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Swine 2006

Part IV: Changes in the U.S. Pork Industry, 1990-2006

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Introduction

In 1983, promoters of the concept that would become the USDA's National Animal Health Monitoring System (NAHMS) envisioned a program that would monitor changes and trends in national animal health and management, thereby providing periodic snapshots of the U.S. food animal industries. With these industry overviews, members could identify opportunities for improvement, provide changing priorities for research and special studies, and detect emerging problems.

Section I of this report presents demographic changes of the U.S. and world pork industries from a historical perspective using data provided by the National Agricultural Statistics Service (NASS), Census of Agriculture, and Foreign Agricultural Service. Results of four NAHMS national studies in Sections II and III provide an overview of change in U.S. swine management and health from 1990 through 2006. Section IV provides information from other national data bases.

The first NAHMS national study of the swine industry, the 1990 National Swine Survey, provided a snapshot of swine health and management and served as a baseline from which industry changes in animal health and management were measured. NAHMS conducted the 1990 National Swine Survey in 18 States, with a target population of sites with at least one sow. The sample represented 95 percent of the U.S. swine population. National estimates generated from this study were reported in "Morbidity/Mortality and Health Management of Swine in the United States" (November 1991).

The second NAHMS national swine study was implemented in 1995 via two phases: Swine '95 Baseline and Swine '95: Grower/Finisher. Both phases were conducted in the top 16 swine States, which represented 91 percent of the U.S. swine population. The target population for the Baseline phase was producers with at least one pig. Data were collected by two interviews of approximately 1,400 producers. National estimates generated from the Baseline phase were reported in "Swine '95 Part I: Reference of 1995 Swine Management Practices" (October 1995). The Swine '95: Grower/Finisher phase was conducted on-farm via two interviews on sites with at least 300 market pigs. National estimates generated from the Swine '95: Grower/Finisher phase were reported in "Swine '95 Part II: Reference of 1995 Grower/Finisher Health and Management" (May 1996).

The third NAHMS national swine study, Swine 2000, provided both participants and the industry with information on nearly 94 percent of the U.S. swine herd on sites with 100 or more pigs. Data for "Swine 2000 Part I: Reference of Swine

Health and Management in the United States, 2000" (August 2001) were collected from 2,499 swine production sites from 2,328 operations. NASS collaborated with Veterinary Services to select a producer sample statistically designed to provide inferences to the Nation's swine population on sites with 100 or more pigs. The study included 17 of the major pork-producing States, which accounted for 94 percent of the U.S. pig inventory and 92 percent of U.S. pork producers with 100 or more pigs. NASS interviewers contacted producers from June 1 through July 14, 2000. Respective results were published in "Swine 2000 Part II: Reference of Swine Health and Health Management in the United States, 2000" (March 2002) and "Swine 2000 Part III: Reference of Swine Health and Environmental Management, 2000" (September 2002).

The Swine 2006 study is NAHMS' fourth national study of the U.S. swine industry. The study's 17 participating States accounted for 94 percent of swine operations and inventory on operations with 100 or more pigs. A stratified random sample of 5,000 swine producers was selected to be visited by representatives from NASS between July 17 and September 15, 2006. An on-site questionnaire was administered by NASS enumerators during this visit. Producers that chose to continue in the study were visited up to two times by veterinary medical officers (VMOs) who administered questionnaires and took biological/environmental samples. VMOs made their initial visits between September 5, 2006, and March 15, 2007, and followup visits between December 4, 2006, and March 15, 2007. Results from the first data collection period of this study were presented in "Swine 2006 Part I: Reference of Swine Health and Management Practices in the United States, 2006" (October 2007). Respective results were published in "Swine 2006 Part II: Reference of Swine Health and Health Management Practices in the United States, 2006" (December 2007), and "Swine 2006 Part III: Reference of Swine Health, Productivity, and General Management in the United States, 2006" (March 2008).

Reports and information sheets from all four NAHMS swine studies are available at http://nahms.aphis.usda.gov

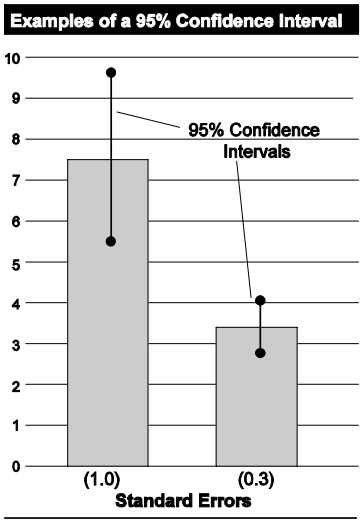
Interpretation of changes in estimates among four national studies conducted between 1990 and 2006 are sometimes difficult. Major influences behind differences in estimates may be due to differences in the composition of the target population as described above. These differences are documented in each summary table to aid in interpretation. Differences also may occur in the factors being measured, e.g., changes in question wording, random variation, and true secular time trends in the pork industry. These differences have been documented to aid in interpretation.

Terms Used In This Report

All in/all out: A management approach in which animals are moved as one group, allowing a facility to be completely empty for a time. Usually, all-in/all-out management also includes completely cleaning and disinfecting the facility before refilling it with animals. All-in/all-out management can be done at any level: pen area, room, building, or entire facility.

NA: Not applicable.

Operation: The overall business and top-level management unit for a swine rearing facility, which might consist of one or more sites (geographic locations). An operation can encompass all production phases of swine rearing (i.e., gestation, farrowing, nursery, and grower/finisher) on one or more sites, each devoted to a different production phase or combination of phases (see also "Site").



Population estimates: Estimates in this report are provided with a measure of precision called the **standard error.** A 95-percent confidence interval can be created with bounds equal to the estimate, plus or minus two standard errors. If the only error is sampling error, the confidence intervals created in this manner will contain the true population mean 95 out of 100 times. In the example to the left, an estimate of 7.5 with a standard error of 1.0 results in limits of 5.5 to 9.5 (two times the standard error above and below the estimate). The second estimate of 3.4 shows a standard error of 0.3 and results in limits of 2.8 and 4.0. Alternatively, the 90-percent confidence interval would be created by multiplying the standard error by 1.65 instead of 2. In general, when comparing point estimates between categories, estimates with confidence levels that overlap are not considered different. Most estimates in this report are rounded to the nearest tenth. If rounded to 0, the standard error was reported (0.0). If there were no reports of the event, no standard error was reported (—).

Site: One geographic location or address that functions as a unit to produce one or more production phases in swine rearing. Examples would be a gestation/farrowing site or a nursery site. A site can encompass more than one production phase, such as a "farrow to finish" site, which has gestation, farrowing, nursery, and grower/finisher hogs all at one location. A site can be a part of an operation or it can be the whole operation, if the operation has only one site (see also "Operation").

Section I: Demographic Changes in the U.S. and World Pork Industries, 1850-2006

A. Historical Changes in the U.S. Pork Industry, 1850–2002

1. Total pig inventory

The Census of Agriculture has collected hog and pig inventory numbers at 5-year intervals since 1850. The table opposite shows inventory numbers at approximately 10-year intervals (every other Census). The 2007 Census was conducted in spring 2008 and will be published in spring 2009. The U.S. hog and pig inventory had sporadic increases and declines from 1850 to 1880, with a peak of 49 million head in 1880 and a low of 25 million head in 1870. A relatively stable inventory predominated from 1890 through 1930, when the inventory remained near 60 million head. By 1940, inventory had declined 40 percent, followed by a similar percentage rebound by 1950. Hog and pig inventory peaked in 1959 at nearly 68 million head. Estimates in subsequent years consistently remained near 55 million head, increasing to 60.4 million head in 2002. The number of hog sites declined dramatically starting in 1959. The 2002 Census showed the number of sites at only 1.8 percent of those in 1900, while the inventory number of head was nearly the same. As a result, the average herd size increased from fewer than 20 head in the early and mid 1900s to 766 head in 2002.

a. Changes in December 1 U.S. hog and pig inventory, 1850-2002:

Year*	Total Inventory (1,000 Head)	Sites Reporting	Average Herd Size
1850	30,354	NA	NA
1860	33,513	NA	NA
1870	25,135	NA	NA
1880	49,773	NA	NA
1890	57,427	NA	NA
1900	62,868	4,335,363	15
1910	58,186	4,351,751	13
1920	59,346	4,850,807	12
1930	56,288	3,535,119	16
1940	34,037	3,766,675	9
1950	55,789	3,013,549	19
1959	67,949	1,848,784	37
1969	55,455	686,097	81
1978	57,697	445,117	130
1987	52,271	243,398	215
1992	57,563	191,347	301
1997	61,188	124,889	490
2002	60,405	78,895	766

*Census of Agriculture data. 1850-1950 includes all States except Alaska and Hawaii. 1959-2002 includes all 50 States.

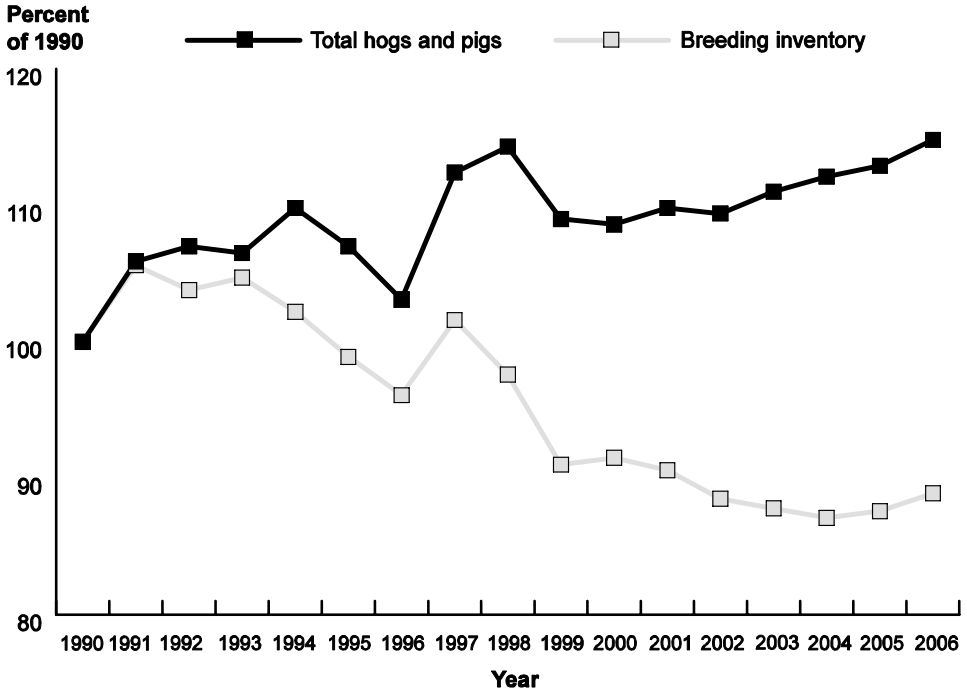
Each year, NASS surveys a random sample of producers to provide national estimates of animal populations and food production. The table below reports NASS demographics of the U.S. pork industry as published December 1 of each year. From 1990 through 2006, hog and pig inventory estimates increased 14.8 percent. From 1990, year-to-year inventories varied slightly but increased until 1998, followed by a decline until 2000. Breeding inventory made up 12.6 percent of total inventory in 1990 compared with 9.7 percent in 2006.

b. Changes in U.S. hog and pig and breeding inventories, December 1, 1990-2006:*

	Hogs and Pigs					Breeding Inventory				
Year	1,000 Head	Pct. Previous Year	Pct. of 1990	Pct. of 1995	Pct. of 2000	1,000 Head	Pct. Previous Year	Pct. of 1990	Pct. of 1995	Pct. of 2000
1990	54,416	101.2	100.0	--	--	6,847	99.9	100.0	--	--
1991	57,649	105.9	105.9	--	--	7,229	105.6	105.6	--	--
1992	58,202	101.0	107.0	--	--	7,109	98.3	103.8	--	--
1993	57,940	99.5	106.5	--	--	7,166	100.8	104.7	--	--
1994	59,738	103.1	109.8	--	--	6,998	97.7	102.2	--	--
1995	58,201	97.4	107.0	100.0	--	6,770	96.7	98.9	100.0	--
1996	56,124	96.4	103.1	96.4	--	6,578	97.2	96.1	97.2	--
1997	61,158	109.0	112.4	105.1	--	6,957	105.8	101.6	102.8	--
1998	62,204	101.7	114.3	106.9	--	6,682	96.0	97.6	98.7	--
1999	59,335	95.4	109.0	101.9	--	6,233	93.3	91.0	92.1	--
2000	59,110	99.6	108.6	101.6	100.0	6,267	100.5	91.5	92.6	100.0
2001	59,722	101.0	109.8	102.6	101.0	6,201	98.9	90.6	91.6	98.9
2002	59,554	99.7	109.4	102.3	100.8	6,058	97.7	88.5	89.5	96.7
2003	60,444	101.5	111.1	103.9	102.3	6,009	99.2	87.8	88.8	95.9
2004	60,975	100.9	112.1	104.8	103.2	5,969	99.3	87.2	88.2	95.2
2005	61,449	100.8	112.9	105.6	104.0	6,011	100.7	87.8	88.8	95.9
2006	62,490	101.7	114.8	107.4	105.7	6,087	101.3	88.9	89.9	97.1

*Source: National Agricultural Statistics Service (NASS).

