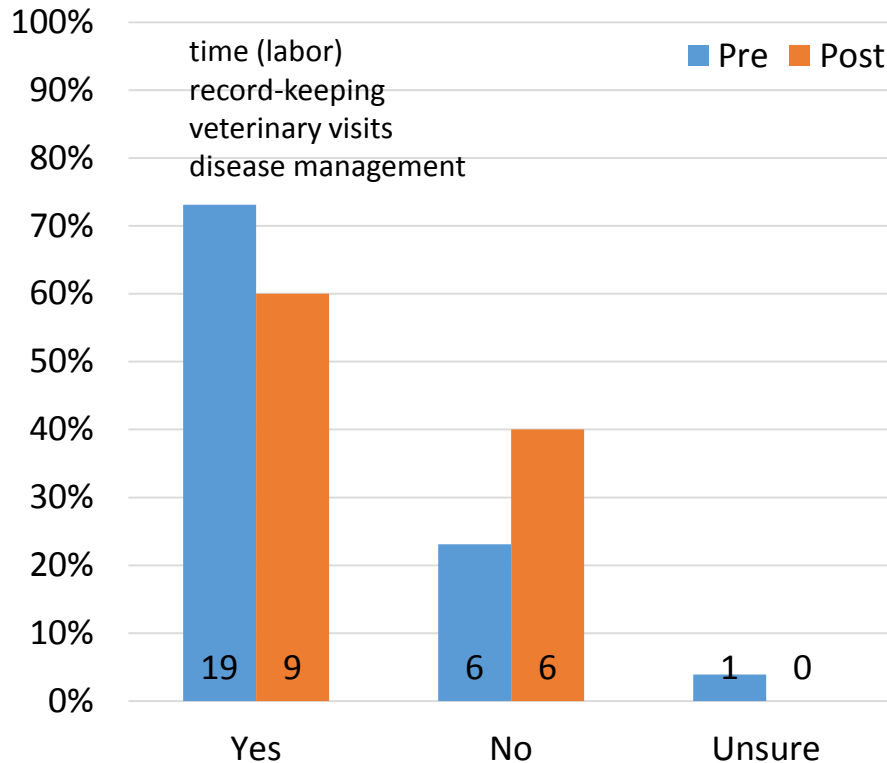
McBride, W.D., N. Key, K.H. Mathews. 2008. Subtherapeutic Antibiotics and Productivity in U.S. Hog Production. *Review of Agricultural Economics* 30(2):270-288.

# Hog Operation Business Arrangements in Iowa, 2012 Census of Agriculture and Interviews

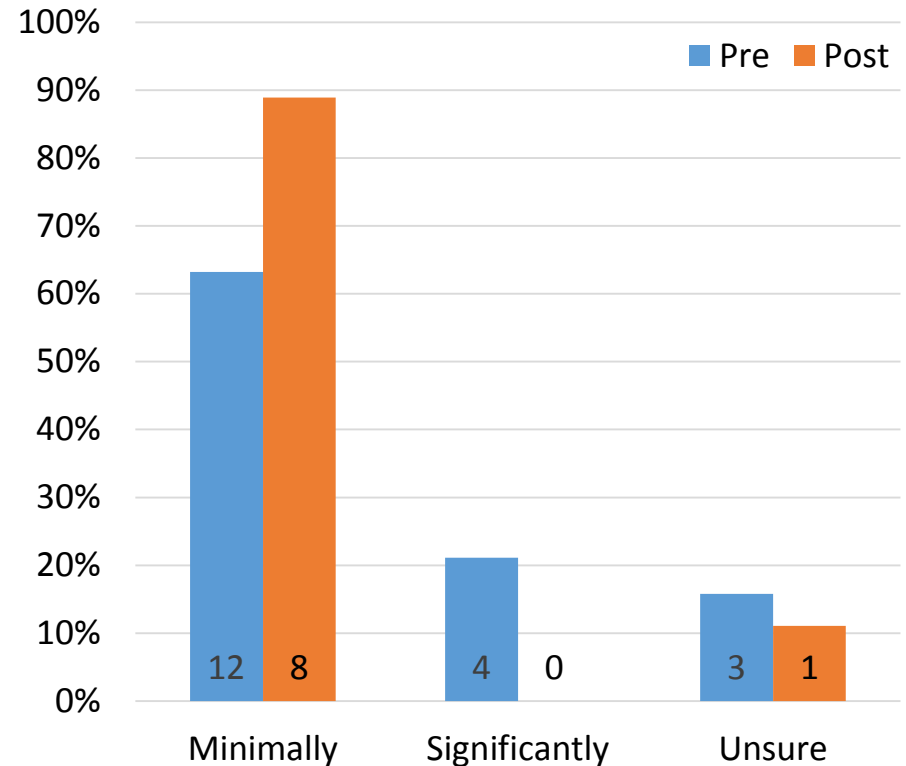
Type	<u>2012 Census of Ag</u>				<u>No. of Interview Participants</u>	
	Operations w/ Sales	Sales, head	% of Operations	% of Sales	Pre	Post
Independent producer	3,550	21,626,145	53.7%	47.0%	26	15
Contract grower (contractee)	3,012	26,236,425	45.5%	46.1%	16	7
Contractor or integrator	54	1,493,278	0.8%	7.0%	3	1
Nutritionist					8	7
Veterinarian					8	6

# Anticipated and reported cost impacts of VFD on independent producers

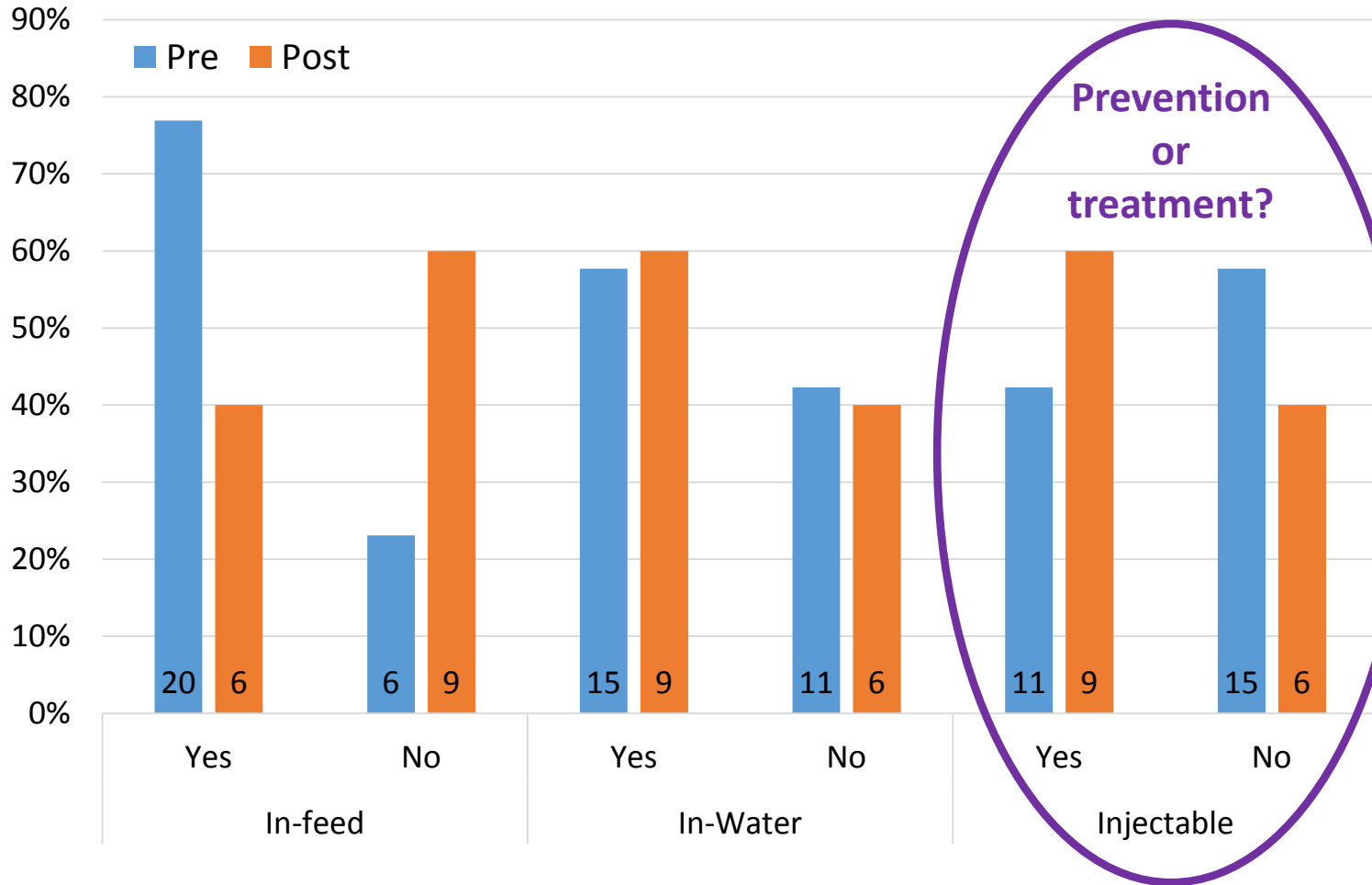
## Increase costs?



