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Poultry '04

Part I: Reference of Health and Management of Backyard/Small Production Flocks in the United States, 2004

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Introduction

The National Animal Health Monitoring System (NAHMS) is a nonregulatory division of the United States Department of Agriculture (USDA) designed to help meet the Nation's animal-health information needs.

Layers '99 was NAHMS' first national study on poultry baseline health and management. Layers '99 estimated the prevalence and associated risk factors of *Salmonella enterica* enteritidis in U.S. layer flocks.

Poultry '04 is NAHMS' second study of the U.S. poultry industry. For Poultry '04, NAHMS conducted a thorough assessment to determine the information needs of the poultry industry, researchers, and Federal and State governments. This needs assessment indicated a need for information regarding bird health, bird movement, and biosecurity practices of nontraditional poultry industries, such as backyard flocks, gamefowl, and live poultry markets.

Part I: Reference of Health and Management of Backyard/Small Production Flocks in the United States, 2004 is the first in a series of reports containing national information from the Poultry '04 study. Data for Part I were collected via a questionnaire administered to owners of backyard flocks in 18 major poultry producing States (see map next page). A sample of large commercial poultry operations (n = 350) with at least 10,000 chickens or 5,000 turkeys was selected, and then a circle with a 1-mile radius was "drawn" around each of these selected operations. VMOs, many of whom had gained previous area-screening experience during the exotic Newcastle disease outbreaks in California, canvassed the circles for residences with birds. Residences with birds other than pet birds (backyard flocks) were asked to complete a questionnaire describing their management and biosecurity practices. A total of 349 of the 350 circles were canvassed. Over the 349 circles screened, there were 10,579 residences contacted, of which 156 had pet birds only and 763 had birds other than pet birds (backyard flocks). In addition, there were 668 commercial poultry operations (other than the ones selected to serve as the centers of the circles) within the 349 circles. Since the design and analysis of this study are probability based, estimates presented describe backyard flock attributes "near" the population of commercial operations within the 18 States.

The methods used and number of respondents in the study can be found at the end of this report.

Further information on NAHMS studies and reports is available online at:
http://www.aphis.usda.gov/vs/ceah/ncahs

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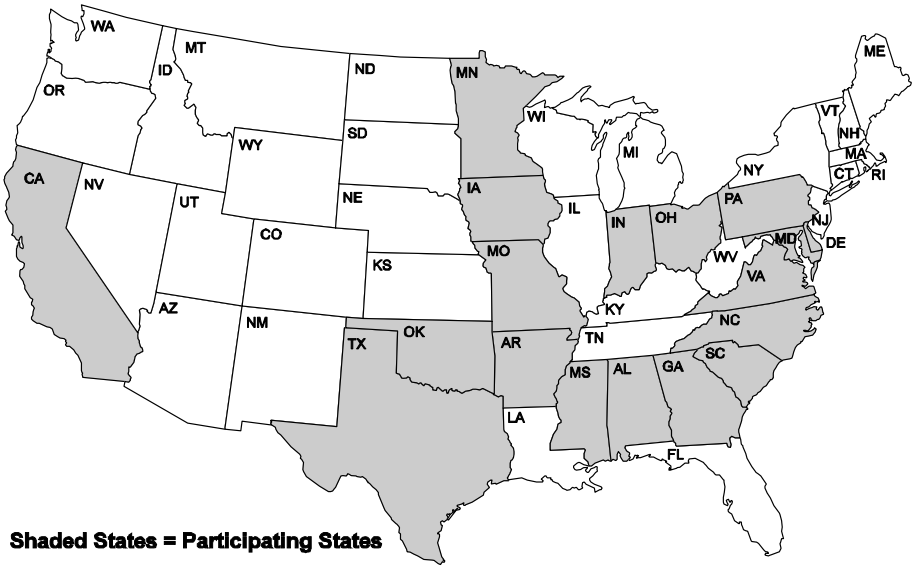
Poultry '04 Participating States



Shaded States = Participating States

Terms Used In This Report

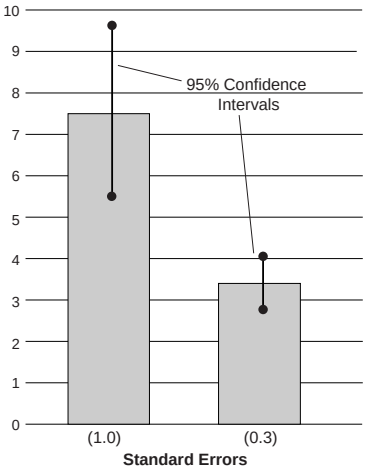
Backyard flocks: Residences with birds (other than pet birds or in addition to pet birds). Backyard flocks have fewer than 1,000 birds.

Commercial poultry operations: Operations with 1,000 or more birds (domestic poultry).

Flock size: Total number of birds present (including pet birds) on the day of the interview. Small flocks are those with fewer than 20 birds; medium flocks are those with 20 to 99 birds; and large flocks are those with 100 to 999 birds.

Pet birds: Birds not normally used for food and usually housed in cages in the home, such as parrots, cockatiels, parakeets, finches, and canaries.

Examples of a 95% Confidence Interval



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 2.0. 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. If there were no reports of the event, no standard error was reported. Differences identified in this report are at the 95-percent confidence level.

Residences: All homes—with and without birds—within a 1-mile radius of a selected commercial poultry operation, including

- **Mobile-home parks—**a group of five or more trailers or mobile homes,
- **Apartment buildings—**any building of five or more connected units, such as apartments, condominiums, and townhome buildings, and
- **Single-family homes—**single, detached dwellings (including up to four mobile homes) and multiplexes (duplexes, triplexes, and fourplexes) that stand on their own. Each unit was counted separately, e.g., a fourplex was counted as four units.

Section I: Population Estimates

A. Circle-Level Tables

Note: Each selected commercial poultry (layer, broiler, or turkey) operation served as the center point of a circle (sampling circle) with a 1-mile radius. Each sampling circle was canvassed for residences that housed birds. Data for the study were collected from participating residences with birds other than or in addition to pet birds within the sampling circles.

1. Residence density within sampling circle

Almost all sampling circles contained one or more single-family homes. Apartment buildings and mobile-home parks were found within the sampling circles of 4.5 percent and 11.3 percent of commercial operations, respectively. About two-thirds of selected commercial poultry operations (68.0 percent) had another commercial poultry operation within their sampling circles.

a. Percentage of commercial poultry operations, by type of residences found within the 1-mile-radius sampling circles surrounding those operations and by region:

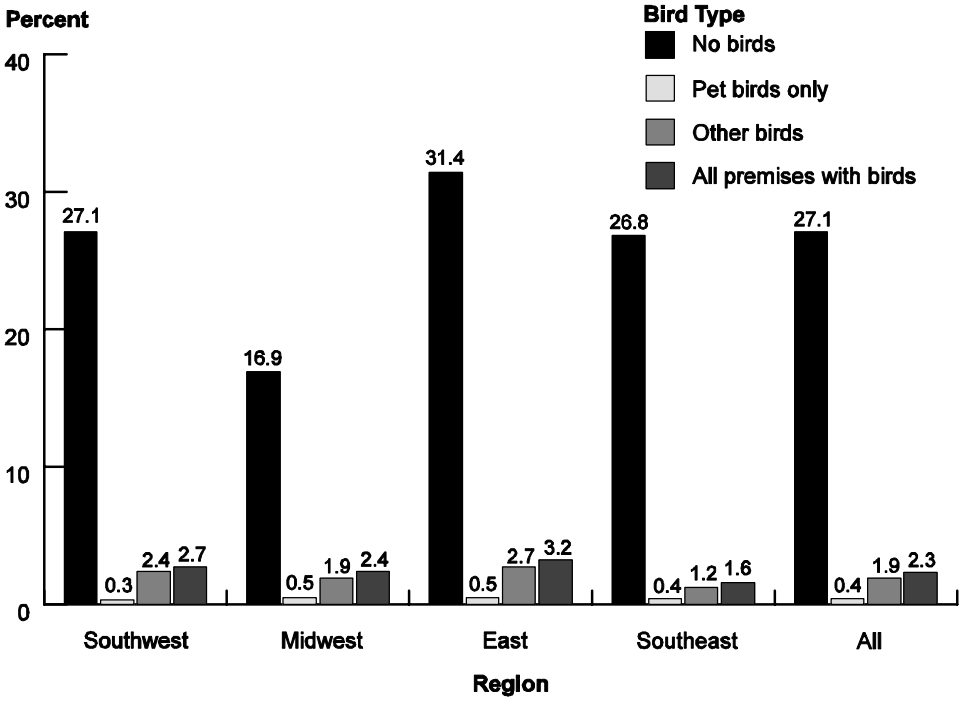
	Percent Commercial Operations									
	Region									
	Southwest		Midwest		East		Southeast		All	
Type of Residence	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Single-family homes	99.8	(0.2)	100.0	(--)	100.0	(--)	100.0	(--)	100.0	(0.0)
Apartment buildings	1.1	(0.7)	9.2	(4.5)	7.7	(2.9)	4.6	(1.9)	4.5	(1.1)
Mobile-home parks	3.9	(2.5)	3.9	(3.9)	16.2	(3.5)	14.3	(3.3)	11.3	(1.9)
Another commercial poultry operation	71.3	(5.7)	51.8	(7.6)	61.1	(4.3)	70.7	(3.7)	68.0	(2.5)