U.S. Total Hog and Pig Inventory and Breeding Inventory, as a Percentage of 1990 Inventory, 1990-2006*



*NASS data

2. Number of swine sites and herd size

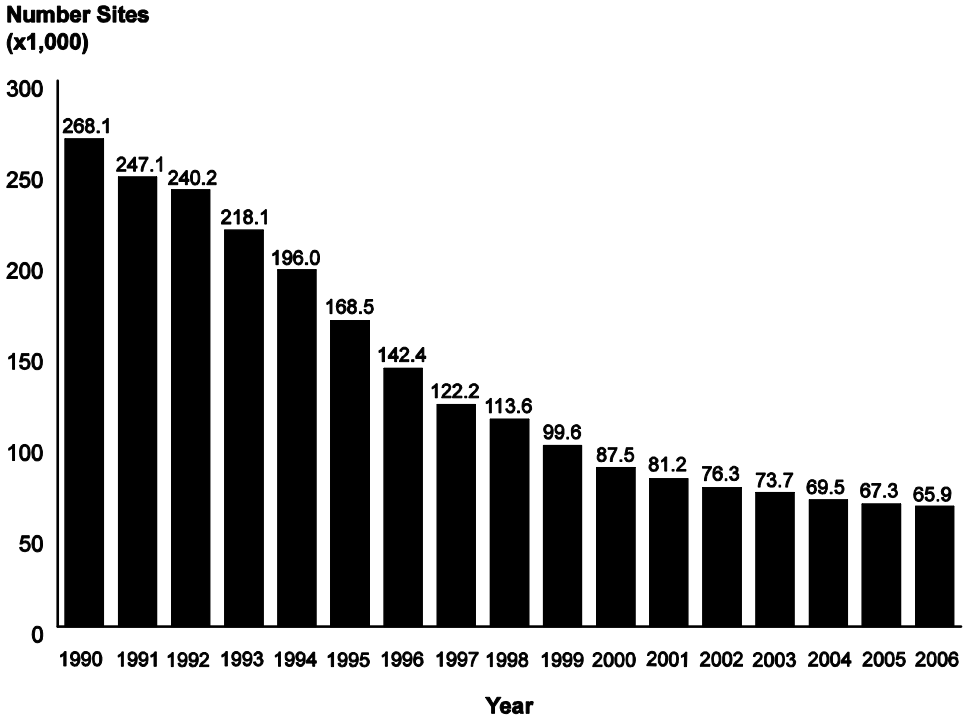
The number of U.S. swine sites has decreased steadily since 1990. In 2000, the number of swine sites in the United States had decreased by two-thirds of the 1990 number, and in 2006 the number of swine sites had decreased to less than one-fourth the number reported in 1990.

a. Changes in the number of U.S. swine sites, 1990-2006:*

Year	Number	Percent Previous Year	Percent of 1990	Percent of 1995	Percent of 2000
1990	268,140	89.1	100.0	--	--
1991	247,090	92.1	92.1	--	--
1992	240,150	97.2	89.6	--	--
1993	218,060	90.8	81.3	--	--
1994	196,030	89.9	73.1	--	--
1995	168,450	85.9	62.8	100.0	--
1996	142,380	84.5	53.1	84.5	--
1997	122,160	85.8	45.6	72.5	--
1998	113,590	93.0	42.4	67.4	--
1999	99,620	87.7	37.2	59.1	--
2000	87,470	87.8	32.6	51.9	100.0
2001	81,220	92.9	30.3	48.2	92.9
2002	76,250	93.9	28.4	45.3	87.2
2003	73,720	96.7	27.5	43.8	84.3
2004	69,500	94.3	25.9	41.3	79.5
2005	67,280	96.8	25.1	39.9	76.9
2006	65,940	98.0	24.6	39.1	75.4

*Source: NASS.

Number of U.S. Swine Sites, 1990-2006*



*NASS data

Small herds still represent the majority of U.S. pig sites. However, the number of sites with fewer than 100 head declined steadily as a percentage of all sites from 1990 through 1999, but then began a small return to previous levels so that in 2006 the percentage of these smaller producers was at 1993 levels. The percentage of sites with 100 to 499 head and with 500 to 999 head has decreased since 1998. The percentage of sites with a total inventory of 2,000 or more head consistently increased from 2.1 percent in 1993 to 11.7 percent in 2006.

b. Percentage of U.S. pig sites by herd size, 1990-2006:[1]

	Percent Sites						
	Herd Size						
Year	1-99 Head	100-499 Head	500-999 Head	1,000-1,999 Head	2,000-4,999 Head	5,000 or More Head	Total
1990	63.9	25.0	7.1	4.0	[2]	[2]	100.0
1991	61.4	26.4	7.8	4.4	[2]	[2]	100.0
1992	60.2	26.5	8.1	5.2	[2]	[2]	100.0
1993	60.1	25.8	8.4	3.6	1.6	0.5	100.0
1994	58.6	25.9	8.8	4.2	1.9	0.6	100.0
1995	57.4	26.2	9.0	4.4	2.2	0.8	100.0
1996	57.5	25.0	9.1	4.8	2.5	1.1	100.0
1997	56.9	23.0	9.5	5.5	3.6	1.5	100.0
1998	54.4	23.8	9.9	6.0	4.2	1.7	100.0
1999	54.2	22.8	9.2	6.6	5.1	2.1	100.0
2000	57.3	19.3	8.7	6.7	5.6	2.4	100.0
2001	58.8	17.6	8.3	6.5	6.1	2.7	100.0
2002	59.8	16.1	8.2	6.6	6.3	3.0	100.0
2003	60.3	15.7	7.7	6.6	6.6	3.1	100.0
2004	60.6	14.9	7.4	6.4	7.4	3.3	100.0
2005	60.3	15.0	7.1	6.3	7.8	3.5	100.0
2006	60.5	14.6	6.8	6.4	8.0	3.7	100.0

[1]Source: NASS.
[2]Only estimates of 1,000 or more head were available in 1990–92.

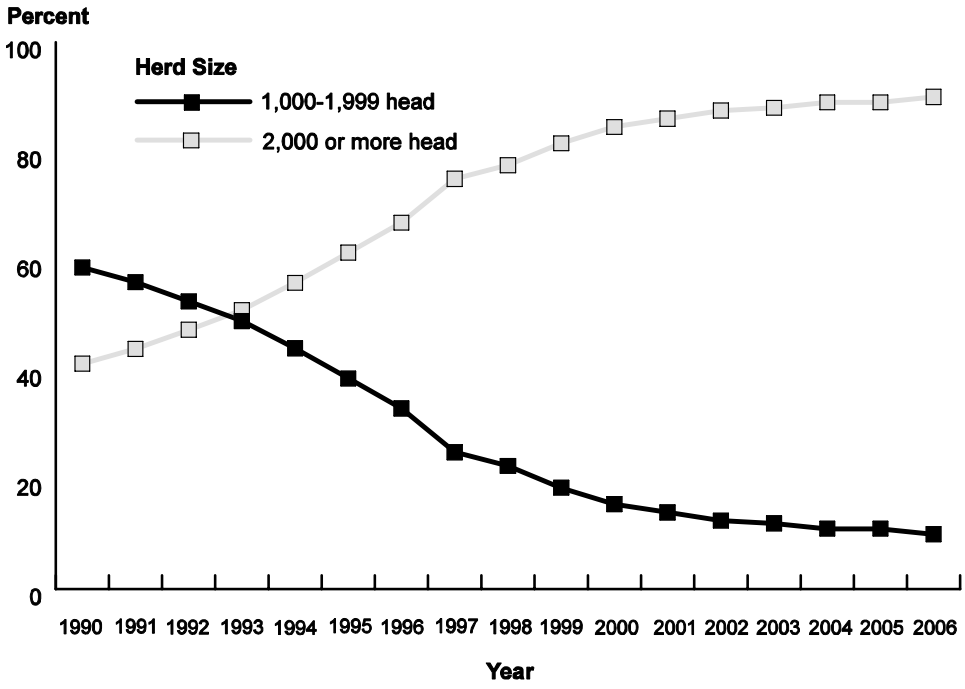
The percentage of pig inventory on sites with 1 to 1,999 head has decreased steadily since 1990. The percentage of pig inventory on sites with 2,000 or more head has increased by a factor of 2.4 since 1993.

c. Percentage of U.S. total hog and pig inventory by herd size, 1990-2006:[1]

Percent Total Hog and Pig Inventory							
	Herd Size						
Year	1-99 Head	100-499 Head	500-999 Head	1,000-1,999 Head	2,000-4,999 Head	5,000 or More Head	Total
1990	6.4	28.6	23.8	41.2	[2]	[2]	100.0
1991	5.5	27.2	23.4	43.9	[2]	[2]	100.0
1992	5.3	25.3	22.0	47.4	[2]	[2]	100.0
1993	5.0	22.5	21.5	17.5	15.5	18.0	100.0
1994	4.0	20.5	19.5	18.0	17.0	21.0	100.0
1995	3.5	18.0	17.0	17.0	17.0	27.5	100.0
1996	3.0	15.0	15.0	16.0	17.0	34.0	100.0
1997	2.0	11.0	12.0	14.5	20.5	40.0	100.0
1998	2.0	9.5	11.0	14.0	21.5	42.0	100.0
1999	1.5	8.0	9.0	13.0	22.5	46.0	100.0
2000	1.0	6.5	8.0	12.5	22.0	50.0	100.0
2001	1.0	5.5	7.5	12.0	23.0	51.0	100.0
2002	1.0	5.0	6.5	12.0	22.5	53.0	100.0
2003	1.0	4.5	6.5	11.0	24.0	53.0	100.0
2004	1.0	4.0	6.0	10.0	26.0	53.0	100.0
2005	1.0	4.0	6.0	10.0	26.0	53.0	100.0
2006	1.0	4.0	5.0	10.0	26.0	54.0	100.0

[1]Source: NASS.
[2]Only estimates of 1,000 or more head were available in 1990–92.