## If yes, how much?

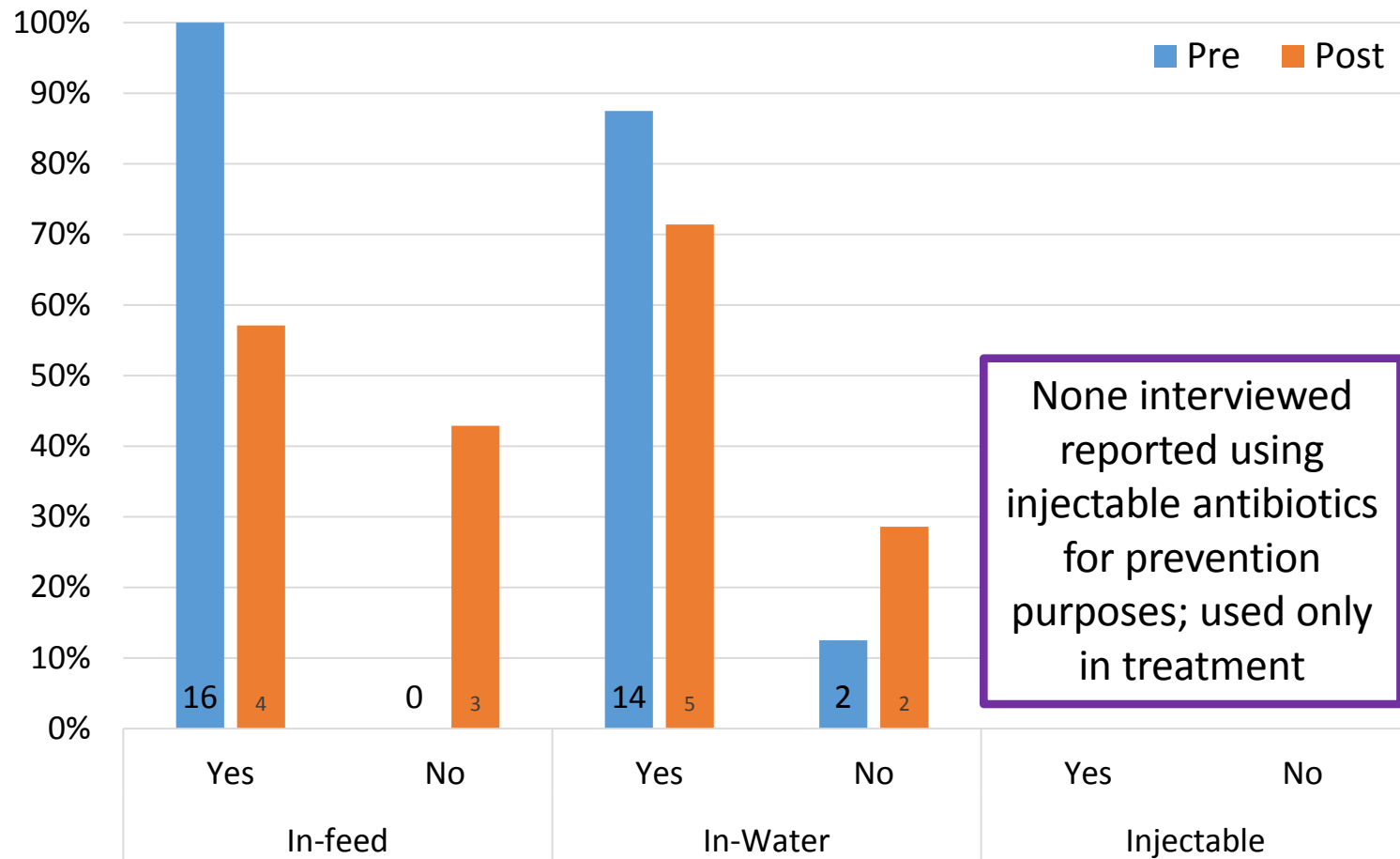


# Use of antibiotics to prevent disease as reported by independent producers





# Use of antibiotics to prevent disease as reported by contract growers



None interviewed reported using injectable antibiotics for prevention purposes; used only in treatment

# A couple sentiments we heard:

*I am concerned with the time needed to complete/file (even electronic) the paper work ... it takes time away from working with pigs and people in the barns ... that is where I earn my keep for my clients.*

-- swine veterinarian

*The new regulations are helping me develop a closer relationship with clients, they are calling me in sooner when problems arise because they now need me to get the antibiotics they need. It is helping solve disease issues earlier and more effectively.*

-- swine veterinarian

*I have more communication with company veterinarians and feed mills as a result of changes in requirements.*

-- swine nutritionist

Reproductive performance of gilt progeny  
*Craig JR, Collins CL, Athorn RZ, et al*

Economic analysis of sow retention  
*Gruhot TR, Calderón Díaz JA, Baas TJ, et al*

Survey on Impacts of Guidance 209 and  
213 and VFD regulations on antibiotic use  
*Schulz LL, Rademacher CJ*

Outbreak of sternal burittis in Italy  
*Marruchella G, Mosca F, Di Provido A, et al*



PEER REVIEWED

BRIEF COMMUNICATION

## Food and Drug Administration Guidance 209 and 213 and Veterinary Feed Directive regulations regarding antibiotic use in livestock: A survey of preparation and anticipated impacts in the swine industry

Lee L. Schulz, MS, PhD; Christopher J. Rademacher, DVM

### Implications

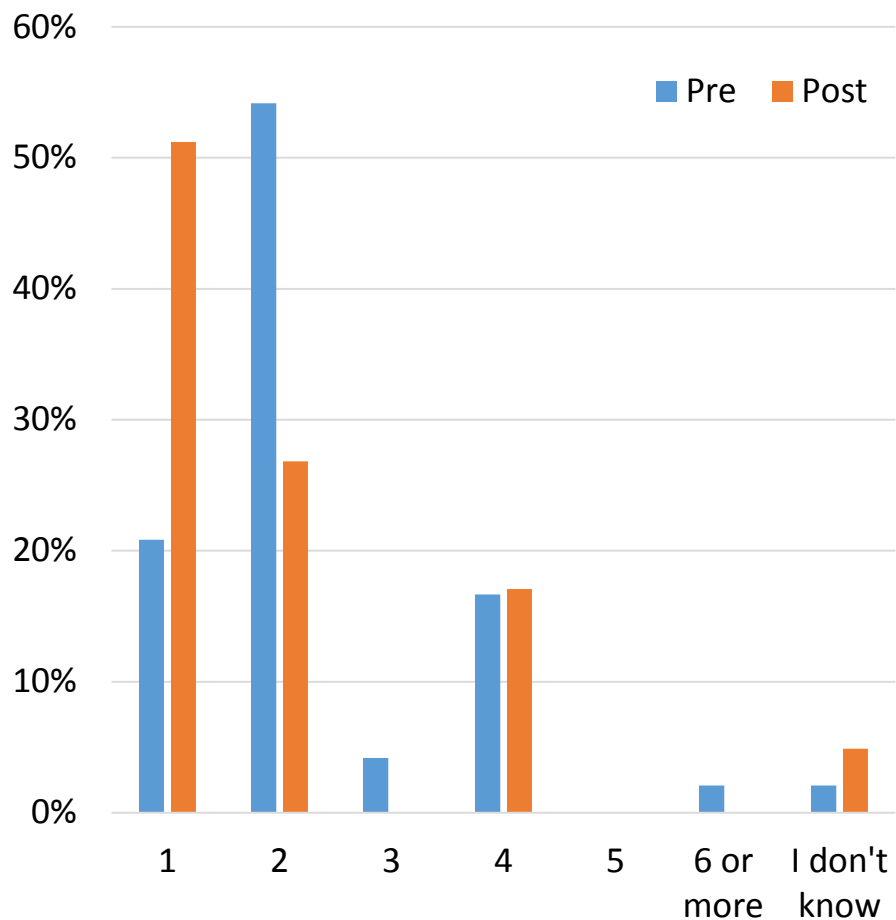
- Practitioners can use this information to perform a benchmark assessment of their individual preparedness and anticipated impacts.
- Preliminary evidence suggests the industry will go beyond simply complying with the federal guidance for judicious use of antibiotics by collectively implementing more completely and stringently suggested herd-health and production plans.