Overall, commercial poultry operations averaged 29.4 residences per sampling circle, with a range of 19.3 residences in the Midwest region to 34.6 residences in the East region. An average of 27.1 residences per sampling circle had no birds; 0.4 residences had pet birds only; and 1.9 residences had birds other than or in addition to pet birds (backyard flocks). Some residences in the “no bird” category may have had birds in the spring and summer; however, data were collected during the fall.

b. Average number of residences per 1-mile-radius sampling circle, by bird type at those residences and by region:

	Average Number									
	Region									
	Southwest		Midwest		East		Southeast		All	
Bird Type	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
No birds	27.1	(3.1)	16.9	(2.2)	31.4	(5.6)	26.8	(1.7)	27.1	(1.6)
Pet birds only	0.3	(0.1)	0.5	(0.1)	0.5	(0.1)	0.4	(0.1)	0.4	(0.0)
Other birds	2.4	(0.3)	1.9	(0.3)	2.7	(0.2)	1.2	(0.1)	1.9	(0.1)
All residences with birds	2.7	(0.3)	2.4	(0.4)	3.2	(0.3)	1.6	(0.2)	2.3	(0.1)
All residences	29.8	(3.3)	19.3	(2.4)	34.6	(5.6)	28.4	(1.7)	29.4	(1.6)

Average Number of Premises per Sampling Circle, by Bird Type and by Region



Numbers of residences per sampling circle were similar across all three types of commercial poultry operations selected.

c. Average number of residences per 1-mile-radius sampling circle, by bird type at those residences and by type of commercial operation at the center of sampling circle:

	Average Number					
	Operation Type					
	Broiler		Layer		Turkey	
Bird Type	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
No birds	29.4	(2.2)	21.1	(1.7)	24.3	(2.6)
Pet birds only	0.4	(0.1)	0.3	(0.1)	0.4	(0.1)
Other birds	1.9	(0.1)	1.8	(0.3)	1.8	(0.3)
All residences with birds	2.3	(0.2)	2.1	(0.3)	2.2	(0.3)
All residences	31.7	(2.3)	23.2	(1.8)	26.5	(2.7)

One-fourth of circles (24.2 percent) had at least one residence with pet birds only, while two out of three circles (61.8 percent) had at least one residence with birds other than or in addition to pet birds (backyard flock).

d. Percentage of commercial poultry operations where residences with the following types of birds were found within the 1-mile-radius sampling circle, by region:

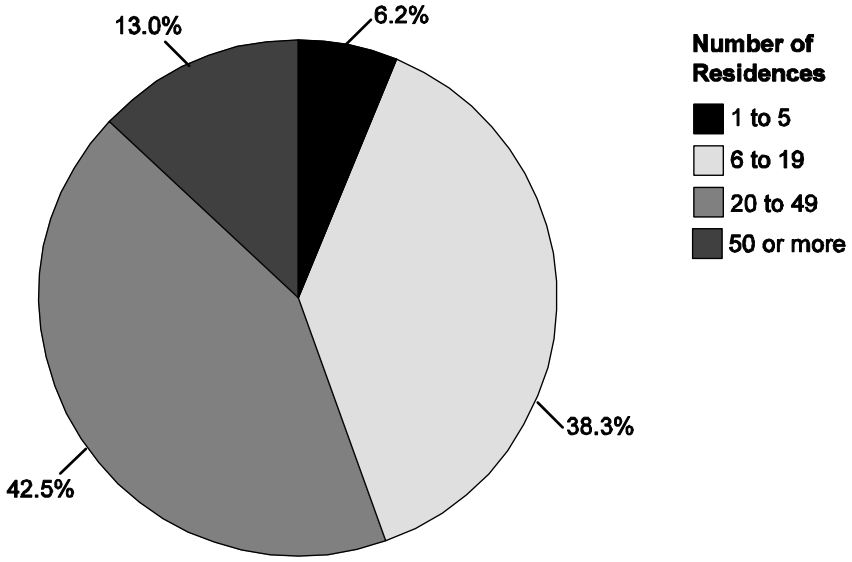
	Percent Commercial Operations									
	Region									
	Southwest		Midwest		East		Southeast		All	
Residence Bird Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
No birds	98.8	(0.2)	100.0	(--)	100.0	(--)	100.0	(--)	100.0	(0.0)
Pet birds only	17.7	(4.1)	25.7	(7.3)	33.5	(5.5)	24.1	(3.8)	24.2	(2.4)
Other birds	69.3	(5.7)	65.6	(6.8)	74.0	(4.4)	52.6	(4.2)	61.8	(2.7)
Any residence	98.8	(0.2)	100.0	(--)	100.0	(--)	100.0	(--)	100.0	(0.0)

Circles in the Midwest region were the least dense (33.9 percent of circles had 20 or more residences), while circles in the Southeast region were the most dense (62.0 percent of circles had 20 or more residences). Less than 0.1 percent of sampling circles (only one circle in the Southwest region) had no residences of any kind.

e. Percentage of commercial poultry operations, by number of residences within the 1-mile-radius sampling circle and by region:

	Percent Commercial Operations									
	Region									
	Southwest		Midwest		East		Southeast		All	
Number of Residences	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
0	0.2	(0.2)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(0.0)
1 to 5	7.7	(3.6)	8.8	(4.7)	4.2	(2.4)	5.7	(2.1)	6.2	(1.5)
6 to 19	41.0	(6.0)	57.3	(7.9)	44.3	(5.3)	32.3	(4.1)	38.3	(2.8)
20 to 49	39.6	(5.7)	25.0	(7.3)	35.4	(5.1)	48.8	(4.3)	42.5	(2.8)
50 or more	11.5	(4.4)	8.9	(3.4)	16.1	(4.1)	13.2	(2.9)	13.0	(2.0)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Commercial Poultry Operations by Number of Residences Within the 1-Mile-Radius Sampling Circle

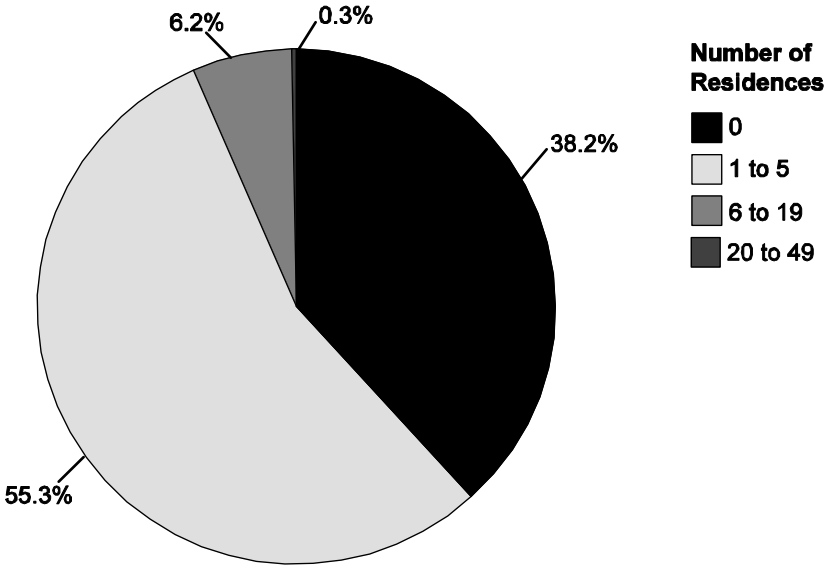


The majority of sampling circles (55.3 percent) contained one to five backyard flocks. Over one-third of sampling circles (38.2 percent) contained no backyard flocks.