Percentage of U.S. Total Hog and Pig Inventory by Herd Size, 1990-2006*



*NASS data

Except in 1990, 1993, and 1998, fewer pigs were weaned per litter in December–February than during the other quarters. In general, the number of pigs weaned per litter increased each quarter since 1990.

d. Changes in pigs weaned per litter, per quarter, 1990-2006:[1]

Year	Dec-Feb[2]	Pct. 1995	Pct. 2000	Mar-May	Pct. 1995	Pct. 2000	Jun-Aug	Pct. 1995	Pct. 2000	Sep-Nov	Pct. 1995	Pct. 2000
1990	7.83	--	--	7.94	--	--	7.90	--	--	7.82	--	--
1991	7.87	--	--	7.96	--	--	7.89	--	--	7.89	--	--
1992	8.04	--	--	8.08	--	--	8.14	--	--	8.05	--	--
1993	8.14	--	--	8.13	--	--	8.09	--	--	8.05	--	--
1994	8.10	--	--	8.26	--	--	8.21	--	--	8.16	--	--
1995	8.24	100.0	--	8.32	100.0	--	8.34	100.0	--	8.35	100.0	--
1996	8.43	102.3	--	8.48	101.9	--	8.55	102.5	--	8.54	102.3	--
1997	8.63	104.7	--	8.67	104.2	--	8.72	104.6	--	8.67	103.8	--
1998	8.70	105.6	--	8.75	105.2	--	8.72	104.6	--	8.66	103.7	--
1999	8.73	105.9	--	8.80	105.8	--	8.86	106.2	--	8.78	105.1	--
2000	8.76	106.3	100.0	8.86	106.5	100.0	8.84	106.0	100.0	8.85	106.0	100.0
2001	8.72	105.8	99.5	8.89	106.9	100.3	8.89	106.6	100.6	8.85	106.0	100.0
2002	8.77	106.4	100.1	8.84	106.3	99.8	8.92	107.0	100.9	8.86	106.1	100.1
2003	8.81	106.9	100.6	8.88	106.7	100.2	8.90	106.7	100.7	8.93	106.9	100.9
2004	8.85	107.4	101.0	8.93	107.3	100.8	9.01	108.0	101.9	8.96	107.3	101.2
2005	8.94	108.5	102.1	9.02	108.4	101.8	9.06	108.6	102.5	9.03	108.1	102.0
2006	9.03	109.6	103.1	9.08	109.1	102.5	9.11	109.2	103.1	9.11	109.1	102.9

[1] Source: NASS. Ratio of expected number of pigs weaned to sows/gilts farrowed.
[2] December preceding year.

B. U.S. Pork Industry Changes

1. Inventories by State

The following table describes U.S. pork industry changes by State for 1990, 1995, 2000, and 2006. The pig inventories and number of sites are by State and based on USDA-NASS data. The table also identifies which States participated in the four NAHMS national swine studies. December 1, 2006, inventory levels were considerably above December 1, 1990, levels, especially in the three States with the most pigs—Iowa, North Carolina, and Minnesota—as well as many of the Western States. Declining inventories were shown in the traditional hog-raising States of Illinois, Indiana, Ohio, South Dakota, and Wisconsin.

a. Changes in number of pigs by State (NASS):

	Total Pigs (1,000 Head)						
State	**Dec. 1, 1990**	**Dec. 1, 1995**	**Dec. 1, 2000**	**Dec. 1, 2006**	**2006 Pct. of 1990**	**2006 Pct. of 1995**	**2006 Pct. of 2000**
Alabama[1]	355	230	165	165	46.5	71.7	100.0
Alaska	1.2	2	0.8	0.9	75.0	45.0	112.5
Arizona	110	125	9	148	134.5	118.4	1,644.4
Arkansas[3 4]	760	790	685	260	34.2	32.9	38.0
California[1]	195	240	150	145	74.4	60.4	96.7
Colorado[1 3 4]	300	580	840	840	280.0	144.8	100.0
Connecticut	6.9	5	4	3.6	52.2	72.0	90.0
Delaware	31	33	20	10.5	33.9	31.8	52.5
Florida	130	85	40	20	15.4	23.5	50.0
Georgia[1 2]	1,100	700	380	245	22.3	35.0	64.5
Hawaii	36	34	26	16	44.4	47.1	61.5
Idaho	60	45	24	25	41.7	55.6	104.2
Illinois[1 2 3 4]	5,700	4,800	4,150	4,200	73.7	87.5	101.2
Indiana[1 2 3 4]	4,400	4,000	3,350	3,350	76.1	83.8	100.0
Iowa[1 2 3 4]	13,800	13,500	15,100	17,300	125.4	128.1	114.6
Kansas[2 3 4]	1,500	1,300	1,520	1,840	122.7	141.5	121.1
Kentucky[2]	920	800	430	310	33.7	38.8	72.1
Louisiana	50	55	29	14	28.0	25.5	48.3
Maine	8	7	6	4.8	60.0	68.6	80.0
Maryland[1]	162	80	40	33	20.4	41.3	82.5
Massachusetts	33	21	21	13	39.4	61.9	61.9
Michigan[1 2 3 4]	1,250	1,100	950	1,000	80.0	90.9	105.3
Minnesota[1 2 3 4]	4,500	4,950	5,800	6,900	153.3	139.4	119.0
Mississippi	149	225	315	335	224.8	148.9	106.3
Missouri[2 3 4]	2,800	3,550	2,900	2,800	100.0	78.9	96.6
Montana	185	180	155	180	97.3	100.0	116.1
Nebraska[1 2 3 4]	4,300	4,050	3,050	3,050	70.9	75.3	100.0
Nevada	14	7	7.5	3.5	25.0	50.0	46.7
New Hampshire	6	3	4	2.8	46.7	93.3	70.0
New Jersey	25	34	14	9	36.0	26.5	64.3
New Mexico	27	5	3	2	7.4	40.0	66.7

[1]Participated in 1990 National Swine Survey (total of 18 States).
[2]Participated in Swine '95 study (total of 16 States).
[3]Participated in Swine 2000 study (total of 17 States).
[4]Participated in Swine 2006 study (total of 17 States).

a. Changes in number of pigs by State (NASS) continued:

State	Dec. 1, 1990	Dec. 1, 1995	Dec. 1, 2000	Dec. 1, 2006	2006 Pct. of 1990	2006 Pct. of 1995	2006 Pct. of 2000
	Total Pigs (1,000 Head)						
New York	103	66	80	98	95.1	148.5	122.5
North Carolina[1 2 3 4]	2,800	8,200	9,300	9,500	339.3	115.9	102.2
North Dakota	265	280	185	169	63.8	60.4	91.4
Ohio[1 2 3 4]	2,000	1,800	1,490	1,690	84.5	93.9	113.4
Oklahoma[3 4]	215	1,000	2,310	2,330	1,083.7	233.0	100.9
Oregon[1]	80	45	32	25	31.3	55.6	78.1
Pennsylvania[1 2 3 4]	920	1,000	1,030	1,080	117.4	108.0	104.9
Rhode Island	5.3	3.0	2.5	2.1	39.6	70.0	84.0
South Carolina	400	350	290	295	73.8	84.3	101.7
South Dakota[2 3 4]	1,770	1,450	1,320	1,270	71.8	87.6	96.2
Tennessee[1 2]	620	500	230	220	35.5	44.0	95.7
Texas[3 4]	550	500	920	940	170.9	188.0	102.2
Utah	33	62	550	680	2,060.6	1,096.8	123.6
Vermont	5	2.5	2.5	2.5	50.0	100.0	100.0
Virginia[1]	430	380	425	365	84.9	96.1	85.9
Washington	56	51	27	36	64.3	70.6	133.3
W. Virginia	30	22.0	10	11	36.7	50.0	110.0
Wisconsin[1 2 3 4]	1,200	880	610	450	37.5	51.1	73.8
Wyoming	20	73	108	100	500.0	137.0	92.6
U.S.	54,416	58,201	59,110	62,490	114.8	107.4	105.7

[1]Participated in 1990 National Swine Survey (total of 18 States).
[2]Participated in Swine '95 study (total of 16 States).
[3]Participated in Swine 2000 study (total of 17 States).
[4]Participated in Swine 2006 study (total of 17 States).

b. Changes in number of swine sites (NASS):

	Number of Sites						
State	**1990**	**1995**	**2000**	**2006**	**2006 Pct. of 1990**	**2006 Pct. of 1995**	**2006 Pct. of 2000**
Alabama[1]	4,500	2,100	700	450	10.0	21.4	64.3
Alaska	40	50	50	50	125.0	100.0	100.0
Arizona	400	310	230	150	37.5	48.4	65.2
Arkansas[3 4]	3,100	1,790	1,100	750	24.2	41.9	68.2
California[1]	4,000	3,200	1,000	800	20.0	25.0	80.0
Colorado[1 3 4]	2,000	1,400	900	800	40.0	57.1	88.9
Connecticut	450	400	180	250	55.6	62.5	138.9
Delaware	420	200	100	70	16.7	35.0	70.0
Florida	5,000	3,200	1,400	1,100	22.0	34.4	78.6
Georgia[1 2]	8,000	3,000	1,200	700	8.8	23.3	58.3
Hawaii	500	300	230	230	46.0	76.7	100.0
Idaho	2,000	1,100	400	650	32.5	59.1	162.5
Illinois[1 2 3 4]	15,300	9,600	5,100	2,900	19.0	30.2	56.9
Indiana[1 2 3 4]	13,000	9,000	4,400	2,800	21.5	31.1	63.6
Iowa[1 2 3 4]	35,000	25,000	12,300	8,700	24.9	34.8	70.7
Kansas[2 3 4]	6,000	3,800	1,600	1,400	23.3	36.8	87.5
Kentucky[2]	6,500	3,800	1,300	900	13.8	23.7	69.2
Louisiana	2,500	1,200	650	600	24.0	50.0	92.3
Maine	1,600	1,300	300	370	23.1	28.5	123.3
Maryland[1]	1,400	800	430	400	28.6	50.0	93.0
Massachusetts	850	700	300	300	35.3	42.9	100.0
Michigan[1 2 3 4]	5,500	4,700	2,500	2,100	38.2	44.7	84.0
Minnesota[1 2 3 4]	15,000	10,500	7,300	4,800	32.0	45.7	65.8
Mississippi	6,000	2,300	1,500	1,000	16.7	43.5	66.7
Missouri[2 3 4]	16,000	8,500	3,600	2,000	12.5	23.5	55.6
Montana	1,500	900	650	500	33.3	55.6	76.9
Nebraska[1 2 3 4]	12,500	10,000	4,000	2,500	20.0	25.0	62.5
Nevada	140	140	100	110	78.6	78.6	110.0
New Hampshire	750	400	250	300	40.0	75.0	120.0
New Jersey	700	650	400	300	42.9	46.2	75.0
New Mexico	900	500	400	350	38.9	70.0	87.5

[1]Participated in 1990 National Swine Survey (total of 18 States).
[2]Participated in Swine '95 study (total of 16 States).
[3]Participated in Swine 2000 study (total of 17 States).
[4]Participated in Swine 2006 study (total of 17 States).

b. Changes in number of swine sites (NASS) continued:

	Number of Sites						
State	**1990**	**1995**	**2000**	**2006**	**2006 Pct. of 1990**	**2006 Pct. of 1995**	**2006 Pct. of 2000**
New York	2,900	1,800	1,100	1,200	41.4	66.7	109.1
North Carolina[1 2 3 4]	10,000	6,000	3,600	2,300	23.0	38.3	63.9
North Dakota	2,100	1,500	700	430	20.5	28.7	61.4
Ohio[1 2 3 4]	13,600	8,500	5,200	4,000	29.4	47.1	76.9
Oklahoma[3 4]	5,200	3,400	2,700	2,600	50.0	76.5	96.3
Oregon[1]	2,400	1,600	1,000	1,100	45.8	68.8	110.0
Pennsylvania[1 2 3 4]	7,500	4,600	3,300	3,200	42.7	69.6	97.0
Rhode Island	90	60	50	50	55.6	83.3	100.0
South Carolina	5,500	2,000	900	1,100	20.0	55.0	122.2
South Dakota[2 3 4]	7,700	5,400	1,900	1,100	14.3	20.4	57.9
Tennessee[1 2]	8,500	4,000	1,500	1,100	12.9	27.5	73.3
Texas[3 4]	11,000	7,000	4,300	3,700	33.6	52.9	86.0
Utah	900	700	500	450	50.0	64.3	90.0
Vermont	1,100	400	250	280	25.5	70.0	112.0
Virginia[1]	3,500	1,800	1,200	850	24.3	47.2	70.8
Washington	2,500	1,400	800	900	36.0	64.3	112.5
W. Virginia	2,300	1,400	1,000	900	39.1	64.3	90.0
Wisconsin[1 2 3 4]	9,400	5,700	2,700	2,200	23.4	38.6	81.5
Wyoming	400	350	200	150	37.5	42.9	75.0
U.S.	268,140	168,450	87,470	65,940	24.6	39.1	75.4

[1]Participated in 1990 National Swine Survey (total of 18 States).
[2]Participated in Swine '95 study (total of 16 States).
[3]Participated in Swine 2000 study (total of 17 States).
[4]Participated in Swine 2006 study (total of 17 States).