<https://www.aasv.org/shap/issues/v25n5/v25n5p247.html>

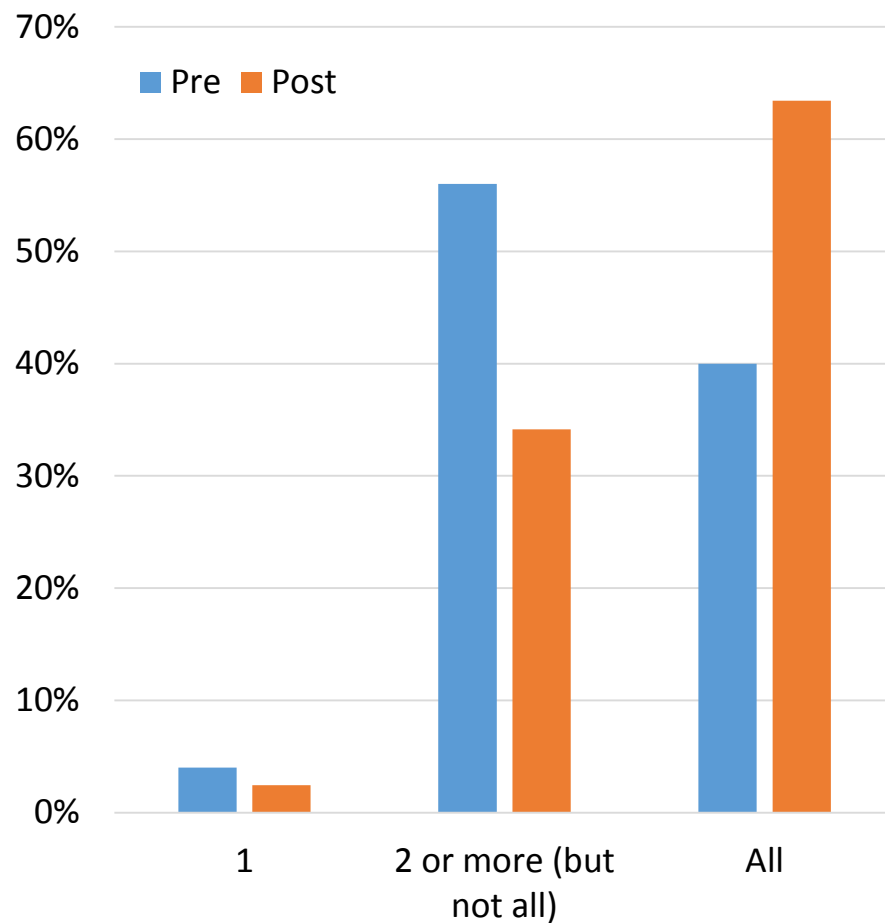
**(SUBMITTED) Swine veterinary assessment of the impact of new FDA regulations on antibiotic use: A post-enactment survey of swine practitioners**

Christopher J. Rademacher, Christopher C. Pudenz, and Lee L. Schulz,

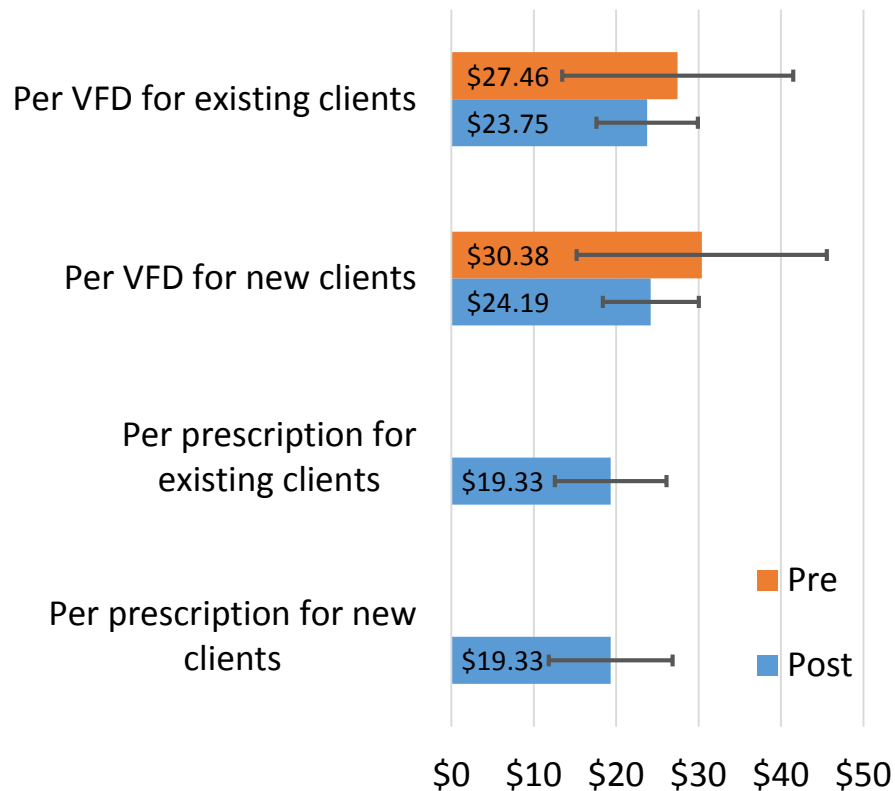
### How many visits in year do you think is required for a swine producer and veterinarian to have a VCPR?



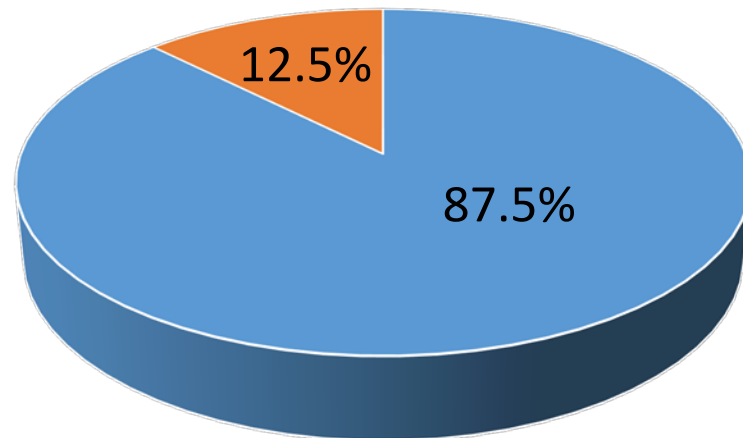
### In order to fulfil the VCPR requirement for a producer how many sites do you visit?



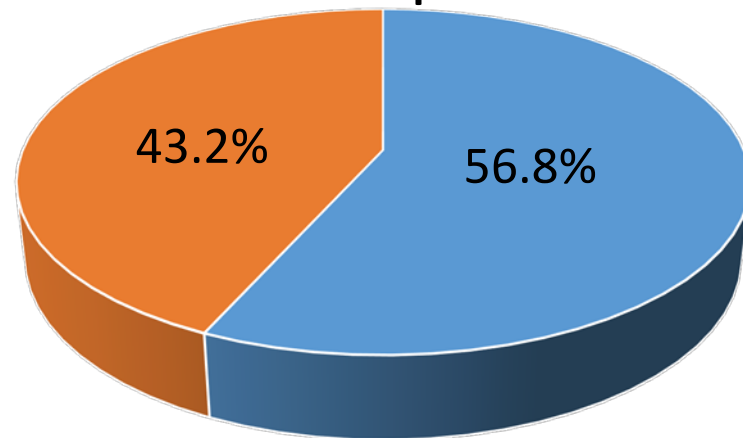
What are you charging to write VFDs and prescriptions for new and existing clients?



## Provision of VFDs

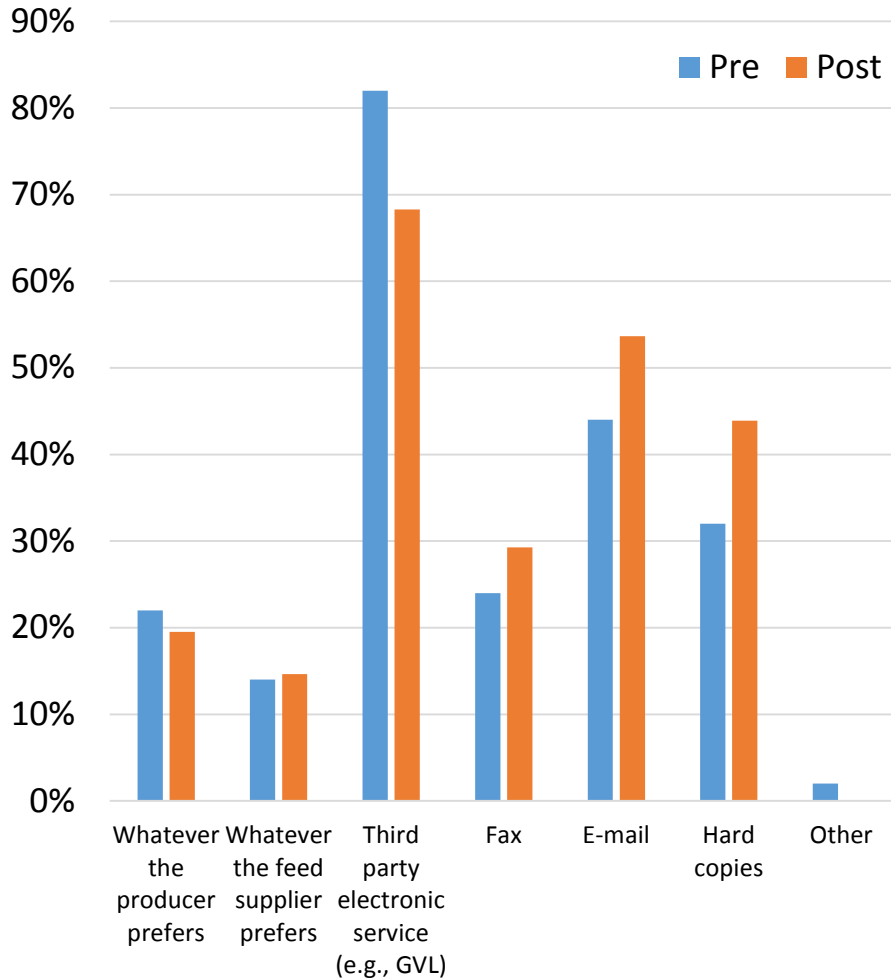


## Provision of Prescriptions



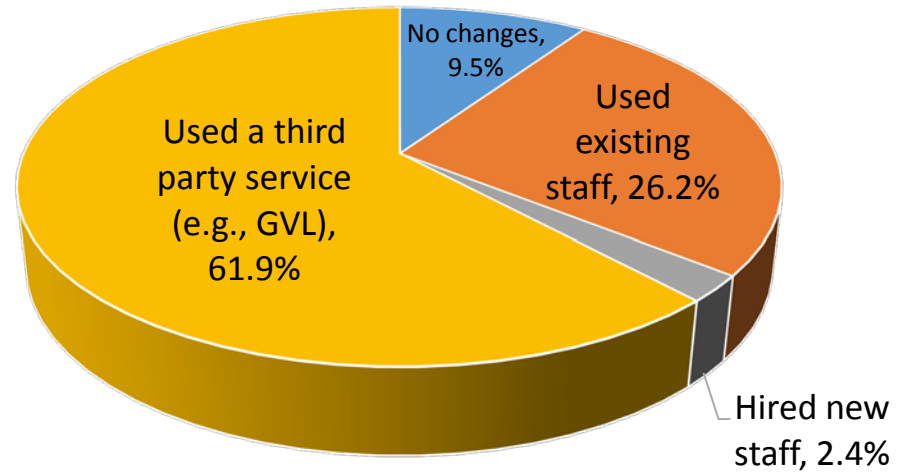
■ Separate Line Item Fee ■ Part of a Consultation/Service Fee