f. Percentage of commercial poultry operations, by number of residences within the 1-mile-radius sampling circle that had birds other than or in addition to pet birds (backyard flocks) and by region:

	Percent Commercial Operations									
	Region									
	Southwest		Midwest		East		Southeast		All	
Number of Residences	Pct.	Std. Err.	Pct.	Std. Err.	Pct.	Std. Err.	Pct.	Std. Err.	Pct.	Std. Err.
0	30.7	(5.7)	34.4	(6.8)	26.0	(4.4)	47.3	(4.2)	38.2	(2.7)
1 to 5	57.8	(6.3)	57.7	(8.0)	61.1	(5.2)	51.5	(4.1)	55.3	(2.8)
6 to 19	10.9	(4.2)	7.9	(5.0)	12.2	(3.4)	1.2	(0.9)	6.2	(1.4)
20 to 49	0.6	(0.3)	0.0	(--)	0.7	(0.7)	0.0	(--)	0.3	(0.3)
50 or more	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Commercial Poultry Operations, by Number of Residences Within the 1-Mile-Radius Sampling Circle That Had Birds Other Than or in Addition to Pet Birds (Backyard Flocks)



The majority of residences (92.4 percent) within the sampling circle of a commercial operation had no birds; 1.3 percent had pet birds only; and 6.3 percent had birds other than or in addition to pet birds.

g. Percentage of residences within the 1-mile-radius sampling circle of a commercial poultry operation, by bird type at the residences and by region:

	Percent Residences									
	Region									
	Southwest		Midwest		East		Southeast		All	
Bird Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
No birds	91.0	(1.0)	87.7	(1.9)	90.8	(1.5)	94.2	(0.6)	92.4	(0.5)
Pet birds only	0.8	(0.2)	2.4	(0.6)	1.5	(0.3)	1.4	(0.2)	1.3	(0.1)
Had other birds	8.2	(1.0)	9.9	(1.6)	7.7	(1.4)	4.4	(0.5)	6.3	(0.4)
Total	100.0		100.0		100.0		100.0		100.0	

B. General Management for Backyard Flocks (Residences with Birds Other Than Pet Birds or in Addition to Pet Birds)

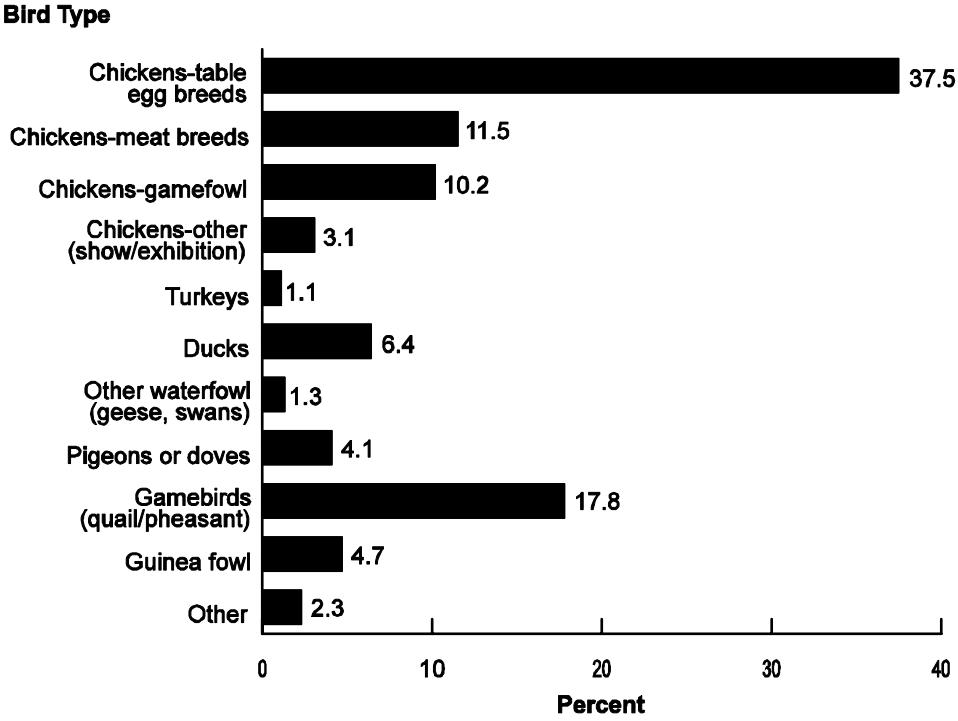
1. Bird types

Chickens of table-egg breeds were found in two-thirds (63.2 percent) of backyard flocks and accounted for 37.5 percent of all birds. Pet birds accounted for only 0.3 percent of the total bird population at residences with backyard flocks.

a. Percentage of backyard flocks (and percentage of birds) by type of bird of any age in the backyard flocks:

	Backyard Flock		Birds	
Bird Type	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Chickens–table egg breeds	63.2	(4.1)	37.5	(6.9)
Chickens–meat breeds	17.2	(3.0)	11.5	(5.4)
Chickens–gamefowl	23.2	(4.7)	10.2	(3.0)
Chickens–other (show/exhibition)	9.7	(2.4)	3.1	(1.0)
Turkeys	6.9	(1.6)	1.1	(0.4)
Ducks	20.6	(2.9)	6.4	(1.2)
Other waterfowl (geese, swans)	8.7	(1.8)	1.3	(0.4)
Pigeons or doves	4.5	(1.0)	4.1	(1.6)
Ratites (ostriches)	0.7	(0.4)	0.0	(0.0)
Gamebirds (quail/pheasant)	4.4	(1.4)	17.8	(9.8)
Guinea fowl	11.8	(2.0)	4.7	(2.1)
Peafowl	3.1	(1.2)	0.3	(0.1)
Pet birds (caged birds like parrots)	3.8	(1.0)	0.3	(0.1)
Other species of birds	0.6	(0.6)	1.7	(1.5)
Total	NA		100.0	

Percentage of Birds by Bird Type



Gamefowl chickens were present in half (50.2 percent) of backyard flocks in the Southeast region and in only 4.1 percent of backyard flocks in the East region. Guinea-fowl presence ranged from 4.3 percent of backyard flocks in the East region to 31.7 percent of backyard flocks in the Midwest region.

b. Percentage of backyard flocks by type of bird of any age in the backyard flocks and by region:

	Percent Backyard Flocks							
	Region							
	Southwest		Midwest		East		Southeast	
Bird Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Chickens–table egg breeds	69.8	(5.5)	74.4	(8.0)	74.2	(4.8)	44.8	(8.8)
Chickens–meat breeds	18.1	(5.4)	17.8	(6.8)	10.5	(2.9)	22.8	(7.4)
Chickens–gamefowl	16.5	(4.9)	9.1	(3.5)	4.1	(2.0)	50.2	(9.8)
Chickens–other (show/exhibition)	8.5	(3.2)	4.8	(3.0)	10.3	(3.3)	11.0	(5.7)
Turkeys	6.5	(3.2)	13.5	(4.6)	9.8	(3.0)	3.6	(1.7)
Ducks	22.1	(4.7)	22.1	(5.1)	27.6	(6.2)	12.2	(3.4)
Other waterfowl (geese, swans)	12.0	(4.5)	23.0	(6.2)	8.6	(2.3)	3.9	(1.8)
Pigeons or doves	4.8	(1.9)	11.2	(3.5)	6.1	(2.3)	1.8	(1.0)
Ratites (ostriches)	0.9	(0.9)	0.0	(--)	1.3	(0.9)	0.0	(--)
Gamebirds (quail/pheasant)	5.0	(3.4)	2.6	(2.1)	5.0	(2.5)	3.3	(1.5)
Guinea fowl	20.3	(4.7)	31.7	(8.2)	4.3	(1.8)	8.6	(2.9)
Peafowl	4.9	(3.3)	2.3	(2.1)	2.1	(0.7)	2.4	(1.5)
Pet birds (caged birds like parrots)	4.9	(2.0)	7.0	(4.6)	2.2	(1.0)	3.9	(2.1)
Other species of birds	0.0	(--)	0.5	(0.5)	1.9	(1.8)	0.0	(--)