C. World Pork Production Changes

1. Inventories by country

a. Changes in pig inventories in selected countries:*

Continent/Country		Inventory (1,000 Head) Jan. 1, 1991	Jan. 1, 1996	Jan. 1, 2001	Jan. 1, 2006
North America	Canada	10,172	11,588	13,576	15,110
	Mexico	8,593	11,100	10,649	10,125
	United States	54,416	58,201	59,110	62,490
	Subtotal	*73,181*	*80,889*	*83,335*	*87,725*
South America	Brazil	32,550	32,068	32,440	32,938
	Subtotal	*32,550*	*32,068*	*32,440*	*32,938*
European Union		*116,668*[1]	*115,959*[1]	*158,765*[2]	*157,364*[2]
	Subtotal	*116,668*	*115,959*	*158,765*	*157,364*
Eastern Europe	Bulgaria	4,187	2,140	NA	NA
	Czech Republic	4,630	4,024	NA	NA
	Hungary	8,000	5,032	NA	NA
	Poland	19,739	20,343	NA	NA
	Romania	12,003	7,960	NA	NA
	Subtotal	*48,559*	*39,499*	*NA*	*NA*
Former Soviet Union	Russian Federation	38,314	22,630	15,780	16,550
	Ukraine	19,427	13,144	7,652	7,052
	Subtotal	*57,741*	*35,774*	*23,432*	*23,602*
Asia	China, Peoples Republic of	362,408	441,692	446,815	503,348
	Japan	11,355	9,900	9,788	9,620
	Korea, Republic of	4,528	6,461	7,350	8,098
	Philippines	8,007	9,023	11,715	13,041
	Taiwan	8,565	10,510	7,495	7,172
	Subtotal	*394,863*	*477,586*	*483,163*	*541,279*
Oceania	Australia	2,530	2,600	2,748	2,490
	Subtotal	*2,530*	*2,600*	*2,748*	*2,490*
Other		NA	NA	NA	29,800
Total		726,092	784,375	783,883	875,198

*Statistical data provided by Foreign Agriculture Service (FAS).
[1]European Union–15 includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and U.K.
[2]European Union–27 includes Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and U.K.

b. Changes in pig inventory percentages in selected countries:*

Continent/Country		2001 as Pct. of 1991	2001 as Pct. of 1996	2006 as Pct. of 1991	2006 as Pct. of 1996	2006 as Pct. of 2001
North America	Canada	133.5	117.2	148.5	130.4	111.3
	Mexico	123.9	95.9	117.8	91.2	95.1
	United States	108.6	101.6	114.8	107.4	105.7
	Subtotal	*113.9*	*103.0*	*118.5*	*107.2*	*104.0*
South America	Brazil	136.1	136.9	134.9	135.7	99.1
	Subtotal	136.1	136.9	134.9	135.7	99.1
European Union		NC	NC	NC	NC	99.1
Eastern Europe	Bulgaria	Data were not available for all countries for all years.				
	Czech Republic					
	Hungary					
	Poland					
	Romania					
	Subtotal					
Former Soviet Union	Russian Federation	41.2	69.7	43.2	73.1	104.9
	Ukraine	39.4	58.2	36.3	53.7	92.2
	Subtotal	*40.6*	*65.5*	*40.9*	*66.0*	*100.7*
Asia	China, Peoples Republic of	123.3	101.2	138.9	114.0	112.7
	Japan	86.2	98.9	84.7	97.2	98.3
	Korea, Republic of	162.3	113.8	178.8	125.3	110.2
	Philippines	146.3	129.8	162.9	144.5	111.3
	Taiwan	87.5	71.3	83.7	68.2	95.7
	Subtotal	*122.4*	*101.2*	*137.1*	*113.3*	*112.0*
Oceania	Australia	108.6	105.7	98.4	95.8	90.6
	Subtotal	*108.6*	*105.7*	*98.4*	*95.8*	*90.6*
Other		NC	NC	NC	NC	NC
Total		NC	NC	NC	NC	111.6

*Statistical data provided by Foreign Agriculture Service (FAS).
NC = Not comparable.

Section II: Health and Productivity Changes in the U.S. Pork Industry, NAHMS Population Estimates—1990, 1995, 2000, and 2006

A. Farrowing Phase

NOTE: This section contains no information by herd size or region. However, herd size and regional information is available in individual reports for the various study years at: http://nahms.aphis.usda.gov.

Animal- and litter-level estimates for Section II are for sites with 1 or more pigs (1992, 1995) and 100 or more pigs (2000, 2006). Site-level estimates are for sites with 100 or more pigs.

1. Death loss and productivity[1]

Since 1990, the number of pigs born alive per litter has increased by 1.33 piglets per litter, and total born per litter has increased by 1.50 piglets per litter. The number of stillbirths and mummies per litter was similar in 1990 and 2000 but steadily increased from 1995 to 2006 by approximately 0.2 piglets each survey year. Stillbirths and mummies as a percentage of total born per litter also increased steadily from 1995 to 2006. The number of preweaning deaths per litter was similar in 1990 and 2000 but increased by approximately 0.3 piglets between 1990 and 2006. The number of pigs weaned per litter increased by about one pig per litter from 1990 to 2006.

Per litter productivity:

	1990 National Swine Survey[2]			Swine '95 (12/94-11/95)			Swine 2000 (12/99-11/00)			Swine 2006 (12/05-11/06)		
Measure	No.	Std. Error	Pct.	No.	Std. Error	Pct.	No.	Std. Error	Pct.	No.	Std. Error	Pct.
Stillbirths and mummies per litter	0.87	NA	8.41	0.65	(0.02)	6.49	0.81	(0.04)	7.53	1.04	(0.07)	8.76
Born alive per litter	9.47	(0.04)	91.59	9.37	(0.07)	93.51	9.94	(0.06)	92.47	10.80	(0.13)	91.24
Total born per litter	10.34	(0.04)	100.00	10.02	(0.07)	100.00	10.75	(0.08)	100.00	11.84	(0.13)	100.00
Preweaning deaths per litter	1.10	(0.04)	11.62	0.88	(0.03)	9.39	1.17	(0.03)	11.77	1.42	(0.08)	13.15
Weaned per litter	8.37	(0.05)	88.38	8.49	(0.06)	90.61	8.77	(0.06)	88.23	9.38	(0.14)	86.85
Total born alive per litter	9.47	(0.04)	100.00	9.37	(0.06)	100.00	9.94	(0.06)	100.00	10.80	(0.13)	100.00

[1] Per litter productivity was calculated as a ratio of a weighted sum of events (such as number born) across all sites (numerator) to the weighted sum of farrowings across all sites (denominator).
[2] Prospective monitoring via diary cards for a 3-month period per site with sites enrolled at different times covering the entire year.

2. Cause of preweaned piglet deaths

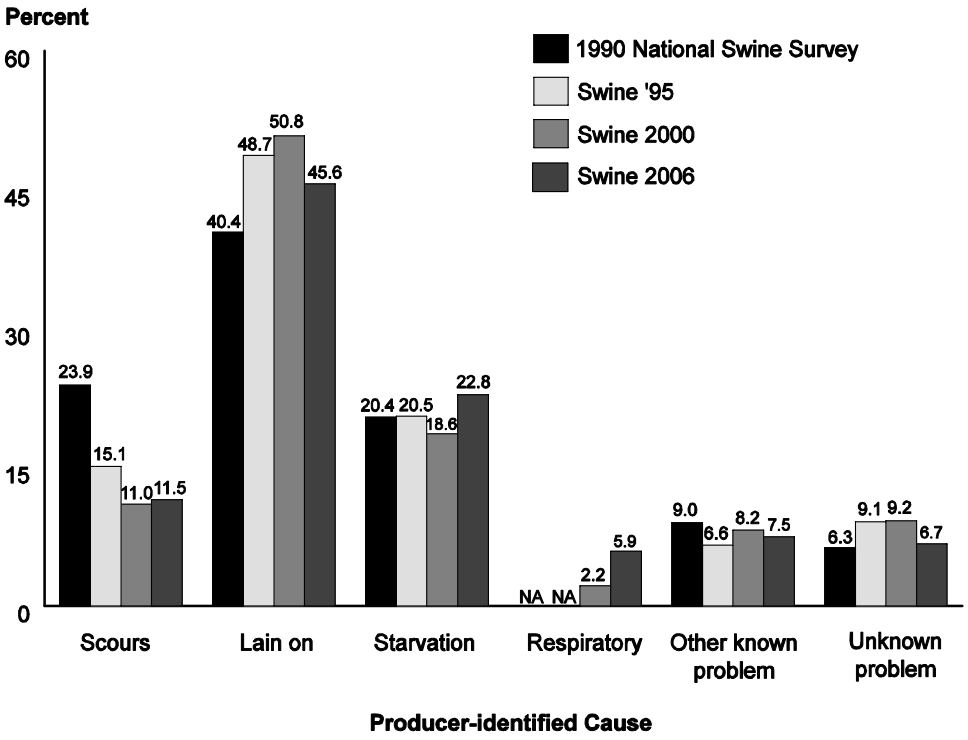
In all four studies, producers identified piglets lain on as the leading cause of preweaning deaths.

Percentage of preweaning deaths* by producer-identified cause:

	1990 National Swine Survey		Swine '95 (12/94-11/95)		Swine 2000 (12/99-11/00)		Swine 2006 (12/05-11/06)	
Question Variation	**Deaths due to attributed first and second leading causes**		**Deaths due to all causes**					
Cause	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Scours	23.9	(1.5)	15.1	(0.2)	11.0	(1.7)	11.5	(3.5)
Lain on	40.4	(1.8)	48.7	(3.4)	50.8	(2.1)	45.6	(5.8)
Starvation	20.4	(1.1)	20.5	(2.7)	18.6	(1.9)	22.8	(6.5)
Respiratory	NA		NA		2.2	(0.4)	5.9	(3.7)
Other known problem	9.0	(1.8)	6.6	(1.0)	8.2	(1.0)	7.5	(2.5)
Unknown problem	6.3	(1.5)	9.1	(1.3)	9.2	(1.0)	6.7	(1.9)
Total	100.0		100.0		100.0		100.0	

*The question variation in 1990 precipitated the change in denominator from percentage of first and second leading causes to percentage of deaths due to all causes, which decreased estimates for the most common causes of death and increased estimates for the less frequent causes.