## How do you plan to provide VFDs to producers?

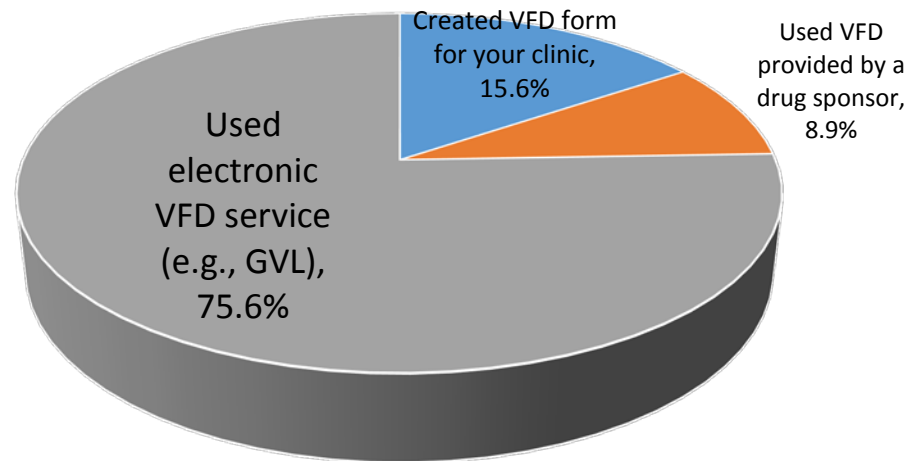


Percents may reflect multiple answers

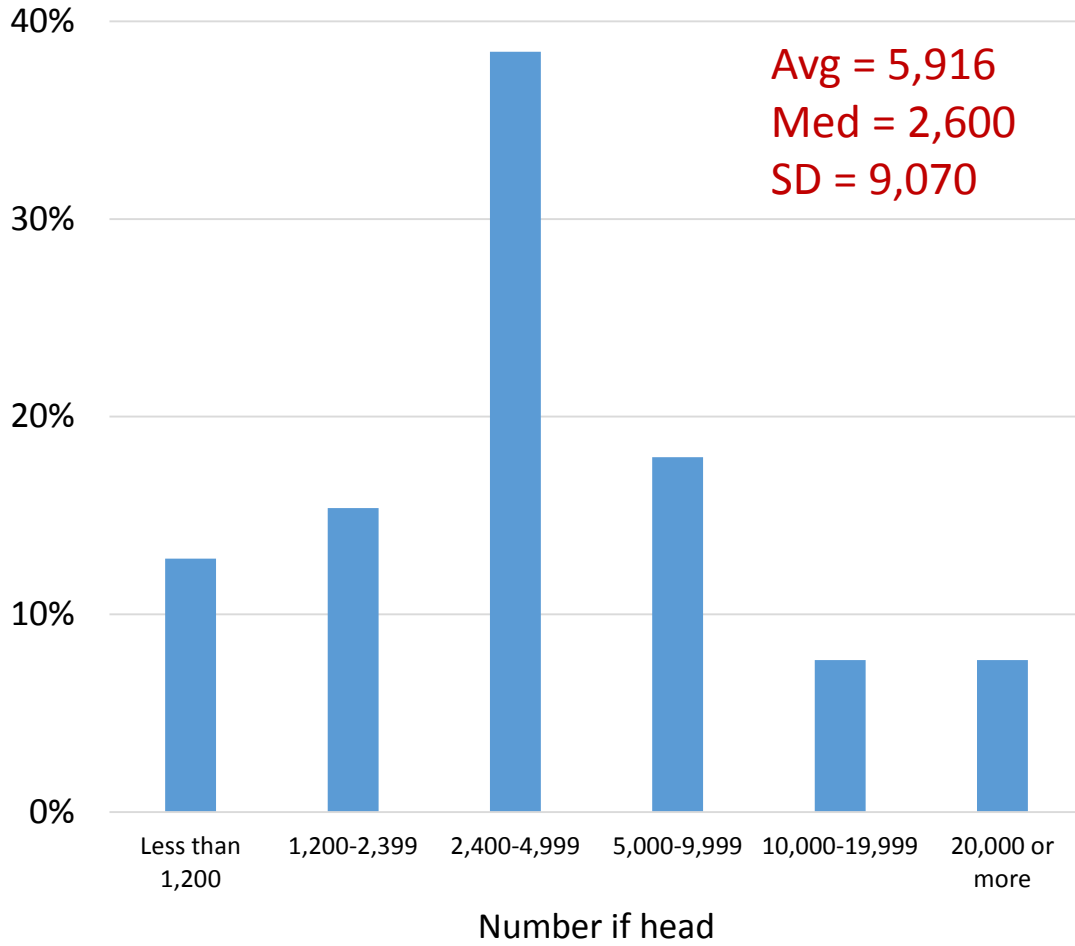
The FDA will require that a record of every VFD be kept for a period of 2 years. How do you plan to meet the additional record keeping requirement?



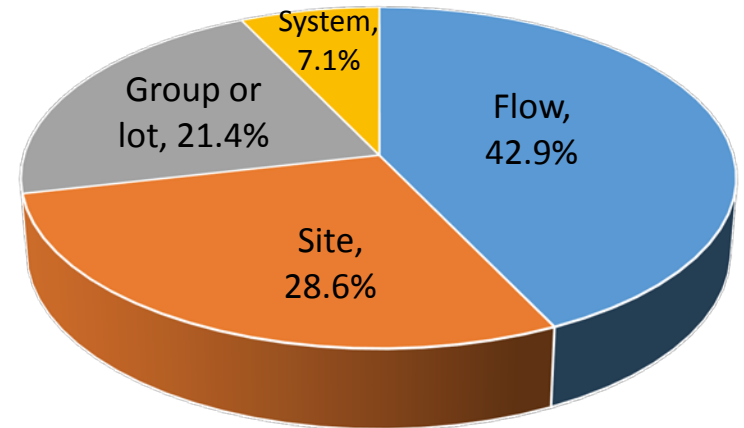
Have you used a pre-made VFD form or created your own?



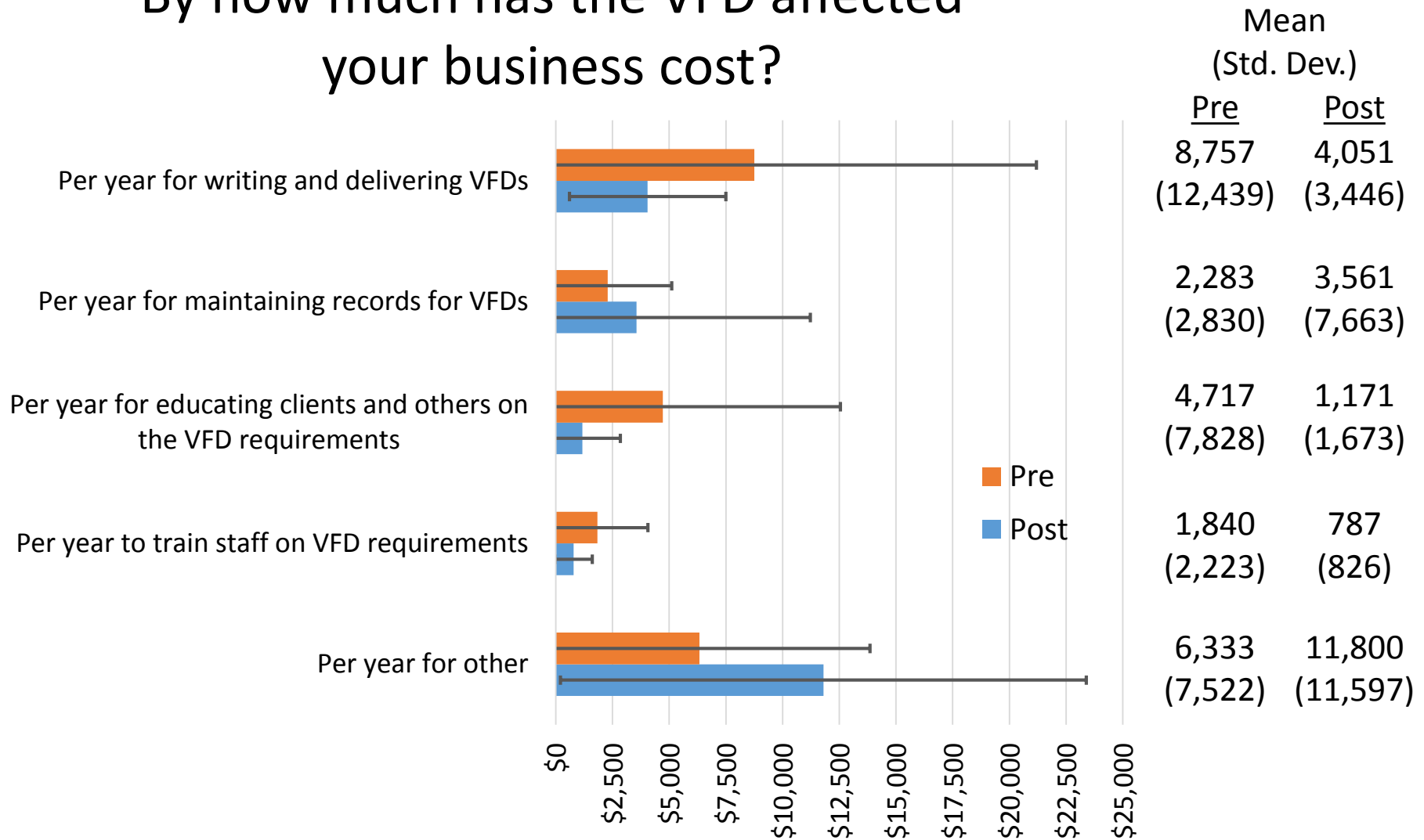
# What is the average number of head you write a VFD for?