Bird types in backyard flocks were similar across the three types of commercial poultry operations at sampling-circle centers.

c. Percentage of backyard flocks, by type of bird of any age in the backyard flocks and by type of commercial poultry operations at sampling-circle centers:

	Percent Backyard Flocks					
	Type of Commercial Poultry Operation					
	Broiler		Layer		Turkey	
Bird Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Chickens–table egg breeds	63.8	(4.0)	74.1	(5.5)	42.9	(17.0)
Chickens–meat breeds	18.6	(3.2)	14.4	(6.0)	14.7	(13.1)
Chickens–gamefowl	18.8	(3.8)	26.9	(8.5)	39.2	(23.0)
Chickens–other (show/exhibition)	8.6	(2.2)	16.5	(8.0)	4.4	(3.5)
Turkeys	7.0	(2.0)	7.0	(3.0)	6.1	(4.5)
Ducks	19.7	(3.2)	23.0	(5.8)	21.1	(12.6)
Other waterfowl (geese, swans)	9.1	(2.4)	7.9	(2.7)	8.0	(4.7)
Pigeons or doves	4.9	(1.4)	5.3	(2.0)	1.3	(0.8)
Ratites (ostriches)	1.0	(0.6)	0.0	(--)	0.1	(0.1)
Gamebirds (quail/pheasant)	4.3	(1.8)	4.3	(2.6)	4.8	(4.3)
Guinea fowl	11.7	(2.2)	17.4	(5.6)	2.9	(1.6)
Peafowl	3.9	(1.8)	1.2	(0.5)	2.1	(1.2)
Pet birds (caged birds like parrots)	5.2	(1.5)	1.3	(0.7)	0.8	(0.6)
Other species of birds	0.0	(--)	0.1	(0.1)	4.6	(4.3)

Approximately four out of five backyard flocks (81.3 percent) had more than one bird type.

d. Percentage of backyard flocks with more than one bird type:

Percent Backyard Flocks	Standard Error
81.3	(4.5)

The most common combination of bird types was chickens/waterfowl (18.3 percent of all backyard flocks had both chickens and waterfowl). Ten-percent of all backyard flocks had both chickens and guinea fowl.

e. Percentage of backyard flocks that had the following combinations of bird types:

	Percent Backyard Flocks									
	Bird Type									
	Chickens		Turkeys		Waterfowl		Pet Birds		Guinea Fowl	
Bird Type	Pct.	Std. Err.	Pct.	Std. Err.	Pct.	Std. Err.	Pct.	Std. Err.	Pct.	Std. Err.
Turkeys	5.6	(1.4)								
Waterfowl	18.3	(2.9)	3.9	(1.3)						
Pet birds	3.6	(1.0)	0.2	(0.1)	1.2	(0.6)				
Guinea fowl	10.0	(1.9)	2.0	(0.8)	5.3	(1.2)	0.2	(0.1)		
Other	7.2	(1.9)	2.0	(0.8)	5.5	(1.5)	1.2	(0.6)	2.2	(0.8)

On average, backyard flocks had 35.1 birds, ranging from an average of 26.1 birds in the Southeast region to 49.2 birds in the East region. Less than 1 in 10 backyard flocks (8.5 percent) had 100 to 999 birds. Nearly 1 in 3 backyard flocks (31.8 percent) had fewer than 10 birds.

f. Average number of birds in backyard flocks, by region:

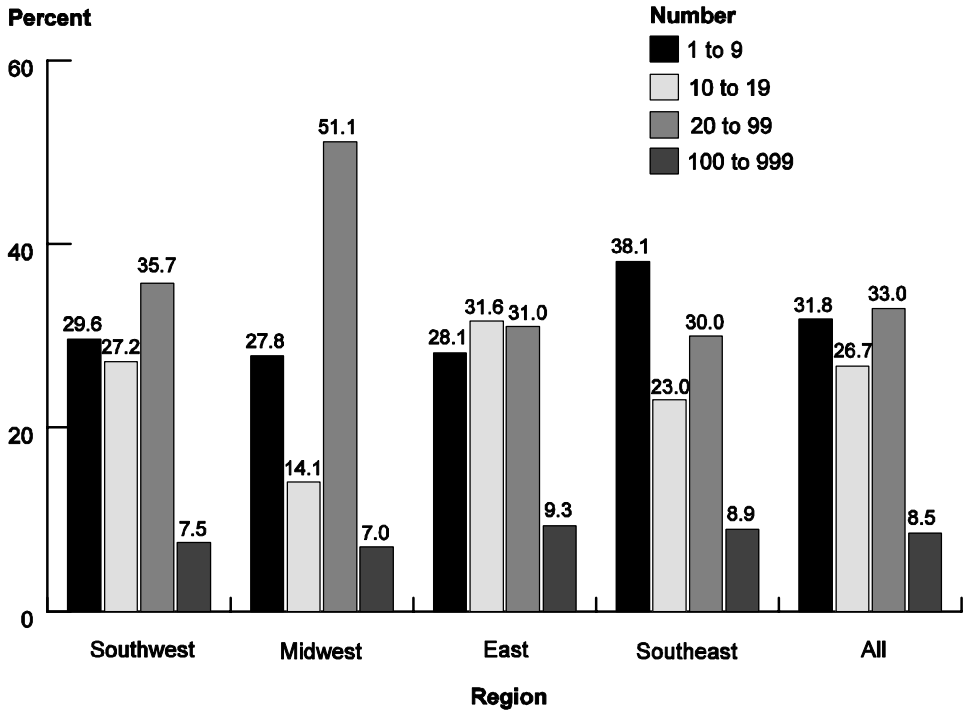
Average									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
28.8	(4.5)	43.8	(8.5)	49.2	(16.4)	26.1	(5.8)	35.1	(6.0)

Photo: Judy Rodriguez

g. Percentage of backyard flocks, by number of birds in backyard flocks and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Number of Birds	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
1 to 9	29.6	(5.9)	27.8	(7.5)	28.1	(4.9)	38.1	(6.5)	31.8	(3.3)
10 to 19	27.2	(5.2)	14.1	(5.0)	31.6	(5.8)	23.0	(4.3)	26.7	(2.9)
20 to 99	35.7	(5.7)	51.1	(6.0)	31.0	(6.4)	30.0	(6.2)	33.0	(3.4)
100 to 999	7.5	(3.6)	7.0	(3.5)	9.3	(3.2)	8.9	(5.4)	8.5	(2.3)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Backyard Flocks by Number of Birds in the Backyard Flock and by Region:



2. Distances

While nearly all respondents could estimate the distance to the nearest feed store, only one in five could estimate the distance to the nearest live-bird market. Two-thirds of backyard flocks (61.7 percent) reported a feed store within 10 miles, while the majority of backyard flocks that could make an estimate reported that the nearest live-bird market was 20 or more miles.

a. Percentage of backyard flocks by distance (in miles) to nearest feed store, auction, flea market/swap meet, and live-bird market:

	Percent Backyard Flocks							
	Nearest . . .							
	Feed Store		Auction Where Birds Are Sold		Flea Market/ Swap Meet		Live Bird Market	
Distance (Miles)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Less than 5	34.7	(4.5)	5.5	(1.7)	5.1	(1.8)	0.9	(0.5)
5 to 9	27.0	(3.5)	11.9	(2.4)	7.0	(1.7)	3.2	(0.9)
10 to 19	25.1	(4.0)	10.4	(2.1)	9.1	(2.1)	1.3	(0.6)
20 or more	5.3	(2.1)	21.2	(4.0)	23.7	(4.4)	10.9	(3.6)
Did not know	7.9	(4.4)	51.0	(4.6)	55.1	(4.6)	83.7	(3.8)
Total	100.0		100.0		100.0		100.0	

About one in four backyard flocks (26.4 percent) were within 1 mile of four or more commercial poultry operations, and 12.1 percent of backyard flocks were within 1 mile of six or more commercial operations. In the Southwest region, 43.5 percent of backyard flocks were within 1 mile of four or more commercial operations.

b. Percentage of backyard flocks by number of commercial poultry operations within 1 mile and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Number Commercial Operations Within 1 Mile	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
1	22.6	(8.5)	48.1	(14.6)	37.7	(6.5)	48.1	(9.9)	36.9	(5.0)
2 to 3	33.9	(7.3)	19.2	(11.3)	41.4	(6.0)	37.2	(8.9)	36.7	(4.2)
4 to 5	25.7	(6.6)	18.4	(10.5)	11.1	(3.4)	6.1	(3.0)	14.3	(2.8)
6 or more	17.8	(7.9)	14.3	(5.9)	9.8	(3.6)	8.6	(4.0)	12.1	(3.1)
Total	100.0		100.0		100.0		100.0		100.0	