Percentage of Preweaning Deaths* by Producer-identified Cause, 1990, 1995, 2000, and 2006



*The question variation in 1990 precipitated the change in denominator from percentage of first and second leading causes to percentage of deaths due to all causes, which decreased estimates for the most common causes of death and increased estimates for the less frequent causes.

3. Culling rate of sows

Cull rates ranged from a low of 37.7 percent in 2000 to a high of 48.8 percent in 2006. Note: The reasons-for-culling categories differed between the 1995, 2000, and 2006 studies; in 1995, disease was a specific reason for culling, whereas in 2000 and 2006 reproductive failure replaced the disease category. In 2006, injury was a new category.

a. Breeding-age females culled over a 12-month period as a percentage of sow and gilt inventory:

1990 National Swine Survey[1]		Swine '95 (12/94-11/95)		Swine 2000[2] (12/99-11/00)		Swine 2006[2] (12/05-11/06)	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
43.5	NA	41.2	(1.7)	37.7	(2.5)	48.8	(7.5)

[1]Prospective monitoring via diary cards for a 3-month period per site with sites enrolled at different times covering the entire year.
[2]Excludes gilts intended for breeding but not yet in the breeding herd.
.

b. Percentage of culled breeding-age females from December 1 through May 31, by reason culled:

	Swine '95		Swine 2000		Swine 2006	
Reason Culled	**Percent Females**	**Std. Error**	**Percent Females**	**Std. Error**	**Percent Females**	**Std. Error**
Age	40.7	(2.1)	41.9	(1.8)	36.6	(2.6)
Lameness	9.2	(0.7)	16.0	(1.2)	15.2	(2.3)
Performance*	33.0	(2.2)	12.0	(0.7)	13.0	(1.1)
Disease	2.5	(0.7)	NA		NA	
Reproductive failure	NA		21.3	(1.3)	26.3	(1.9)
Injury	NA		NA		4.0	(0.6)
Other	14.6	(2.4)	8.8	(1.6)	4.9	(0.8)
Total	100.0		100.0		100.0	

*Small litter size, high preweaning mortality, or low birth weight.

B. Nursery Phase

1. Death loss

The nursery mortality rate was less than 4 percent in all four study years. Note: The definition of a nursery varied between studies.

Percentage of nursery pigs that died during the nursery phase:

1990 National Swine Survey[1 2]		Swine '95[3] (12/94-5/95)		Swine 2000[3] (12/99-5/00)		Swine 2006[4] (12/05-5/06)	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
2.4	(0.1)	2.3	(0.1)	2.6	(0.1)	2.9	(0.1)

[1]Question variation: nursery unit, all weaned pigs less than 40 lb.
[2] Based on questionnaire for a 3-month period prior to the interview; farms enrolled at different times covering the entire year.
[3]Question variation: nursery unit, physically separate unit.
[4]Question variation: nursery defined as generally weaning to 60 lb.

2. Cause of nursery pig deaths

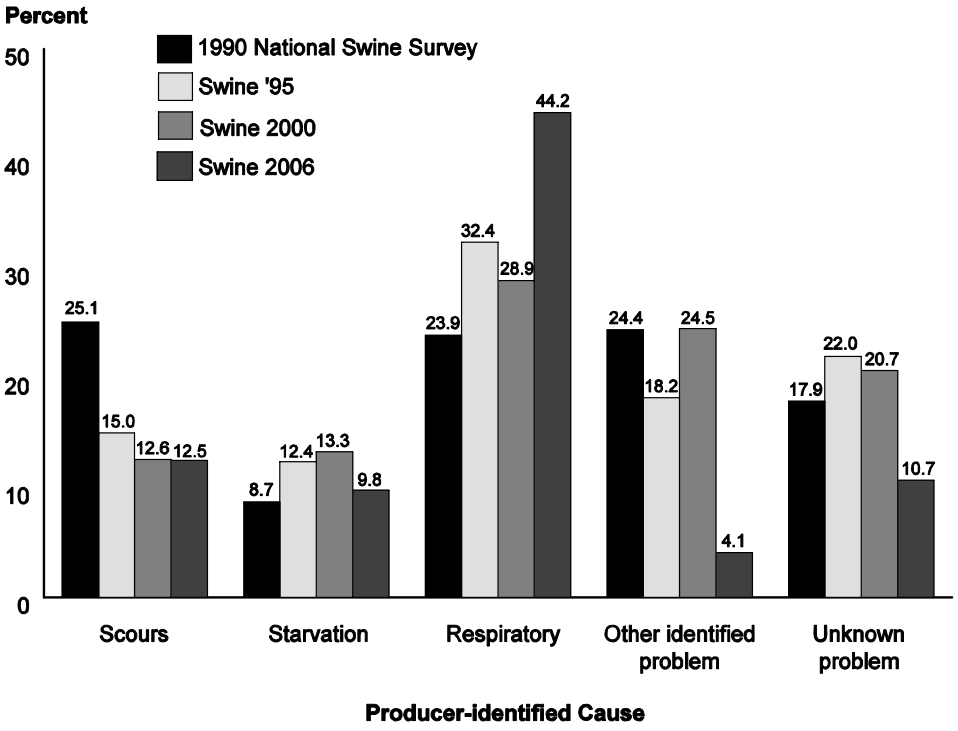
Nearly half the nursery pig deaths in 2006 (44.2 percent) were attributed to respiratory disease.

Percentage of nursery pig deaths* by producer-identified cause:

	1990 National Swine Survey		Swine '95 (12/94-5/95)		Swine 2000 (12/99-5/00)		Swine 2006 (12/05-5/06)	
Question Variation	Deaths due to attributed first and second leading causes		Percent deaths due to all causes					
Cause	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Scours	25.1	(2.7)	15.0	(1.7)	12.6	(1.2)	12.5	(1.1)
Starvation	8.7	(1.2)	12.4	(1.8)	13.3	(1.1)	9.8	(0.9)
Respiratory problems	23.9	(2.5)	32.4	(2.5)	28.9	(1.7)	44.2	(2.3)
CNS/meningitis	NA		NA		NA		18.7	(1.9)
Other identified problem	24.4	(3.6)	18.2	(2.8)	24.5	(3.4)	4.1	(0.8)
Unknown problem	17.9	(1.7)	22.0	(2.5)	20.7	(3.5)	10.7	(1.1)
Total	100.0		100.0		100.0		100.0	

*The question variation in 1990 precipitated the change in denominator from percentage of first and second leading causes to percentage of deaths due to all causes, which decreased estimates for the most common causes of death and increased estimates for the less frequent causes.

Percentage of Nursery-Pig Deaths* by Producer-identified Cause, 1990, 1995, 2000, and 2006



*The question variation in 1990 precipitated the change in denominator from percentage of first and second leading causes to percentage of deaths due to all causes, which decreased estimates for the most common causes of death and increased estimates for the less frequent causes.

C. Grower/Finisher Phase

1. Death loss

The mortality rate for grower/finisher pigs in 2006 was more than twice that of 1990.

Percentage of grower/finisher pigs that died during the grower/finisher phase:

1990 National Swine Survey (12 months)		Swine '95 (12/94-5/95)		Swine 2000 (12/99-5/00)		Swine 2006 (12/05-5/06)	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
1.8	(0.1)	2.1	(0.1)	2.9	(0.1)	3.9	(0.2)

2. Cause of grower/finisher pig deaths

Similar to nursery pigs, a higher percentage of grower/finisher pig deaths were due to respiratory disease in 2006 than in 1990, 1995, and 2000. The percentages of deaths due to lameness, trauma, and stress were lower in 2006 than in 2000.

Percentage of grower/finisher deaths* by producer-identified cause:

	1990 National Swine Survey		Swine '95 (12/94-5/95)		Swine 2000 (12/99-5/00)		Swine 2006 (12/05-5/06)	
Question Variation	Deaths due to attributed first and second leading causes		Percent of deaths due to all causes					
Cause	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Scours	1.9	(0.4)	7.5	(1.2)	5.3	(2.0)	6.7	(0.6)
Lameness	7.9	(0.8)	8.0	(0.7)	8.4	(0.8)	5.4	(0.3)
Trauma	8.6	(1.3)	6.7	(0.6)	8.0	(0.5)	4.9	(0.4)
Respiratory problem	47.9	(2.6)	40.2	(2.1)	39.1	(2.0)	61.1	(2.3)
Stress	NA		NA		6.7	(0.6)	3.2	(0.3)
Other identified problem	14.9	(1.9)	17.2	(1.9)	14.2	(1.5)	8.0	(3.4)
Unknown problem	18.8	(1.9)	20.4	(1.7)	18.3	(1.4)	10.7	(1.0)
Total	100.0		100.0		100.0		100.0	

*The question variation in 1990 precipitated the change in denominator from percentage of first and second leading causes to percentage of deaths due to all causes, which decreased estimates for the most common causes of death and increased estimates for the less frequent causes.

D. Swine Diseases

1. Diseases reported in 12-month period

Note: Due to differences in populations and question variation, comparisons could not be made to the 1990 and 1995 studies.

PRRS diagnosis by a veterinarian or a laboratory remained unchanged across both study periods and was the most prevalent of the listed diseases that were diagnosed in the breeding herd by a veterinarian or laboratory during the previous 12 months in 2000 and 2006.

a. Percentage of sites in which the following diseases were diagnosed in the ***breeding herd*** by a veterinarian or laboratory during the previous 12 months:

	Swine 2000		Swine 2006	
Diseases	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
PRRS	16.2	(2.6)	18.8	(3.3)
APP	1.5	(0.4)	3.2	(1.8)
Mycoplasma pneumonia	7.3	(1.5)	8.8	(2.4)
Roundworms	7.0	(3.0)	2.6	(1.5)
Traditional swine flu (swine influenza virus H1N1)	6.8	(1.3)	5.6	(1.7)
Gastric ulcers	4.7	(1.4)	9.3	(2.4)
New swine flu (swine influenza virus H3N2)	4.5	(1.0)	4.8	(1.7)
Glasser's disease (*Haemophilus parasuis*)	3.0	(1.0)	1.8	(0.7)
Parvovirus	2.3	(0.6)	3.8	(1.8)
Erysipelas	1.9	(0.6)	3.9	(2.2)

The diagnosis of *E.coli* diarrhea in nursery pigs by a veterinarian or laboratory was obtained in over twice as many sites in 2006 compared to 2000.

b. Percentage of sites in which the following diseases were diagnosed in ***nursery pigs*** by a veterinarian or laboratory during the previous 12 months:

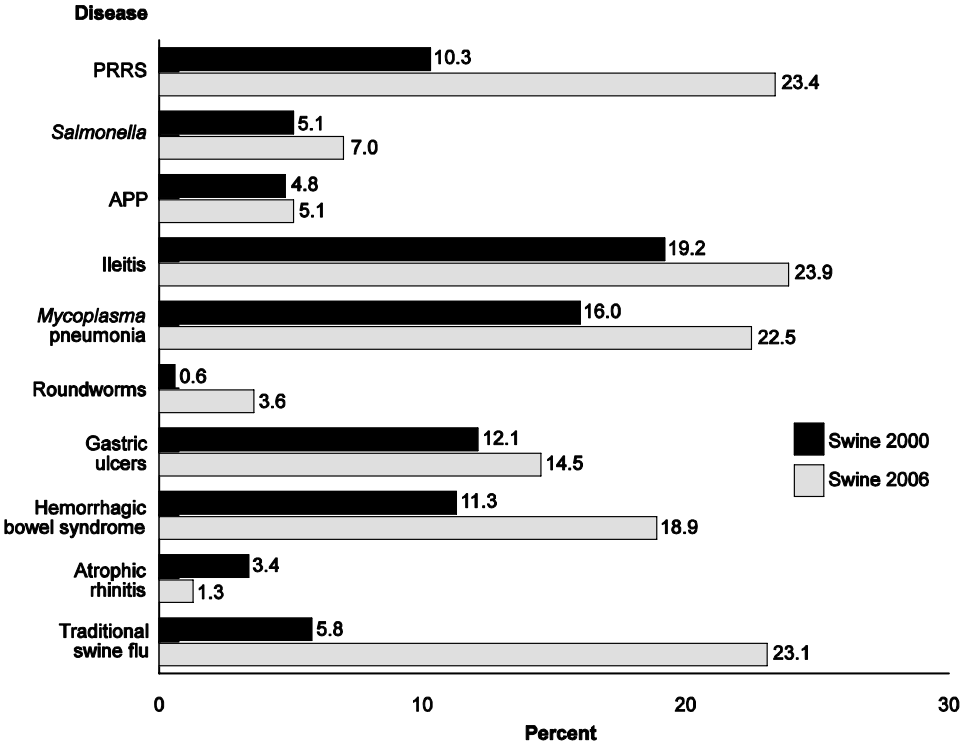
	Swine 2000		Swine 2006	
Disease	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
PRRS	11.6	(3.2)	21.5	(3.2)
Salmonella	4.5	(1.0)	4.0	(1.6)
APP	3.8	(0.9)	1.2	(0.5)
Streptococcus suis (meningitis)	16.8	(2.6)	21.5	(3.1)
Mycoplasma pneumonia	10.3	(1.5)	12.6	(2.8)
E. coli diarrhea	7.9	(1.2)	17.0	(3.1)
Greasy pig disease (*Staphylococcus hyicus*)	7.1	(1.5)	8.9	(2.0)
Glasser's disease (*Haemophilus parasuis*)	6.0	(1.1)	12.8	(2.9)
Traditional swine flu (swine influenza virus H1N1)	3.3	(0.9)	6.8	(1.8)
Roundworms	0.5	(0.3)	2.1	(1.3)

The percentage of grower/finisher sites in which traditional swine flu was diagnosed by a veterinarian or laboratory increased from 5.8 percent in 2000 to 23.1 percent in 2006.

c. Percentage of sites in which the following diseases were diagnosed in ***grower/finisher pigs*** by a veterinarian or laboratory during the previous 12 months:

	Swine 2000		Swine 2006	
Disease	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
PRRS	10.3	(1.7)	23.4	(3.0)
Salmonella	5.1	(1.1)	7.0	(1.4)
APP	4.8	(0.9)	5.1	(1.3)
Ileitis (*Lawsonia intracellularis*)	19.2	(2.5)	23.9	(3.2)
Mycoplasma pneumonia	16.0	(2.1)	22.5	(3.0)
Roundworms	0.6	(0.3)	3.6	(2.2)
Gastric ulcers	12.1	(2.2)	14.5	(2.2)
Hemorrhagic bowel syndrome	11.3	(1.9)	18.9	(2.6)
Atrophic rhinitis	3.4	(0.9)	1.3	(0.7)
Traditional swine flu (swine influenza virus H1N1)	5.8	(1.0)	23.1	(2.9)

Percentage of Sites in Which the Following Diseases were Diagnosed in Grower/Finisher Pigs by a Veterinarian or Laboratory During the Previous 12 Months



Section III: Management Changes in the U.S. Pork Industry, NAHMS Population Estimates—1990, 1995, 2000, and 2006

A. Breeding Animals

Note: Tables in Section III for all study years are for sites with 100 or more pigs, unless otherwise noted.

1. Mating techniques

The percentage of sites that used artificial insemination (AI) as the predominant mating technique in sows and gilts increased from 2000 (24.3 and 28.7 percent, respectively) to 2006 (40.1 and 41.8 percent, respectively). The percentage of sows and gilts residing on operations that used AI as the predominant technique has not changed substantially.

a. Percentage of sites that used AI as a predominant mating technique for sows or gilts:

Percent Sites							
2000				2006*			
Sows		Gilts		Sows		Gilts	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
24.3	(1.8)	28.7	(2.2)	40.1	(2.1)	41.8	(2.5)

*Question variation: Swine 2006 asked for information on first, second, or third or more matings. Swine 2000 only asked for first and second matings.

b. Percentage of sows or gilts serviced on sites that used AI as a predominant mating technique:

Percent Sows or Gilts							
2000				2006*			
Sows		Gilts		Sows		Gilts	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
76.0	(2.0)	69.4	(3.3)	84.7	(4.5)	81.5	(3.1)

*Question variation: Swine 2006 asked for information on first, second, or third or more matings. Swine 2000 only asked for first and second matings.

2. Preventive practices for sows and gilts

The percentage of sites using routine preventive mange/lice treatment in sows and gilts declined from 81.2 percent in 1995 to 52.8 percent in 2006. The percentage of sites using preventive antibiotics in sows and gilts remained unchanged from 1995 to 2006. A similar pattern was seen on sites with boars. Note: In the 2006 study, data on preventive practices were collected for sows but not for gilts.

For sites with sows and gilts on site, percentage of sites that reported regular use of the following preventive practices:

	Swine '95		Swine 2000		Swine 2006*	
Practice	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Deworm	88.7	(1.5)	83.0	(1.9)	76.8	(1.9)
Mange/lice treatment	81.2	(2.0)	67.9	(2.3)	52.8	(2.2)
Antibiotics in feed	49.0	(2.8)	43.5	(2.5)	47.7	(2.2)
Antibiotics in water	5.1	(1.1)	2.5	(0.6)	3.7	(0.9)
Antibiotics by injection	37.4	(2.7)	38.5	(2.4)	40.8	(2.2)

*Preventive practices for sows only.

3. Preventive practices for boars

For sites with boars on-site, percentage of sites that reported regular use of the following preventive practices:

	Swine '95		Swine 2000		Swine 2006	
Practice	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Deworm	85.8	(1.7)	76.8	(2.1)	68.2	(2.0)
Mange/lice treatment	78.8	(2.1)	65.0	(2.3)	51.3	(2.2)
Antibiotics in feed	39.7	(2.7)	33.6	(2.4)	34.5	(2.2)
Antibiotics in water	4.5	(1.1)	2.5	(0.6)	3.8	(0.9)
Antibiotics by injection	28.9	(2.6)	25.6	(2.0)	23.2	(1.9)

B. Suckling Piglets

1. Pig flow management

The percentage of sites that used continuous flow management in the farrowing phase decreased from a high of 47.0 percent of sites in 1995 to a low of 33.5 percent of sites in 2006. From 2000 to 2006, the percentage of sites that used all-in/all-out management by room in the farrowing phase increased from 25.2 to 37.1 percent, while the percentage of sites that used all-in/all-out management by building decreased from 24.7 to 16.1 percent.

a. Percentage of sites that used the following types of pig management in the farrowing phase:[1]

	1990 National Swine Survey		Swine '95		Swine 2000		Swine 2006[2]	
Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Continuous flow	41.8	(NA)	47.0	(2.7)	38.7	(2.5)	33.5	(2.1)
All-in/all-out	58.2	(NA)	53.0	(2.7)	56.9	(2.5)	59.8	(2.2)
Not applicable	NA		NA		4.4	(1.2)	6.7	(1.0)
Total	100.0		100.0		100.0		100.0	

[1]Question variation: The 1990 National Survey and Swine '95 only asked if sites were continuous flow or all-in/all-out. Swine 2000 and Swine 2006 restricted continuous-flow and all-in/all-out categories to operations with swine housing (with an additional category for no housing).
[2]Response variation: In 2006 the management response "Not Applicable" changed to "Not Applicable (e.g., no housing)."

b. Percentage of sites that used the following types of all-in/all-out pig management in the farrowing phase:

	Swine 2000		Swine 2006	
	Percent	Std. Error	Percent	Std. Error
All swine removed without cleaning and disinfecting swine area	5.8	(1.4)	4.7	(1.1)
All-in/all-out by room*	25.2	(1.7)	37.1	(2.0)
All-in/all-out by building*	24.7	(2.2)	16.1	(1.6)
All-in/all-out by site*	1.2	(0.5)	1.9	(0.6)
Total	56.9	(2.5)	59.8	(2.2)

*In 2006 the phrase "with (room, building, site) cleaned and disinfected" was added.

2. Waste management

For sites with total confinement farrowing facilities, the percentage of sites that used no waste management system decreased to a nearly negligible amount between 1995 and 2006. Hand cleaning declined from 28.3 percent of sites in 1995 to 8.6 percent in 2006, while slat flushing increased from 9.7 percent of sites in 1995 to 26.2 percent in 2006. Since 1995, the majority of sites have used pit-holding as a waste management system.

For sites with total confinement ***farrowing*** facilities, percentage of sites by type of waste management system used in the farrowing phase:[1]

	1990 National Swine Survey[2]		Swine '95[2]		Swine 2000		Swine 2006	
Waste Management System	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
None	0.1	(0.1)	5.1	(1.9)	1.6	(0.6)	0.2	(0.1)
Pit-holding	29.2	(2.5)	41.1	(2.9)	51.1	(2.8)	51.0	(2.6)
Mechanical scraper/tractor	12.1	(3.3)	10.1	(1.8)	8.6	(1.6)	9.5	(1.7)
Hand cleaned	41.6	(4.9)	28.3	(3.1)	11.6	(2.6)	8.6	(1.6)
Flush-under slats	16.5	(2.2)	9.7	(1.3)	21.8	(2.1)	26.2	(2.2)
Flush-open gutter	7.0	(1.4)	3.2	(0.9)	3.9	(0.9)	2.8	(0.8)
Other	7.9	(1.7)	2.5	(0.8)	1.4	(0.4)	1.7	(0.7)
Total	NA		100.0		100.0		100.0	

[1]Question variation: The 1990 National Survey asked if these waste management systems were ever used. Swine '95, Swine 2000, and Swine 2006 asked which systems were used most.
[2]Operations with 1 or more hogs and pigs versus operations with 100 or more for the other studies.

3. Preventive practices

The percentage of sites using deworming and mange/lice treatment preventive practices in suckling piglets declined from 1995 to 2006.

For sites that had a farrowing phase, percentage of sites reporting regular use of preventive practices on piglets before or at weaning:

	1990 National Swine Survey*		Swine '95 (12/94-5/95)		Swine 2000 (12/99-5/00)		Swine 2006 (12/05-05/06)	
Preventive Practice	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Deworm	48.0	(2.9)	67.4	(2.4)	31.8	(2.3)	47.2	(2.2)
Mange/lice treatment	40.2	(2.9)	65.9	(2.4)	29.0	(2.2)	36.5	(2.2)
Antibiotics – injection	32.7	(2.7)	49.2	(2.8)	44.2	(2.3)	51.4	(2.2)
Iron – oral or injection	85.6	(NA)	82.8	(2.0)	75.4	(2.2)	80.1	(1.8)

*Operations with 1 or more hogs and pigs versus operations with 100 or more for the other studies.

4. Average weaning age

Average weaning age from 2000 to 2006 has remained stable.

Average age (in days) of piglets at weaning:

Average Age (Days)							
1990 National Swine Survey*		**Swine '95 (12/94-5/95)***		**Swine 2000 (12/99-5/00)**		**Swine 2006 (12/05-05/06)**	
Avg.	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
28.8	(0.3)	25.7	(0.5)	19.3	(0.2)	19.4	(0.2)

*Operations with 1 or more hogs and pigs versus operations with 100 or more for the other studies.