# At what level of production do you most often write a VFD for?



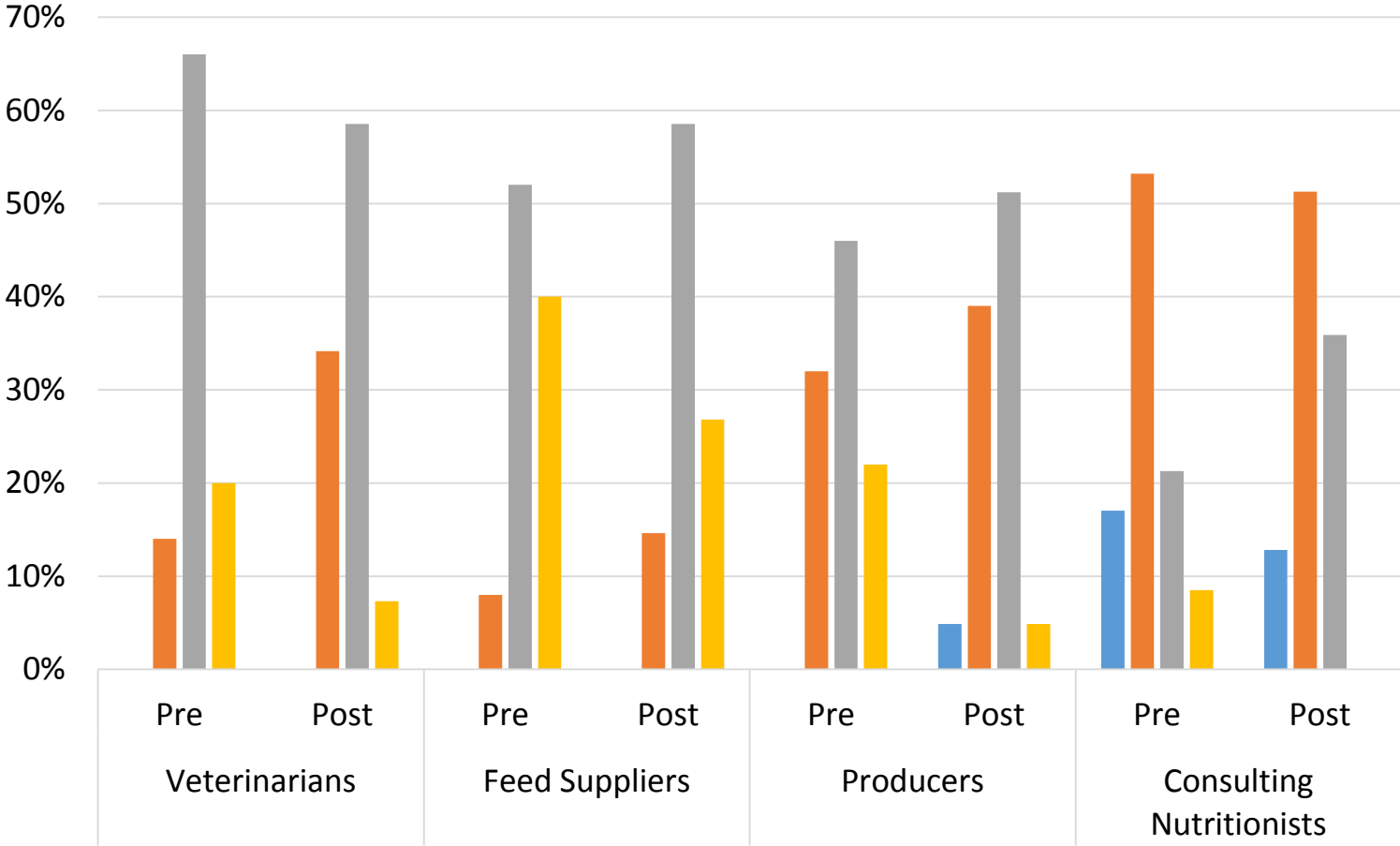
# By how much has the VFD affected your business cost?