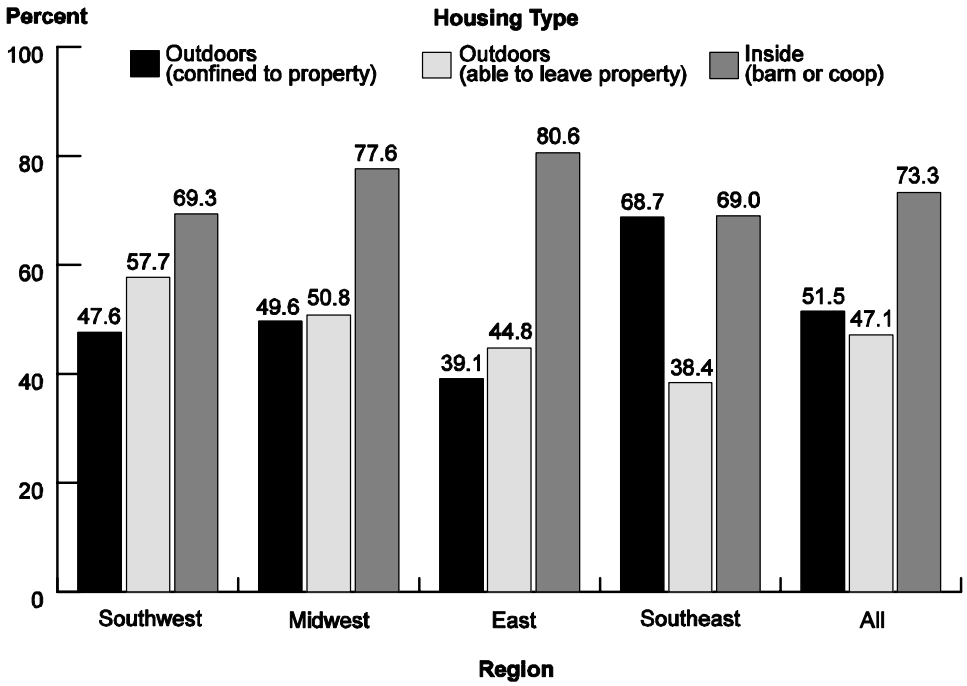
3. Housing

Nearly half of backyard flocks (47.1 percent) housed birds in a manner that allowed birds to leave their property, ranging from 38.4 percent in the Southeast region to 57.7 percent in the Southwest region. Nearly three-fourths of backyard flocks (73.3 percent) housed birds inside a barn or coop. More than one housing type could be used.

a. Percentage of backyard flocks, by bird-housing type and by region

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Housing Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Outdoors, confined to property	47.6	(5.0)	49.6	(7.5)	39.1	(4.9)	68.7	(5.4)	51.5	(3.1)
Outdoors, able to leave property	57.7	(5.0)	50.8	(7.2)	44.8	(5.5)	38.4	(6.1)	47.1	(3.3)
Inside, i.e., barn or coop	69.3	(6.0)	77.6	(6.7)	80.6	(4.4)	69.0	(5.6)	73.3	(3.0)

Percentage of Backyard Flocks, by Bird-Housing Type and by Region



For backyard flocks that housed birds inside a barn or coop, most (69.4 percent) kept birds in pens.

b. For backyard flocks where birds were housed inside a barn or coop, percentage of backyard flocks by type of indoor housing and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Housing Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Cages	20.4	(6.0)	6.9	(4.5)	9.2	(3.1)	31.8	(8.7)	19.0	(3.2)
Pens	76.1	(4.4)	59.7	(12.1)	57.1	(6.6)	79.6	(6.8)	69.4	(3.5)

Indoor birds were allowed to go outside in 65.0 percent of backyard flocks with barns or coops. This practice was most common in the Midwest region (91.0 percent of backyard flocks).

c. For backyard flocks where birds were housed inside a barn or coop, percentage of backyard flocks where birds were allowed outdoors, by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
78.9	(4.6)	91.0	(5.7)	58.7	(6.5)	54.5	(9.9)	65.0	(4.1)

4. Animal contact

Predators such as raccoons or foxes could access bird areas in nearly two out of three (62.5 percent) backyard flocks.

a. Percentage of backyard flocks where raccoons, foxes, skunks, or possums had access to or near bird areas, by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
67.0	(3.7)	71.4	(6.2)	59.3	(5.2)	60.0	(9.3)	62.5	(3.6)

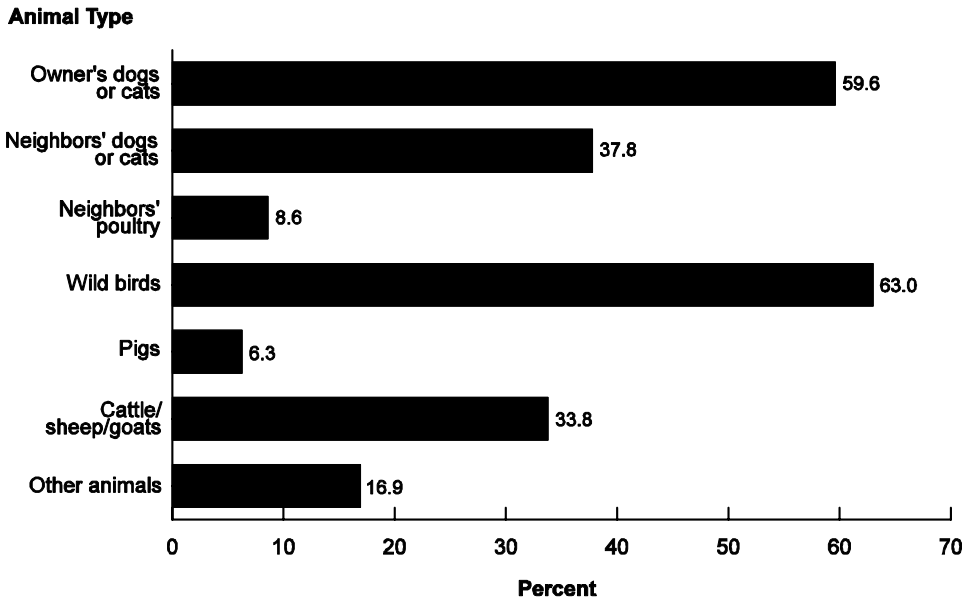
Domestic birds had contact with wild birds in 63.0 percent of backyard flocks and with neighbors' poultry in 8.6 percent of backyard flocks. "Other animals" consisted primarily of horses and wildlife.

b. Percentage of backyard flocks where birds had contact with other animals, by type of animal and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Animal Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Owner's dogs or cats	67.2	(8.9)	72.3	(6.6)	56.5	(5.2)	53.9	(6.6)	59.6	(3.9)
Neighbors' dogs or cats	51.0	(6.7)	58.1	(9.4)	25.6	(4.9)	34.6	(6.6)	37.8	(3.5)
Neighbors' poultry	16.2	(6.8)	11.5	(5.8)	2.0	(1.1)	7.6	(3.3)	8.6	(2.5)
Wild birds	63.0	(5.6)	74.7	(6.3)	60.3	(5.7)	64.2	(8.9)	63.0	(3.9)
Pigs	7.0	(2.5)	9.0	(4.5)	9.1	(3.2)	2.4	(1.5)	6.3	(1.4)
Cattle/sheep/goats	31.2	(5.7)	48.3	(10.3)	34.4	(5.4)	33.9	(7.1)	33.8	(3.4)
Other animals	13.7	(4.8)	22.1	(4.3)	23.4	(4.8)	12.9	(4.0)	16.9	(2.5)

Photo: Judy Rodriguez

Percentage of Backyard Flocks Where Birds Had Contact with Other Animals, by Type of Animal



The frequency with which rodents were observed in backyard flocks was similar across regions. Rodents were never observed in 27.8 percent of backyard flocks.