C. Nursery Pigs

1. Pig flow management

The percentage of sites using continuous flow management in the nursery phase has decreased steadily since 1990. The percentage of sites using various levels of all-in/all-out did not change substantially between 2000 and 2006.

a. Percentage of sites that used the following types of pig management in the nursery phase:[1]

	1990 National Swine Survey		Swine '95		Swine 2000		Swine 2006[2]	
Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Continuous flow	48.6	(NA)	45.9	(2.9)	32.3	(2.3)	25.0	(1.7)
All-in/all-out	51.4	(NA)	54.1	(2.9)	64.1	(2.3)	71.0	(1.7)
Not applicable	NA		NA		3.6	(1.1)	4.0	(0.7)
Total	100.0		100.0		100.0		100.0	

[1]Question variation: The 1990 National Survey and Swine '95 only asked if sites were continuous flow or all-in/all-out. Swine 2000 and Swine 2006 restricted continuous-flow and all-in/all-out categories to operations with swine housing (with an additional category for no housing).
[2]Response variation: In 2006 the management response "Not Applicable" changed to "Not Applicable (e.g., no housing)."

b. Percentage of sites that used the following types of all-in/all-out pig management in the nursery phase:

	Swine 2000		Swine 2006	
	Percent	Std. Error	Percent	Std. Error
All swine removed without cleaning and disinfecting swine area	3.9	(1.2)	3.6	(0.8)
All-in/all-out by room*	24.4	(1.6)	30.5	(1.6)
All-in/all-out by building*	32.3	(2.1)	29.8	(1.6)
All-in/all-out by site*	3.5	(0.7)	7.1	(1.0)
Total	64.1	(2.3)	71.0	(1.7)

*In 2006 the phrase "with (room, building, site) cleaned and disinfected" was added.

2. Age leaving nursery

The average age that pigs left the nursery phase increased from 60.3 days in 1995 to 64.8 days in 2006.

a. Average age (in days) of pigs leaving the nursery:

Average Age (Days)							
1990 National Swine Survey*		**Swine '95***		**Swine 2000**		**Swine 2006**	
Avg.	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
62.0	(0.5)	60.3	(0.8)	63.3	(0.5)	64.8	(0.5)

*Operations with 1 or more hogs and pigs versus operations with 100 or more for the other studies.

D. Grower/Finisher Pigs

1. Pig flow management

The percentage of sites that used continuous flow management in the grower/finisher phase decreased steadily from 75.1 percent of sites in 1990 to 26.1 percent in 2006. The percentage of sites that used all-in/all-out management by room increased from 10.7 percent of sites in 2000 to 17.5 percent in 2006.

Percentage of sites that used the following types of pig management in the grower/finisher phase:[1]

	1990 National Swine Survey		Swine '95		Swine 2000		Swine 2006[2]	
Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Continuous flow	75.1	(NA)	60.0	(NA)	40.5	(2.0)	26.1	(1.3)
All-in/all-out	24.9	(NA)	40.0	(2.5)	56.9	(2.0)	70.8	(1.4)
Not applicable	NA		NA		2.6	(0.7)	3.1	(0.5)
Total	100.0		100.0		100.0		100.0	

[1]Question variation: The 1990 National Survey and Swine '95 only asked if sites were continuous flow or all-in/all-out. Swine 2000 and Swine 2006 restricted continuous-flow and all-in/all-out categories to operations with swine housing (with an additional category for no housing).
[2]Response variation: In 2006 the management response "Not Applicable" changed to "Not Applicable (e.g., no housing)."

b. Percentage of sites that used the following types of all-in/all-out pig management in the grower/finisher phase:

	Swine 2000		Swine 2006	
	Percent	**Std. Error**	**Percent**	**Std. Error**
All swine removed without cleaning and disinfecting swine area	3.2	(0.7)	6.2	(0.8)
All-in/all-out by room*	10.7	(0.9)	17.5	(1.2)
All-in/all-out by building*	32.3	(1.7)	35.0	(1.3)
All-in/all-out by site*	10.7	(1.1)	12.1	(1.0)
Total	56.9	(2.0)	70.8	(1.4)

*In 2006 the phrase "with (room, building, site) cleaned and disinfected" was added.

2. Market age

The average age that pigs left the grower/finisher phase was virtually unchanged from 1990 to 2006.

Average age (in days) of pigs leaving the grower/finisher unit:

Average Age (Days)

1990 National Swine Survey*		Swine '95*		Swine 2000		Swine 2006	
Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
180.0	(0.5)	176.4	(1.0)	177.6	(1.1)	179.7	(1.3)

*Operations with 1 or more hogs and pigs versus operations with 100 or more for the other studies.

E. General Farm Management

1. Vaccination practices

The regular use of influenza vaccines in breeding females more than doubled between 2000 and 2006.

Percentage of sites with the following production phases during the 12 months prior to the survey[1] that usually vaccinated within the production phases against the listed diseases:

	Breeding Females				Weaned Pigs[2]			
	Swine 2000		Swine 2006		Swine 2000		Swine 2006	
Disease	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Mycoplasma pneumonia	20.9	(2.9)	34.9	(4.2)	40.0	(3.6)	35.6	(3.2)
PRRS	37.1	(4.7)	27.3	(3.9)	5.2	(1.1)	5.4	(1.6)
Swine influenza H1N1	11.2	(1.8)	27.9	(3.8)	4.8	(0.9)	9.5	(1.7)
Swine influenza H3N2	10.6	(1.9)	27.8	(3.8)	5.0	(1.0)	8.7	(1.6)

[1]August 21-October 31, 1999, and September 5, 2005-March 15, 2006.
[2]Weaned pigs are those in a nursery or grower/finisher stage.

2. Isolation or quarantine of new arrivals

Isolating or quarantining new breeding stock can maintain biosecurity and prevent the introduction of new disease in the breeding herd. In 2006, about one-third of sites (34.3 percent) always isolated new breeding females, while about one-fourth of sites (23.8 percent) did so in 1995.

a. Percentage of sites by frequency of placing new arrivals through an isolation or quarantine process:

	Breeding Females						Breeding Males					
	Swine '95		Swine 2000		Swine 2006		Swine '95		Swine 2000		Swine 2006	
Frequency	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Always	23.8	(2.1)	32.0	(2.2)	34.3	(2.0)	43.5	(2.4)	54.8	(2.4)	48.6	(2.2)
Sometimes	9.0	(1.3)	8.1	(1.4)	5.0	(0.9)	11.1	(1.7)	11.3	(1.6)	10.1	(1.4)
Never	22.0	(2.2)	16.9	(1.8)	17.0	(1.6)	18.2	(1.8)	20.2	(2.0)	20.2	(1.8)
No new arrivals	45.2	(2.6)	43.0	(2.4)	43.7	(2.2)	27.2	(2.3)	13.7	(1.5)	21.1	(1.7)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

The percentage of sites that health tested new breeding females and males has remained essentially unchanged since 1995.

b. For sites that isolated or quarantined new arrivals, percentage of sites that health tested these arrivals (either before or after isolation), by proportion of animals tested:

	Breeding Females						Breeding Males					
	Swine '95		Swine 2000		Swine 2006		Swine '95		Swine 2000		Swine 2006	
Proportion	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
All	42.0	(4.4)	43.5	(3.7)	42.1	(3.3)	44.4	(3.3)	51.8	(3.1)	46.3	(2.9)
Some	30.6	(3.8)	16.8	(2.4)	24.4	(2.9)	20.0	(2.4)	8.3	(1.4)	14.8	(2.2)
None	27.4	(3.6)	39.7	(3.8)	33.5	(3.1)	35.6	(3.2)	39.9	(3.2)	38.9	(2.8)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

3. Carcass disposal

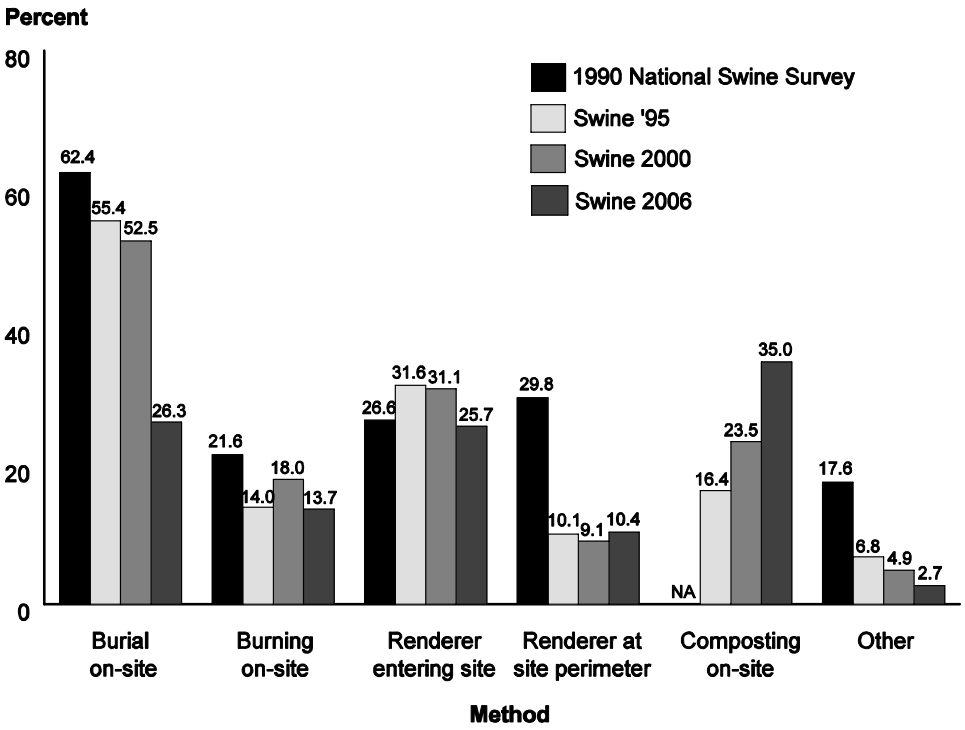
The methods of disposing of carcasses have changed. For example, the percentage of sites that disposed of dead pigs by burying on-site decreased from 62.4 percent in 1990 to 26.3 percent in 2006. Conversely, the percentage of sites that disposed of dead pigs by composting on-site increased from 16.4 percent in 1995 to 35.0 percent in 2006.

Percentage of sites by method of carcass disposal:

	1990 National Swine Survey*		Swine '95 (12/94-5/94)		Swine 2000 (12/99-5/00)		Swine 2006	
Method	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Burial on-site	62.4	(3.2)	55.4	(3.0)	52.5	(2.6)	26.3	(1.2)
Burning on-site	21.6	(2.1)	14.0	(1.8)	18.0	(2.0	13.7	(0.9)
Renderer entering site	26.6	(2.5)	31.6	(2.6)	31.1	(2.5)	25.7	(1.2)
Renderer at site perimeter	29.8	(3.3)	10.1	(1.5)	9.1	(1.4)	10.4	(0.9)
Composting on-site	NA		16.4	(2.1)	23.5	(2.2)	35.0	(1.3)
Other	17.6	(2.2)	6.8	(1.4)	4.9	(1.2)	2.7	(0.4)

*Operations with 1 or more hogs and pigs versus operations with 100 or more for the other studies.

Percentage of Sites by Method of Carcass Disposal



4. Rodent control

The percentage of sites that used cats to control rodents decreased from 87.0 percent in 1990 to 51.2 percent in 2006.