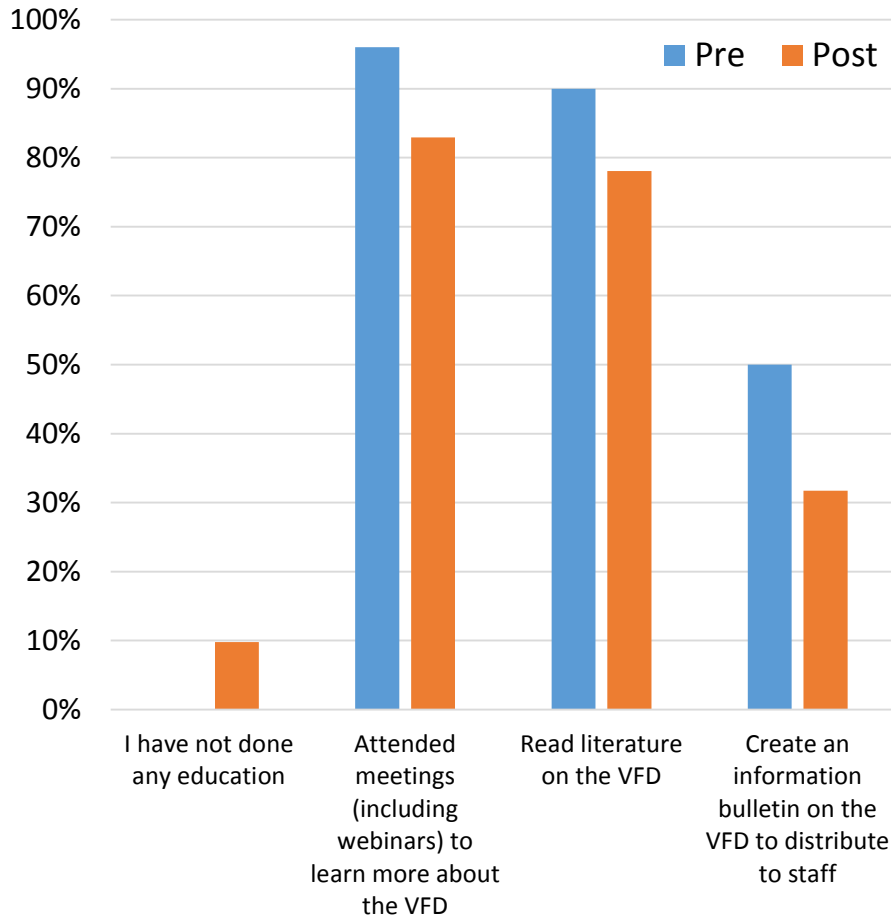


# How much of a burden do you envision (pre) / think (post) complying with the VFD requirements (will have) has had?

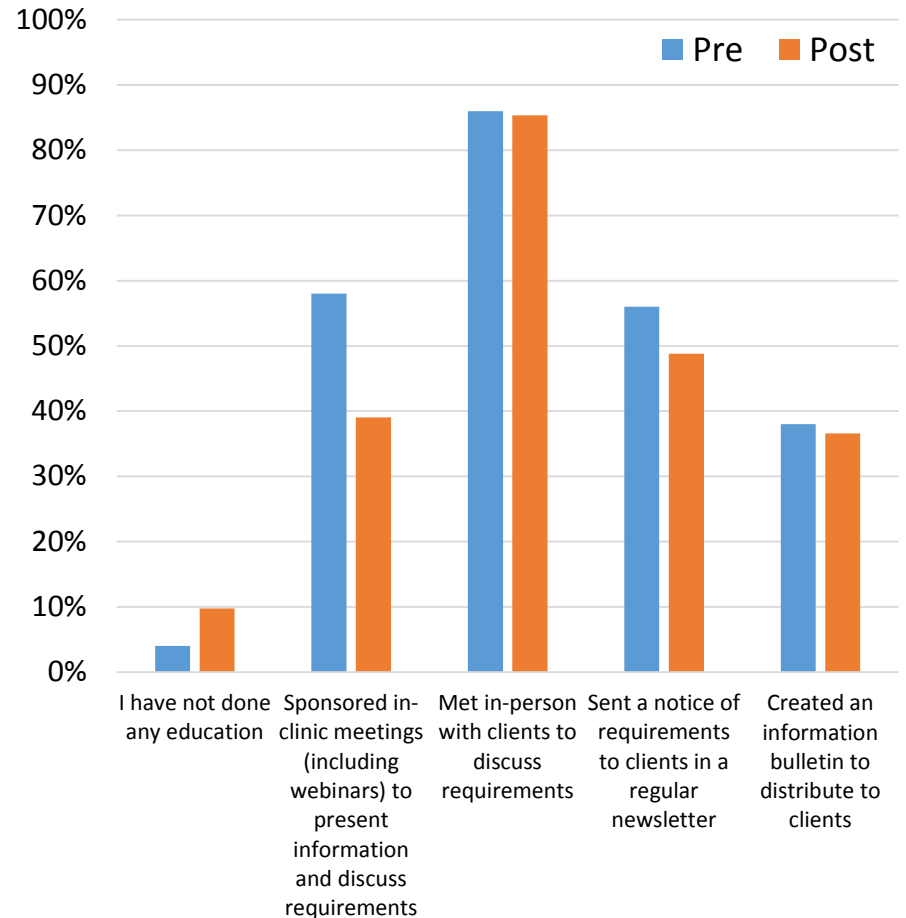
■ No burden 
 ■ A little burden 
 ■ A moderate amount of burden 
 ■ Very burdensome



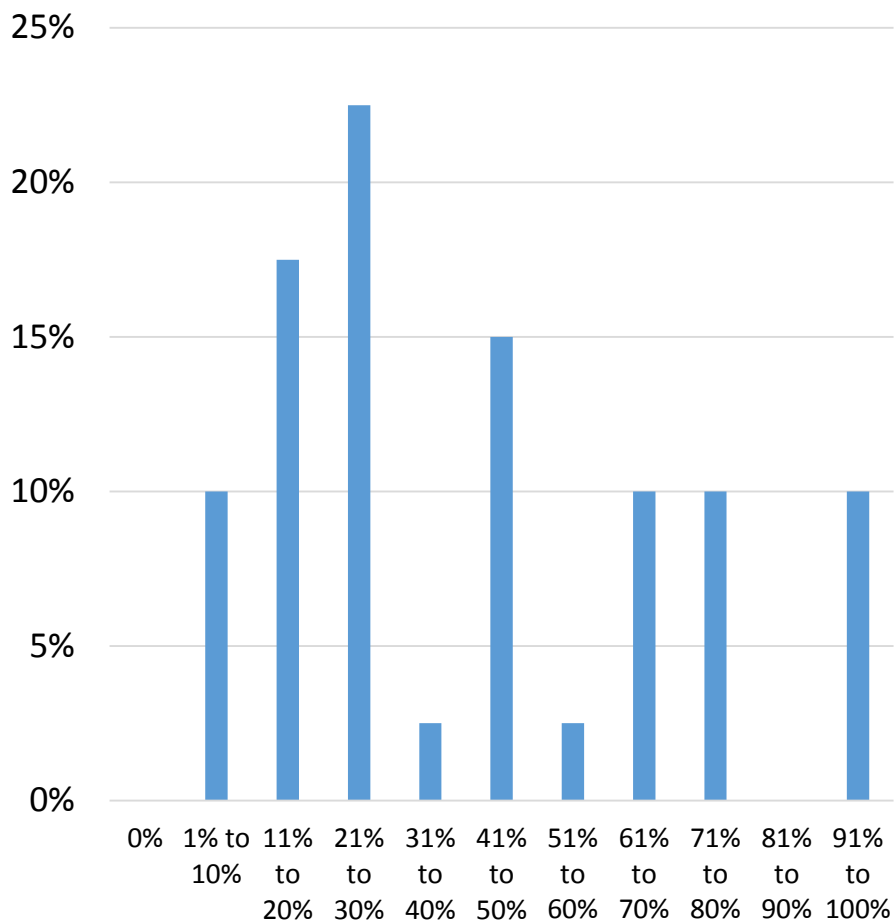
## What have you done to prepare (pre) / educate (post) yourself and staff on VFD requirements?



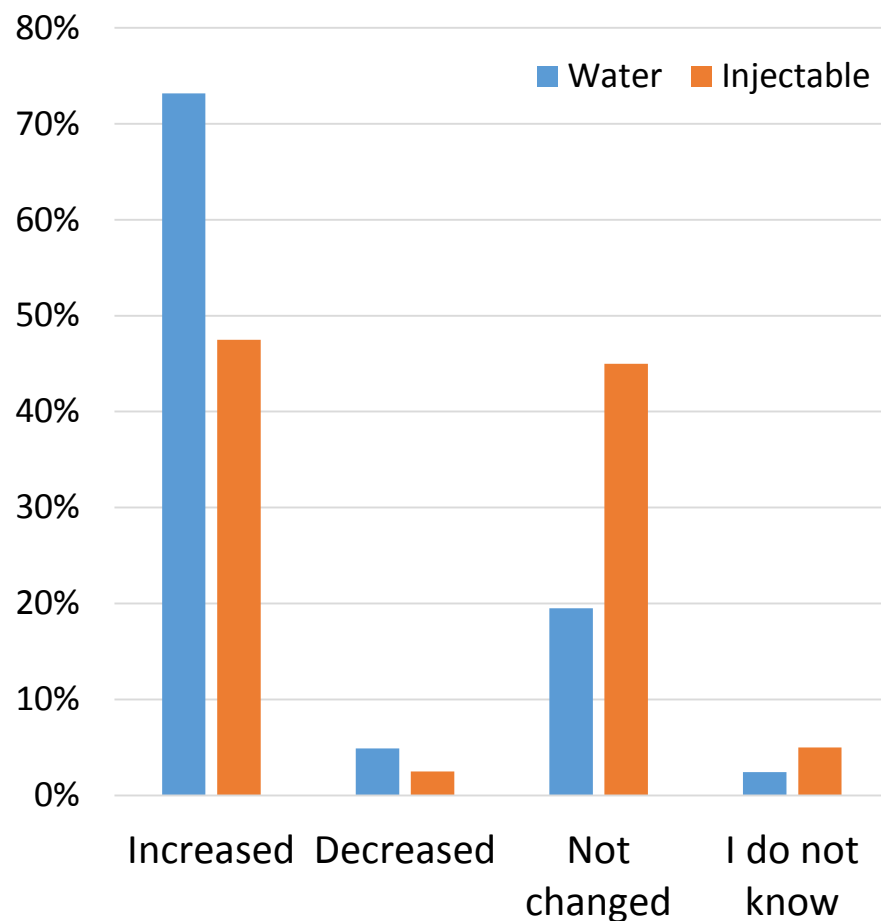
## What have you done to prepare (pre) / educate (post) swine clients on VFD requirements?



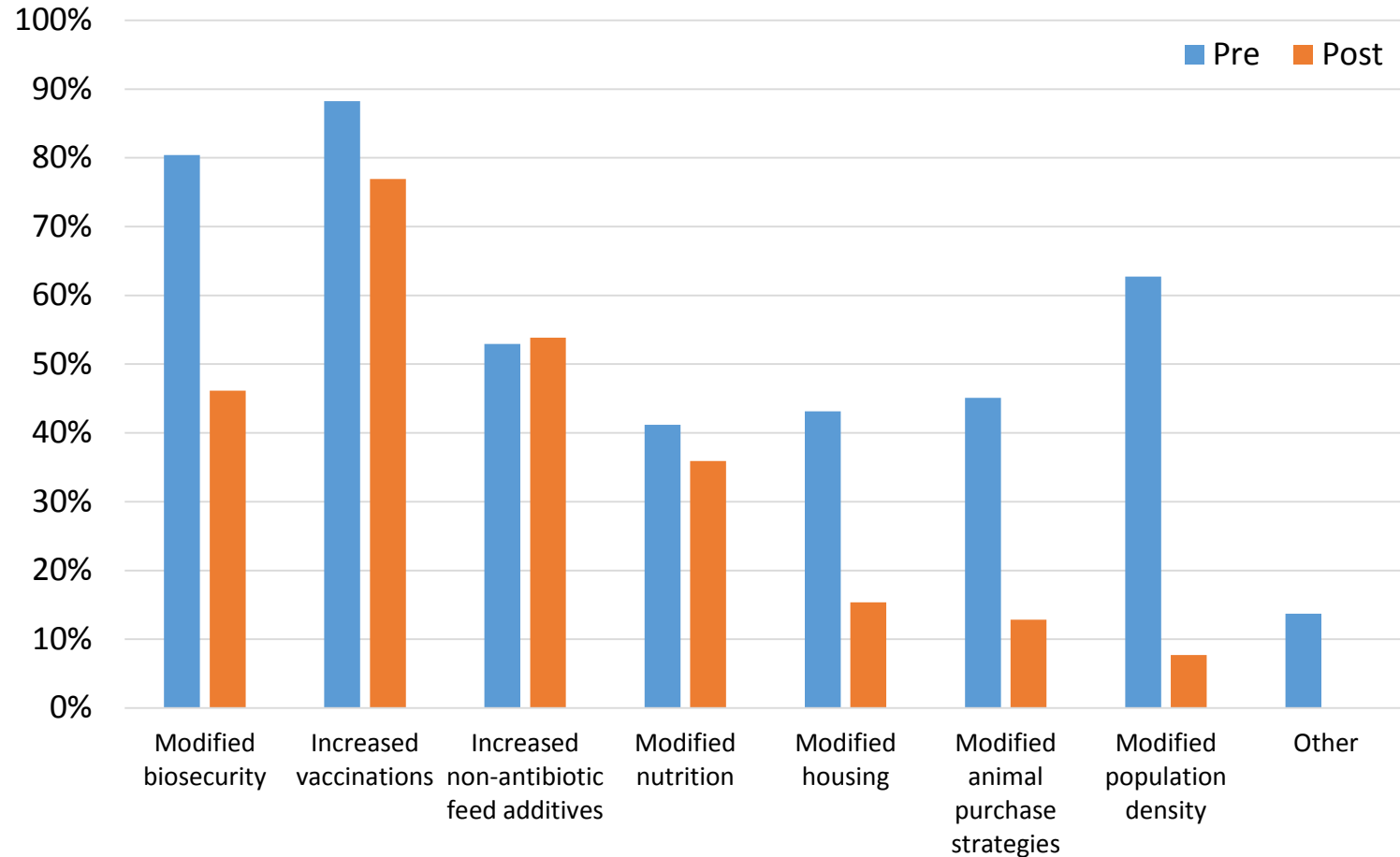
### What % have your swine producers reduced the use of antibiotics in feed as a result of the VFD?