c. Percentage of backyard flocks by frequency that rodents (or evidence of rodents) were observed in bird areas and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Frequency	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Usually	9.0	(3.8)	16.5	(6.4)	6.5	(2.6)	2.7	(1.6)	6.4	(1.6)
Sometimes	30.8	(6.4)	30.0	(6.9)	38.2	(4.6)	27.4	(7.0)	32.0	(3.4)
Rarely	36.1	(4.9)	38.1	(7.4)	29.3	(4.8)	35.3	(6.5)	33.8	(3.1)
Never	24.1	(6.3)	15.4	(6.8)	26.0	(4.3)	34.6	(6.8)	27.8	(3.3)
Total	100.0		100.0		100.0		100.0		100.0	

Use of any rodent control ranged from 59.0 percent of backyard flocks in the East region to 84.5 percent of backyard flocks in the Midwest region. The most common rodent control methods used were cats (36.4 percent of backyard flocks) and bait (32.0 percent of backyard flocks).

d. Percentage of backyard flocks by type of rodent control methods used in bird areas and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Type of Control	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Bait	26.6	(4.4)	31.5	(6.2)	31.8	(4.7)	37.6	(7.0)	32.0	(3.1)
Traps and sticky tape	16.3	(4.6)	12.2	(4.9)	12.8	(3.7)	10.7	(3.3)	13.2	(2.2)
Cats	34.7	(6.5)	60.9	(8.4)	38.6	(4.8)	32.5	(7.9)	36.4	(3.7)
Dogs	25.7	(6.7)	37.4	(8.3)	12.8	(3.1)	27.2	(8.4)	22.5	(3.6)
Professional exterminator	1.8	(1.7)	0.6	(0.6)	1.9	(1.8)	0.4	(0.4)	1.3	(0.8)
Other	2.2	(1.5)	0.0	(--)	3.7	(2.2)	1.0	(0.7)	2.2	(0.9)
Any	68.2	(4.2)	84.5	(7.7)	59.0	(5.6)	66.1	(6.2)	65.2	(3.0)

Backyard flocks that usually or sometimes observed rodents were more likely to use a method of rodent control than backyard flocks that rarely or never observed rodents.

e. Percentage of backyard flocks by rodent control methods used in bird areas and by frequency of observing rodents:

	Percent Backyard Flocks			
	Frequency of Observing Rodents			
	Usually/Sometimes		Rarely/Never	
Control Method	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Bait	41.3	(4.8)	26.2	(4.7)
Traps and sticky tape	20.7	(4.3)	8.6	(2.3)
Cats	39.8	(6.1)	34.4	(4.6)
Dogs	31.2	(6.3)	16.9	(3.8)
Professional exterminator	0.0	(--)	2.2	(1.3)
Other	3.0	(1.5)	1.8	(1.1)
Any of the above	77.5	(5.0)	57.6	(4.2)

C. Health and Health Care

1. Veterinary services

Use of veterinary services was rare in backyard flocks for all regions (2.9 percent of backyard flocks overall).

a. Percentage of backyard flocks where a veterinarian examined any bird(s) for any reason in the previous 12 months, by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
3.6	(2.0)	5.8	(3.3)	3.6	(2.0)	1.2	(1.2)	2.9	(1.0)

As flock size increased, the percentage of backyard flocks that used veterinary services increased.

b. Percentage of backyard flocks where a veterinarian examined any bird(s) for any reason in the previous 12 months, by flock size:

Percent Premises					
Flock Size (Number of Birds)					
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
0.0	(--)	6.0	(2.3)	11.0	(7.1)

2. Medication

Nearly one in three backyard flocks (27.1 percent) obtained medication for birds in the previous 12 months. The most common source of medication was “farm or feed store” (24.4 percent of backyard flocks).

a. Percentage of backyard flocks by source of bird medication in the previous 12 months and by region:

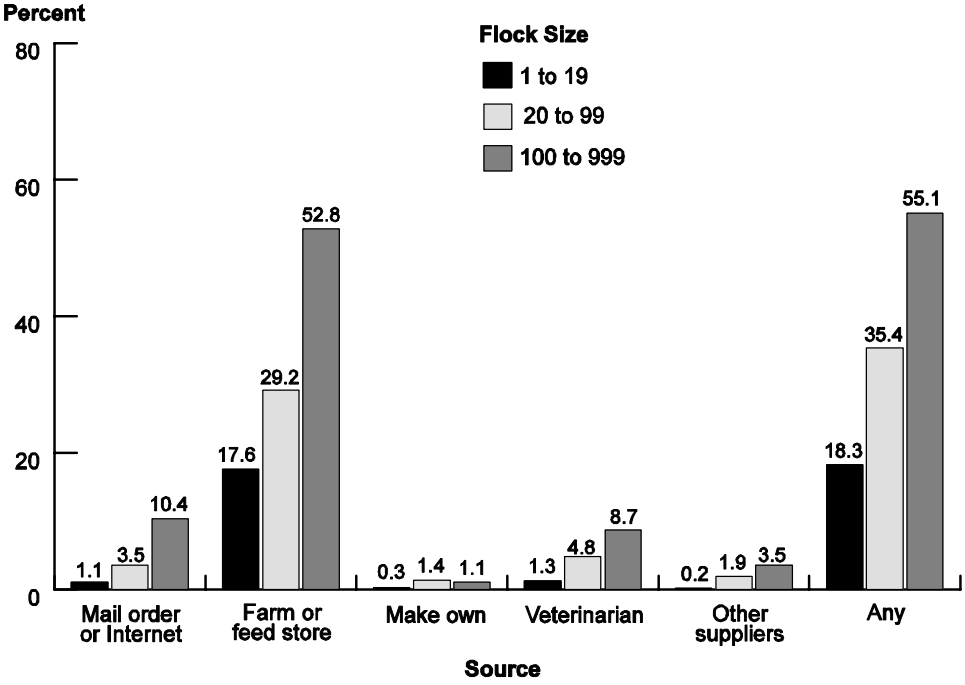
Percent Backyard Flocks										
	Region									
	Southwest		**Midwest**		**East**		**Southeast**		**All**	
Source	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Mail order or Internet	2.4	(1.8)	0.0	(--)	2.7	(1.4)	3.3	(1.5)	2.7	(0.9)
Farm or feed store	34.1	(6.4)	21.0	(7.4)	20.6	(5.5)	19.5	(5.0)	24.4	(3.4)
Make own	0.9	(0.6)	1.5	(1.5)	0.6	(0.5)	0.6	(0.4)	0.7	(0.3)
Veterinarian	4.7	(2.5)	3.2	(2.7)	3.1	(2.0)	1.5	(1.3)	3.1	(1.1)
Other suppliers	2.8	(1.5)	1.5	(1.5)	0.0	(--)	0.3	(0.3)	1.0	(0.5)
Any	36.9	(6.6)	24.2	(6.3)	22.5	(5.5)	22.7	(5.6)	27.1	(3.5)

As flock size increased, the percentage of backyard flocks that obtained medication increased. More than half of large backyard flocks obtained medication from farm stores or feed stores.

b. Percentage of backyard flocks by source of bird medication in the previous 12 months and by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Source	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Mail order or Internet	1.1	(0.6)	3.5	(1.5)	10.4	(6.2)
Farm or feed store	17.6	(3.7)	29.2	(5.9)	52.8	(14.4)
Make own	0.3	(0.2)	1.4	(0.7)	1.1	(0.9)
Veterinarian	1.3	(1.1)	4.8	(2.3)	8.7	(6.9)
Other suppliers	0.2	(0.2)	1.9	(1.1)	3.5	(3.6)
Any	18.3	(3.8)	35.4	(5.9)	55.1	(14.7)

Percentage of Backyard Flocks by Source of Bird Medication in the Previous 12 Months and by Flock Size



Antibiotic use ranged from 0.5 percent of backyard flocks in the Midwest region to 16.8 percent of backyard flocks in the Southwest region. “Other” medications consisted primarily of deworming medication and oral vitamins.

c. Percentage of backyard flocks that administered medication to the flock in the previous 12 months, by medication and by region:

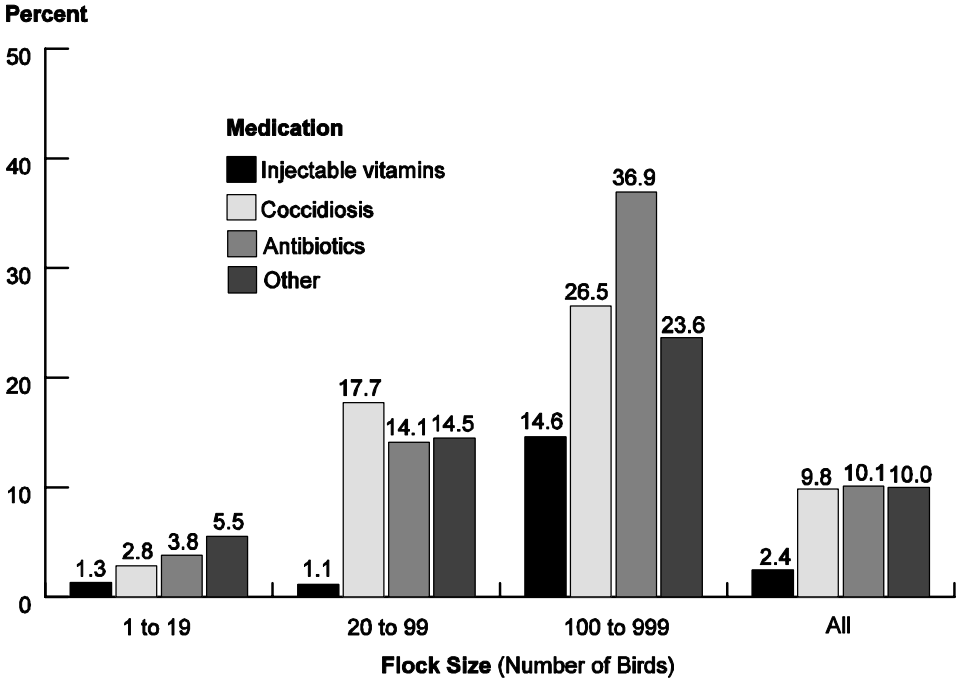
	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Medication	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Injectable vitamins	2.3	(1.3)	1.4	(1.4)	3.2	(2.2)	1.8	(1.1)	2.4	(0.9)
Coccidiosis prevention or treatment	9.2	(3.4)	5.1	(2.9)	6.9	(2.8)	13.7	(6.3)	9.8	(2.5)
Antibiotics for disease treatment	16.8	(3.7)	0.5	(0.5)	7.7	(3.1)	7.2	(2.3)	10.1	(1.8)
Other medication	12.3	(3.4)	7.6	(3.9)	8.3	(3.7)	9.8	(6.0)	10.0	(2.5)

Use of medications increased as flock size increased.

d. Percentage of backyard flocks that administered medication to the flock in the previous 12 months, by medication and by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Medication	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Injectable vitamins	1.3	(0.8)	1.1	(0.7)	14.6	(8.6)
Coccidiosis prevention or treatment	2.8	(1.1)	17.7	(6.0)	26.5	(10.7)
Antibiotics for disease treatment	3.8	(1.3)	14.1	(3.7)	36.9	(11.1)
Other medication	5.5	(2.1)	14.5	(5.9)	23.6	(8.6)

Percentage of Backyard Flocks That Administered Medication to the Flock in the Previous 12 Months, by Medication and by Flock Size



3. Vaccinations

Vaccinations were given by only 2.8 percent of backyard flocks.

a. Percentage of backyard flocks that vaccinated any birds in the previous 12 months, by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
4.1	(2.9)	3.7	(2.4)	1.7	(1.3)	2.5	(1.2)	2.8	(1.1)

Administration of vaccines increased as flock size increased.

b. Percentage of backyard flocks that vaccinated any birds in the previous 12 months, by flock size:

Percent Backyard Flocks					
Flock Size (Number of Birds)					
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
0.0	(--)	5.7	(2.8)	10.3	(6.1)

c. (B150) Percentage of backyard flocks that vaccinated any birds in the previous 12 months, by presence of chickens:

Percent Backyard Flocks			
Chickens Present[1]		Chickens Not Present	
Percent	Standard Error	Percent	Standard Error
2.4	(1.1)	6.3	(4.1)

[1]Based on inventory on day of interview

Just over 1 percent of backyard flock owners vaccinated against each of the diseases listed below.

d. Percentage of backyard flocks by vaccine used in the previous 12 months:

Vaccine	Percent Backyard Flocks	Standard Error
Newcastle disease	1.4	(1.0)
Laryngotracheitis	1.2	(0.9)
Pox	1.6	(1.0)
Infectious bronchitis	1.1	(0.9)
Infectious bursal disease	1.1	(0.9)
Mycoplasma gallisepticum	1.0	(0.9)
Avian encephalomyelitis	1.1	(0.9)
Fowl cholera	1.1	(0.9)
Other	1.8	(1.0)

Two-thirds of backyard flocks that vaccinated birds (66.2 percent) did not hatch eggs, while 18.8 percent hatched eggs and vaccinated chicks for Marek's disease, and 15.0 percent hatched eggs but did not vaccinate chicks. Overall, 0.5 percent of backyard flocks vaccinated chicks for Marek's disease.

e. For backyard flocks that vaccinated any birds, percentage that vaccinated chicks against Marek's disease:

Vaccination Practices	Percent Backyard Flocks	Standard Error
Hatched chicks and vaccinated chicks against Marek's disease	18.8	(13.0)
Hatched chicks and did not vaccinate chicks against Marek's disease	15.0	(8.9)
Did not hatch chicks	66.2	(16.9)
Total	100.0	

Photo: USDA photo library

f. Percentage of all backyard flocks that vaccinated chicks against Marek's disease:

Percent Backyard Flocks	Standard Error
0.5	(0.3)

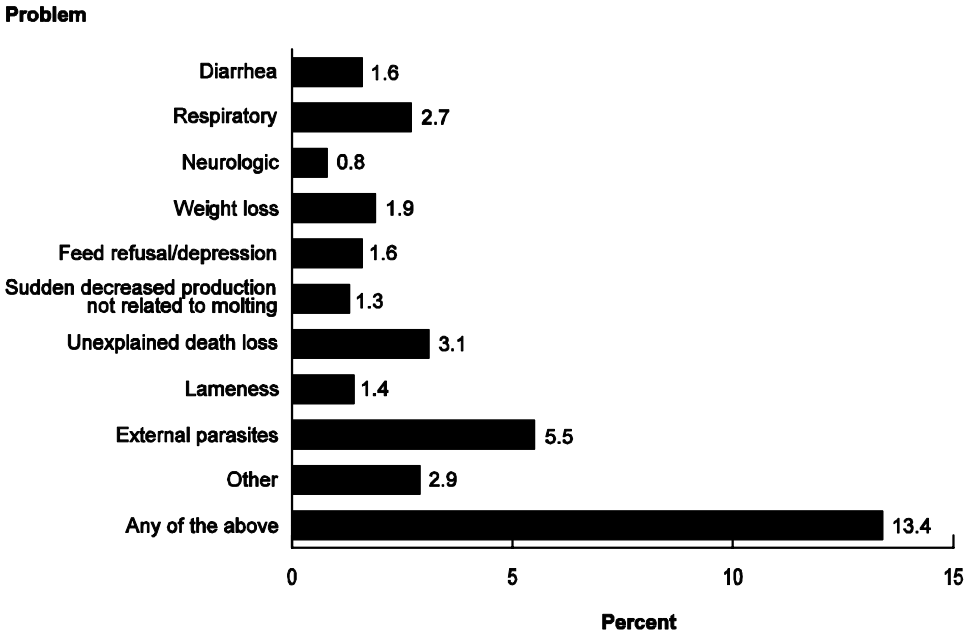
4. Bird health

External parasites were the most common health problem reported (5.5 percent of backyard flocks).