Percentage of sites that regularly used rodent control, by method:

	1990 National Swine Survey		Swine '95		Swine 2000		Swine 2006	
Method	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Cats	87.0	(NA)	68.7	(2.2)	60.6	(1.7)	51.2	(1.3)
Traps	14.7	(NA)	15.9	(1.6)	19.6	(1.5)	20.5	(1.1)
Bait or poison	85.1	(NA)	85.1	(1.9)	88.5	(1.2)	87.9	(0.9)
Dog	NA		NA		33.9	(1.8)	26.3	(1.2)
Professional exterminator	NA		NA		4.4	(0.5)	5.4	(0.5)
Other	5.9	(NA)	9.5	(1.7)	2.6	(0.9)	1.8	(0.4)

5. Proximity to nearest swine farm or market

The percentage of sites within 0.5 miles of another swine site increased from 20.2 percent in 1990 to 29.6 percent in 2006.

Percentage of sites by distance in miles from the nearest known swine site:

	1990 National Swine Survey[1 2]		Swine '95[1 2]		Swine 2000[1]		Swine 2006	
Miles	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Less than 0.50	20.2	(NA)	25.9	(NA)	28.3	(NA)	29.6	(1.3)
0.50 to 0.99	31.1	(2.9)	21.3	(1.9)	25.6	(1.6)	23.2	(1.1)
1.0 to 2.99	31.2	(2.7)	29.1	(2.1)	27.9	(1.5)	27.5	(1.2)
3.0 to 4.99	5.6	(1.3)	11.9	(1.7)	9.3	(0.9)	10.4	(0.8)
5.0 or more	11.8	(4.0)	11.8	(1.6)	8.9	(0.9)	9.3	(0.7)
Unknown	0.1	(0.1)	NA		NA		NA	
Total	100.0		100.0		100.0		100.0	

[1]Question variation: Surveys from 1990-2000 asked distance to nearest 0.1 mile. Swine 2006 asked distance to nearest 0.25 mile.
[2]Operations with 1 or more hogs and pigs versus operations with 100 or more for the other studies.

Section IV: Trends in Other National Data Bases

A. Slaughter Condemnation Rates in Federally Inspected Slaughter Plants, 1996 Through 2006

1. Market pigs

Market pig condemnation rates for dead pigs peaked in 1998 at 2.9 per 1,000 pigs slaughtered. Dead pigs were the largest single reason for market pig condemnation. Condemnation rates for abscesses or pyemia (septicemia caused by microorganisms in the blood, often resulting in the formation of multiple abscesses) decreased steadily from a peak of 0.23 per 1,000 head in 1997 to 0.09 per 1,000 head in 2005. Condemnation rates for arthritis gradually declined between 1996 and 2006.

a. Rate of condemnations per 1,000 pigs slaughtered for selected dispositions, by year:*

Disposition	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Avg.
Deads	2.096	2.454	2.948	2.885	2.847	2.896	2.433	2.131	2.266	2.208	2.189	2.487
Abscess Pyemia	0.209	0.231	0.169	0.151	0.137	0.192	0.182	0.186	0.096	0.090	0.091	0.158
Arthritis	0.092	0.097	0.082	0.059	0.080	0.083	0.083	0.074	0.060	0.042	0.030	0.071
Pneumonia	0.115	0.148	0.120	0.101	0.099	0.098	0.106	0.095	0.070	0.070	0.074	0.100
Septicemia	0.092	0.137	0.119	0.132	0.138	0.171	0.161	0.143	0.134	0.126	0.141	0.136
Erysipelas	0.060	0.050	0.038	0.039	0.046	0.090	0.056	0.045	0.036	0.041	0.042	0.049
Toxemia	0.025	0.032	0.032	0.031	0.046	0.040	0.032	0.032	0.023	0.026	0.024	0.031
Nephritis	0.017	0.019	0.015	0.011	0.015	0.015	0.014	0.014	0.014	0.011	0.013	0.014
Pericarditis	0.011	0.018	0.022	0.031	0.026	0.019	0.022	0.017	0.083	0.020	0.014	0.026

*Source: Food Safety Inspection Service (FSIS).

The number of market pig carcasses condemned for metritis has steadily declined since 2001. The number of carcasses condemned for residues dropped from 1996 to 2004, but rose between 2005 and 2006.

b. Number of condemnations for selected dispositions, by year:*

Disposition	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Avg.
CNS disorder	271	449	995	381	622	1,601	688	346	181	249	283	551
Residue	81	8	62	22	12	0.0	0.0	0.0	0.0	23	25	21
Metritis	35	21	94	41	33	69	32	22	31	7	11	36
Tetanus	0.0	29	0.0	1	36	0.0	34	105	0.0	0.0	0.0	19
Actinomycosis	16	1	189	37	50	16	8	2	0.0	1	1	29
Eosinophilic myositis	0.0	0.0	19	2	7	0.0	3	2	1	3	4	4
Cysticercosis	0.0	0.0	1	1	0.0	0.0	4	0.0	0.0	3	1	1

*Source: FSIS.

2. Sows

Cull sow condemnation rates for deads increased from 2.6 per 1,000 sows slaughtered in 1996 to over 6 per 1,000 sows slaughtered in 2000, but was back down to 4.3 per 1,000 sows slaughtered in 2006. In sows, condemnation rates due to pneumonia peaked at nearly 1 per 1,000 sows slaughtered in 2004.

a. Rate of condemnations per 1,000 sows slaughtered for selected dispositions, by year:*

Disposition	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Avg.
Deads	2.603	3.366	3.022	3.485	6.050	3.946	3.885	3.519	3.515	4.021	4.312	3.793
Abscess Pyemia	1.219	1.097	1.050	1.364	1.586	1.254	1.102	0.614	0.542	0.676	0.673	1.016
Arthritis	0.195	0.031	0.089	0.028	0.053	0.051	0.043	0.020	0.009	0.004	0.006	0.048
Pneumonia	0.501	0.400	0.411	.0475	0.548	0.537	0.471	0.707	0.937	0.620	0.795	0.543
Septicemia	0.311	0.532	0.417	0.404	0.764	0.614	0.740	0.448	0.554	0.502	0.411	0.518
Erysipelas	0.020	0.038	0.035	0.034	0.046	0.010	0.005	0.003	0.007	0.011	0.027	0.021
Toxemia	0.155	0.240	0.279	0.307	0.175	0.095	0.131	0.651	0.894	0.930	0.633	0.408
Nephritis	0.042	0.044	0.046	0.016	0.040	0.061	0.059	0.038	0.053	0.082	0.100	0.053
Pericarditis	0.106	0.041	0.063	0.092	0.127	0.243	0.208	0.200	0.131	0.138	0.114	0.133

*Source: FSIS.

The number of sow carcasses condemned for metritis declined from 216 carcasses in 1997 to 44 carcasses in 2004, then increased the next 2 years, reaching 176 carcasses in 2006. Similar to market swine, the number of sow carcasses condemned for residues was small or nonexistent from 1996 to 2004, but increased between 2005 and 2006.

b. Number of condemnations for selected dispositions, by year:*

Disposition	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Avg.
CNS disorder	59	69	78	23	106	104	107	68	7	30	48	64
Residue	3	0.0	1	1	0.0	0.0	0.0	0.0	0.0	17	20	4
Metritis	43	216	141	37	49	77	75	49	44	110	176	92
Tetanus	4	9	3	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2
Actinomycosis	13	1	0.0	1	1	1	2	0.0	0.0	0.0	0.0	2
Eosinophilic myositis	0.0	0.0	1	0.0	1	1	5	0.0	0.0	0.0	0.0	1
Cysticercosis	0.0	0.0	0.0	0.0	10	20	27	8	10	13	2	7

*Source: FSIS.

B. *Salmonella* Serotypes

1. Most frequently identified serotypes

The table below lists the top 10 *Salmonella* serotypes found in swine, from the most frequent to the least frequent, based on 2001 rankings. Cholerasuis (var. Kunzendorf), Derby, and Typhimurium (var. Copenhagen) are consistently identified by the National Veterinary Services Laboratories (NVSL) as in the top five most frequent isolates for the 6 years presented. Typhimurium was in the top five for 5 out of 6 years (ranking 7 in 2004). *S.* Typhimurium *(var. Copenhagen)* has been the most frequently isolated serotype each year, with the exception of 2002.

Most frequently identified *Salmonella* serotypes[1 2] from swine, by year:

	2001		2002		2003		2004		2005		2006	
Serovar	**Number Isolates**	**Rank**	**Number Isolates**	**Rank**	**Number Isolates**	**Rank**	**Number Isolates**	**Rank**	**Number Isolates**	**Rank**	**Number Isolates**	**Rank**
Typhimurium (var. Copenhagen)	672	1	382	2	310	1	767	1	910	1	589	1
Typhimurium	501	2	99	4	65	5	126	7	183	4	170	4
Cholerasuis (var. Kunzendorf)	264	3	206	3	167	3	218	3	176	5	159	5
Derby	261	4	426	1	242	2	545	2	554	2	371	2
Agona	170	5	99	4	59	6	104	8	146	6	154	6
Heidelberg	123	6	78	6	75	4	128	6	187	3	288	3
Worthington	97	7	--	--	54	7	--	--	115	8	--	--
Infantis	87	8	56	7	35	8	199	4	103	9	80	8
Anatum	74	9	34	10	26	9	152	5	146	6	76	9
Newport	35	10	--	--	--	--	59	10	--	--	90	7
Brandenburg	--	--	53	8	--	--	--	--	--	--	--	--
6,7:Z10-Monophasic	--	--	38	9	--	--	--	--	--	--	--	--
6,7:Nonmotile	--	--	--	--	25	10	--	--	--	--	--	--
Mbandaka	--	--	--	--	--	--	62	9	--	--	--	--
Uganda	--	--	--	--	--	--	--	--	85	10	--	--
Senftenberg	--	--	--	--	--	--	--	--	--	--	61	10
Top 10 (number and percent)	2,284	82.8	1,471	79.7	1,058	79.1	2,360	77.2	2,605	78.4	2,038	73.4
All others (number and percent)	474	17.2	375	20.3	280	20.9	696	22.8	719	21.6	740	26.6
Total (number and percent)	2,758	100.0	1,846	100.0	1,338	100.0	3,056	100.0	3,324	100.0	2,778	100.0

[1]Source: NVSL—data reflect all isolates from samples submitted to NVSL for serotyping for the calendar year January through December. The data may not necessarily reflect the population of *Salmonella* in swine throughout the United States.
[2]For 1990-2000 numbers, see NAHMS Swine 2000 at: http://nahms.aphis.usda.gov

Appendix: Swine 2006 Study Objectives and Related Outputs

1. Describe swine management practices used during the gestation, farrowing, nursery, and grower/finisher phases of production.

- Part I: Reference of Swine Health and Management Practices in the United States, 2006, October 2007
- Part II: Reference of Swine Health and Health Management Practices in the United States, 2006, December 2007
- Part III: Reference of Swine Health, Productivity, and General Management, 2006, March 2008
- Info sheets, expected winter 2008

2. Determine the prevalence and risk factors for a variety of pathogens found in nursery and grower/finisher pigs.

- Part II: Reference of Swine Health and Health Management Practices in the United States, 2006, December 2007
- Part III: Reference of Swine Health, Productivity, and General Management, 2006, March 2008
- Info sheets, expected spring 2008

3. Examine vaccination and antimicrobial use practices.

- Part II: Reference of Swine Health and Health Management Practices in the United States, December 2007

4. Provide an overview of the changes in U.S. swine management and health from 1990 through 2006.

- **Part IV: Changes in the U.S. Pork Industry, 1990-2006, November 2008**
- Info sheets, November 2008