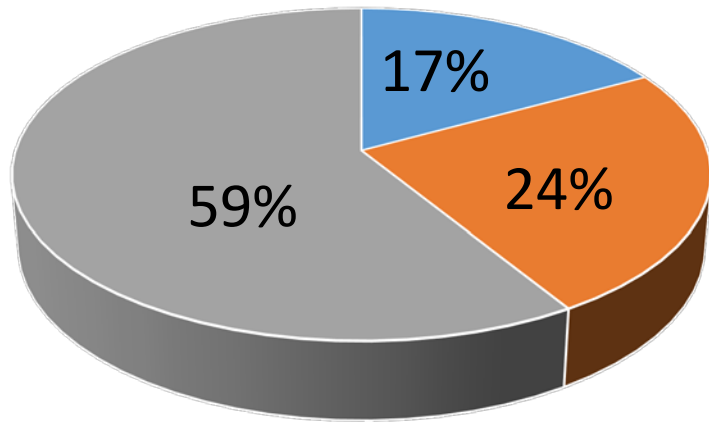
### How has the VFD changed the use of antimicrobials in water and injectable in U.S. swine production?



## How do you plan to advise your clients (pre) / which changes have your producers made (post) in response to the new antibiotic-use guidelines?



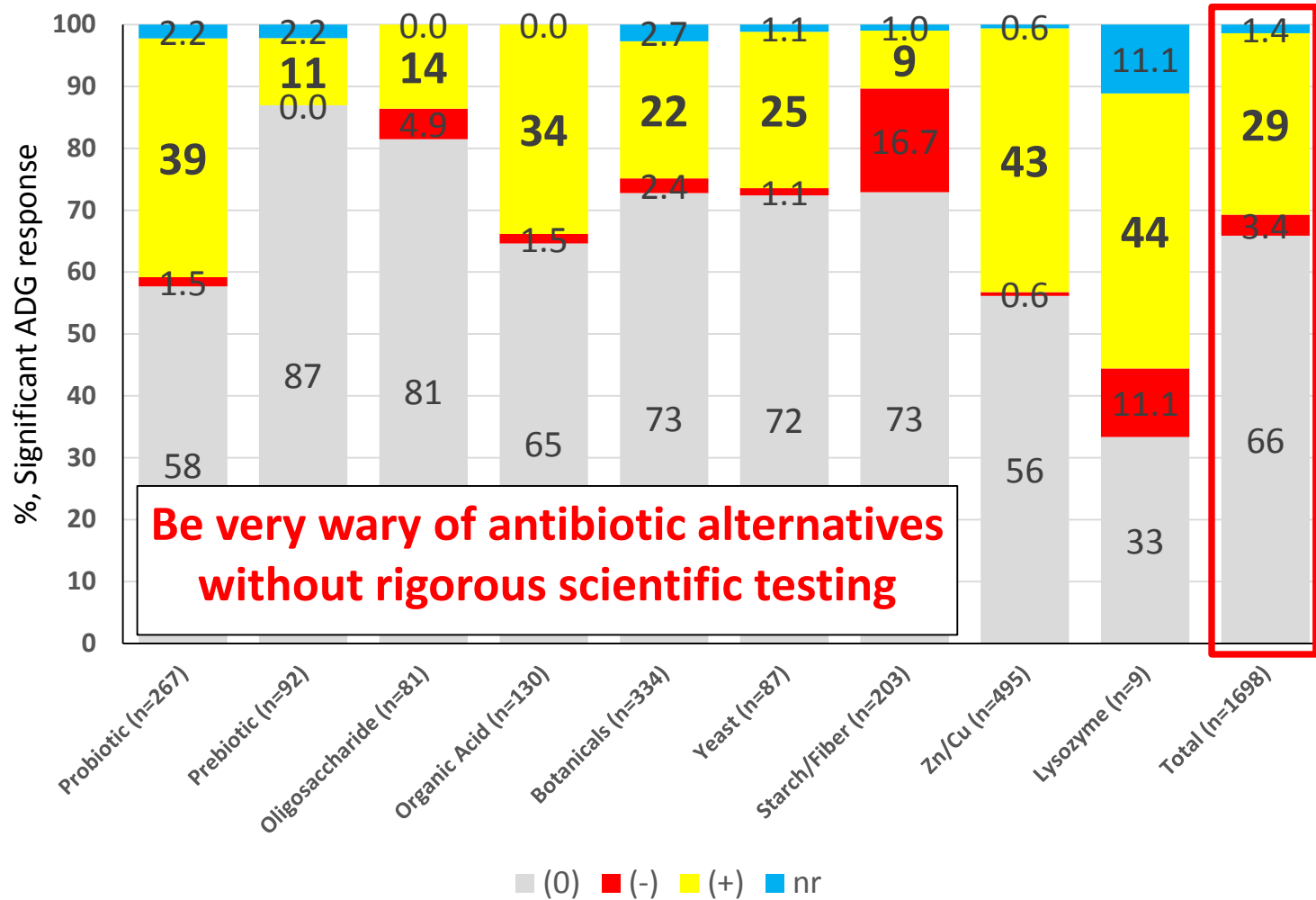
# What percentage of your producers have made the following changes to growth promotion use?



- Eliminated some uses of antibiotics for growth promotion
- Moved to non-medically important growth promotants
- Eliminated all uses of antibiotics for growth promotion

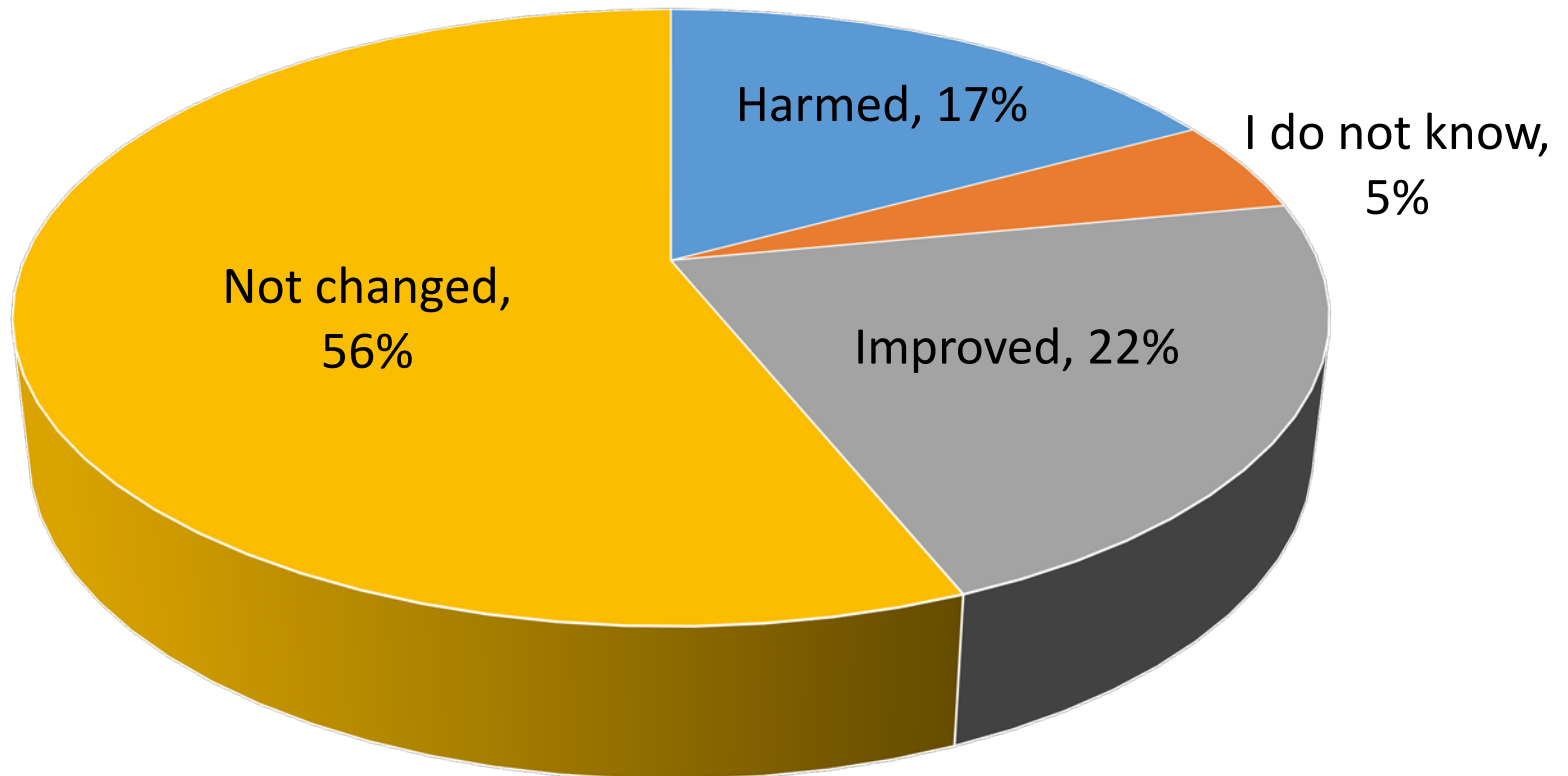
- Antibiotics that are already VFD or Rx based:
  - avilamycin, florfenicol, tilmicosin; or Rx - Tylosin.
- Antibiotics that are not medically important:
  - Ionophores (monensin, lasalocid, narasin (Skycis,etc. )
  - Bacitracin (BMD, bacitracin zinc)
  - Bambermycins (Flavomycin)
  - Carbadox (Mecadox)
  - Tiamulin (Denagard)
- Antibiotics that now require a VFD:
  - Chlortetracycline (CTC)
  - CTC + Tiamulin (CTC + Denagard)
  - lincomycin (Lincomix)
  - Oxytetracycline (OTC)
  - OTC + neomycin (neo-terramycin)
  - tylosin (tylan)
  - virginiamycin (stafac)
- Other drugs (that are not antibiotics), including:
  - Anthelmintics: Coumaphos, Fenbendazole, Ivermectin
  - Beta agonists: Ractopamine, Zilpaterol
  - Coccidiostats: Clopidol, Decoquinate, Diclazuril

# Evaluation of AGP alternative trials on growth performance (ADG) responses



Schweer, W.P., J.F. Patience, K. Scharz, D. Linhares, C. Rademacher, H.K. Allen, C.L. Loving, A. Ramirez, and N.K. Gabler. A Review of and Evaluation of Antibiotic Alternatives in the Literature. J. Anim. Sci Vol. 95, Suppl. 2/J. Dairy Sci. Vol. 100, Suppl. 1

In your opinion, has the VFD, improved, harmed, or not changed overall animal health in U.S. swine?



# VFD in Beef Cattle Sector

Ted Schroeder – Kansas State University

## Objectives

- Determine VFD Effects on producers (cow-calf, stockers, feedlots)
- Determine how beef cattle consulting veterinarians adjust business practices and client relations to address VFD requirements

## Procedure

- Interviewed 15 producers (cow-calf, stockers, feedlots):  
Pre-VFD: July 2016 (in-person NCBA summer meetings)  
Post-VFD: August 2017 (telephone follow-up same group)
- Surveyed consulting beef veterinarians (138 responses to listserv survey) September 2016





## **Findings – Beef Cattle Producer Interviews**

- **Producers across all sectors not concerned about VFD either pre- or post-enactment – were uncertain about costs in pre- but said they were minimal in post & required a little time to set up, but easy to keep current once set up**
- **All had veterinary client relationships in place**
- **Noted post they had to make sure they had prescriptions in place but that it simply required being more organized**
- **None found managing VFD prescriptions or documentation requirements of significant cost**

## Findings – Beef Cattle Producer Interviews

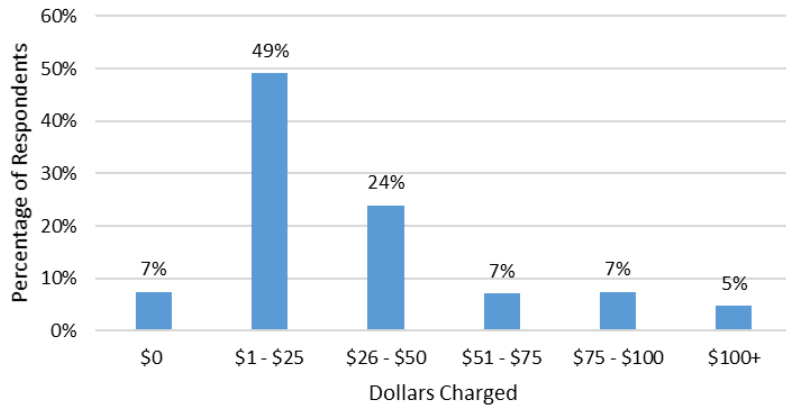
### Common producer sentiment we heard:

*“The ultimate goal here is to make our U.S. beef the safest it can be for our consumers. If this program has helped in this area, it is a win-win for everyone.”*

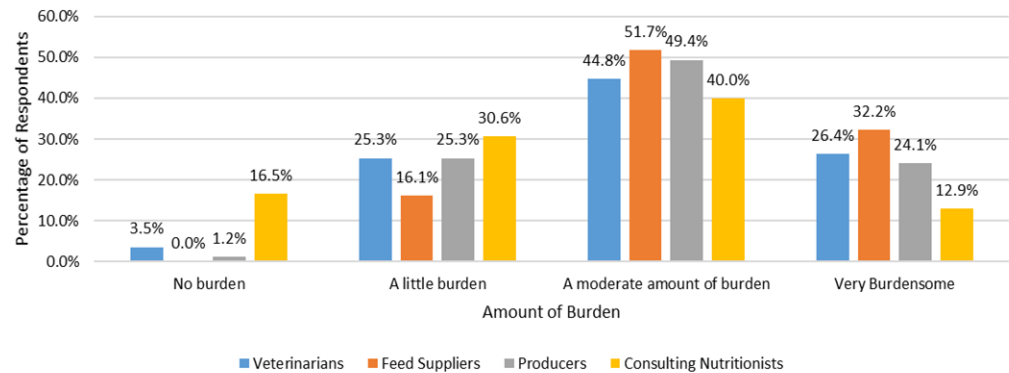
-Texas cow-calf producer

## Findings – Beef Cattle Consulting Veterinarian Survey

Dollars Charged to Write a VFD



How Much Burden the VFD will Have on Veterinarians, Feed Suppliers, Producers and Consulting Nutritionists



<https://www.beefcattleinstitute.org/beef-consulting-veterinarian-feed-directive-preparedness-survey/>

## Findings – Beef Cattle Consulting Veterinarian Survey

	Respondents in each Cost Range								Average	Standard Deviation
	\$0-50	\$51-\$100	\$101-\$250	\$251-\$500	\$501-\$750	\$751-\$1000	\$1001-\$1500	\$1501+		
\$____ total per year for writing and delivering VFDs	5	2	3	9	1	10	1	20	\$2,318.13	\$1,070.74
\$____ total per year for maintaining records for VFDs	13	7	4	13	0	7	1	7	\$674.75	\$423.29
\$____ total educating clients and others (nutritionists, feed suppliers, etc...)	11	4	2	14	0	9	10	11	\$971.85	\$256.25
\$____ total to train staff on VFD requirements	21	6	4	8	0	4	2	4	\$470.77	\$384.15

# Further Research

- Changes in farm financial records and key performance indicators is another possible way to examine impact of new antibiotic-use guidelines.
- Are antibiotic free premiums driven more by demand or supply? Has this changed post VFD enactment?

LM\_HG250

Des Moines, Iowa

Tue, Sep 04, 2018

USDA Market News

NATIONAL WEEKLY DIRECT SWINE NON-CARCASS MERIT PREMIUM

FOR WEEK ENDING Saturday, September 1, 2018

	Value Range*	Average*
VOLUME	0.00 - 0.00	0.00
TRANSPORTATION	0.40 - 3.05	1.47
DELIVERY TIME	0.25 - 3.15	0.83
BREED	0.00 - 0.00	0.00
PORK QUALITY ASSURANCE	0.00 - 0.00	0.00
BETA AGONIST FREE	0.30 - 1.50	0.80
OTHER **	0.15 - 15.00	3.55

\* Prices reported per hundred pounds carcass basis

\*\* OTHER category includes: Animal Welfare, Antibiotic Free, Diet/Feed, Genetics, Meat Quality, Process Verified Program, and Sow Housing

\*\*\* Price not reported due to confidentiality, For more information visit:  
[www.ams.usda.gov/sites/default/files/media/ConfidentialityGuidelines.pdf](http://www.ams.usda.gov/sites/default/files/media/ConfidentialityGuidelines.pdf)

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Source: USDA Livestock, Poultry & Grain Market News Division, Des Moines, IA  
515-284-4460 email: [desm.lpgmn@ams.usda.gov](mailto:desm.lpgmn@ams.usda.gov)  
24 Hour recorded market information 515-284-4830  
[www.ams.usda.gov/market-news/livestock-poultry-grain](http://www.ams.usda.gov/market-news/livestock-poultry-grain)