a. Percentage of backyard flocks that had health problems in their flocks in the 3 months prior to the interview, by type of problem and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Problem	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Diarrhea	3.0	(1.8)	0.0	(--)	0.5	(0.5)	1.5	(1.0)	1.6	(0.7)
Respiratory (nasal/eye discharge, cough/sneeze, swollen sinuses)	4.4	(2.8)	0.0	(--)	2.4	(1.8)	1.8	(1.1)	2.7	(1.1)
Neurologic (lack of coordination, weakness)	0.1	(0.1)	0.0	(--)	1.9	(1.8)	0.6	(0.4)	0.8	(0.6)
Weight loss	1.6	(1.5)	0.0	(--)	1.9	(1.8)	2.6	(1.5)	1.9	(0.9)
Feed refusal/depression (droopy birds)	2.0	(1.5)	0.0	(--)	2.1	(1.8)	1.0	(0.6)	1.6	(0.8)
Sudden decreased production not related to molting (reduced egg laying, hatching rate, or weight gain)	1.9	(1.7)	7.3	(5.1)	1.2	(0.6)	0.0	(--)	1.3	(0.6)
Unexplained death loss	3.6	(1.9)	3.0	(3.2)	4.4	(2.0)	1.4	(1.0)	3.1	(1.0)
Lameness	0.1	(0.1)	2.8	(2.9)	2.7	(1.3)	1.3	(1.0)	1.4	(0.5)
External parasites (mites, lice, etc.)	4.8	(2.2)	2.1	(2.0)	2.3	(1.7)	9.8	(5.9)	5.5	(2.1)
Other	2.7	(1.8)	16.3	(10.0)	0.4	(0.3)	3.8	(3.1)	2.9	(1.3)
Any of the above	10.6	(3.3)	31.6	(9.1)	9.2	(2.6)	17.8	(5.8)	13.4	(2.4)

Percentage of Backyard Flocks That had Health Problems in Their Flocks in the 3 Months Prior to the Interview, by Type of Problem



In general, reported health problems increased as flock size increased. Nearly one-fourth of large backyard flocks (21.4 percent) reported respiratory problems.

b. Percentage of backyard flocks that had problems in their flocks in the 3 months prior to the interview, by type of problem and by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Problem	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Diarrhea	0.5	(0.3)	3.0	(1.9)	3.6	(3.4)
Respiratory (nasal/eye discharge, cough/sneeze, swollen sinuses)	0.4	(0.2)	2.1	(1.4)	21.4	(9.5)
Neurologic (lack of coordination, weakness)	0.2	(0.2)	0.2	(0.3)	7.4	(6.9)
Weight loss	0.2	(0.2)	1.4	(1.1)	16.2	(9.3)
Feed refusal/depression (droopy birds)	0.4	(0.2)	0.7	(0.5)	13.7	(8.7)
Sudden decreased production not related to molting (reduced egg laying, hatching rate, or weight gain)	0.6	(0.5)	2.6	(1.7)	0.3	(0.3)
Unexplained death loss	1.5	(0.7)	5.0	(2.2)	7.4	(6.9)
Lameness	0.7	(0.5)	3.0	(1.4)	0.0	(--)
External parasites (mites, lice, etc.)	0.9	(0.6)	11.9	(5.9)	12.3	(6.6)
Other	3.6	(1.9)	0.6	(0.5)	6.7	(5.6)
Any of the above	7.3	(2.1)	21.7	(5.7)	23.2	(9.7)

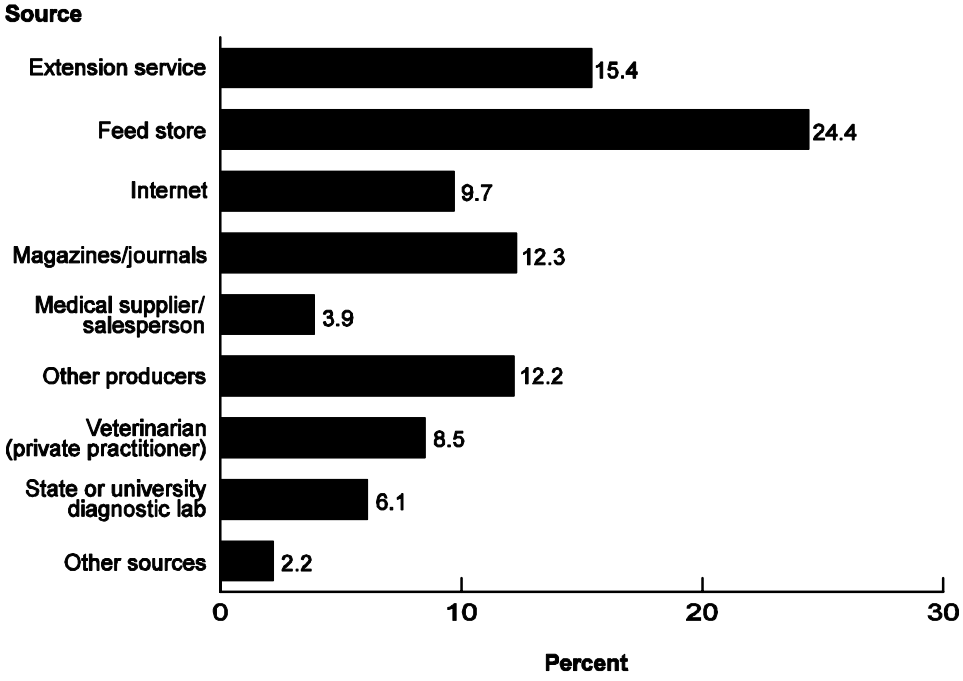
5. Health resources

Feed stores were the most important health-information source for backyard flocks (24.4 percent ranked feed stores very important). The Internet was ranked very important by 9.7 percent of backyard flock owners.

a. Percentage of backyard flocks by level of importance of the following sources of bird-health information:

	Percent Backyard Flocks						
	Importance of Source						
	Very Important		Somewhat Important		Not Important		
Source of Information	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Total**
Extension service	15.4	(3.7)	18.7	(2.3)	65.9	(3.8)	100.0
Feed store	24.4	(3.1)	30.4	(3.3)	45.2	(3.4)	100.0
Internet	9.7	(1.8)	8.3	(1.8)	82.0	(2.6)	100.0
Magazines/journals	12.3	(3.0)	17.6	(2.4)	70.1	(3.6)	100.0
Medical supplier/ salesperson	3.9	(1.5)	9.2	(2.4)	86.9	(3.0)	100.0
Other producers	12.2	(2.9)	23.7	(2.8)	64.1	(3.8)	100.0
Veterinarian (private practitioner)	8.5	(2.5)	11.3	(2.1)	80.2	(3.3)	100.0
State or university diagnostic lab	6.1	(2.3)	7.7	(1.6)	86.2	(2.6)	100.0
Other sources	2.2	(0.8)	1.7	(1.1)	96.1	(1.3)	100.0

Percentage of Backyard Flocks That Ranked the Following Sources of Bird-Health Information Very Important



The highest percentage of large backyard flocks reported that other producers and magazines/journals were very important sources of bird-health information, while the highest percentage of medium and small backyard flocks ranked feed stores as very important.

b. Percentage of backyard flocks that ranked bird-health information sources as very important, by source of information and by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Source of Information	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Extension service	16.3	(4.4)	12.7	(5.8)	20.1	(11.8)
Feed store	23.7	(3.7)	24.0	(5.9)	30.9	(9.6)
Internet	7.7	(2.3)	12.0	(3.4)	14.9	(7.7)
Magazines/journals	8.2	(2.5)	11.2	(5.6)	44.9	(13.6)
Medical supplier/ salesperson	4.1	(1.9)	3.7	(2.2)	3.5	(3.6)
Other producers	9.6	(2.7)	8.1	(3.1)	44.8	(13.5)
Veterinarian (private practitioner)	9.9	(2.9)	5.7	(2.1)	10.0	(6.1)
State or university diagnostic lab	5.7	(2.1)	6.7	(5.6)	6.7	(5.9)
Other sources	2.2	(1.2)	2.6	(1.3)	0.3	(0.3)

Importance of information sources was similar for backyard flocks with and without chickens.

c. Percentage of backyard flocks that ranked sources of bird health information very important, by source of information and by presence of chickens on the premises:

	Percent Backyard Flocks			
	Chickens Present[1]		Chickens Not Present	
Source of Information	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Extension service	15.7	(4.0)	13.2	(7.2)
Feed store	24.2	(3.3)	27.0	(8.8)
Internet	8.1	(1.8)	25.4	(8.7)
Magazines/journals	11.4	(3.2)	21.9	(8.0)
Medical supplier/ salesperson	3.9	(1.6)	4.2	(4.1)
Other producers	11.8	(3.1)	15.4	(7.2)
Veterinarian (private practitioner)	8.8	(2.8)	6.0	(4.3)
State or university diagnostic lab	6.2	(2.5)	5.4	(4.2)
Other sources	2.1	(0.9)	2.7	(1.8)

[1]Based on inventory on day of interview

About half of backyard flocks found bird health-care products and services readily available (score = 5).

d. On a scale of 1 to 5, with 1 being unavailable and 5 being readily available, percentage of backyard flocks by availability of products/services for birds (whether or not they are used):

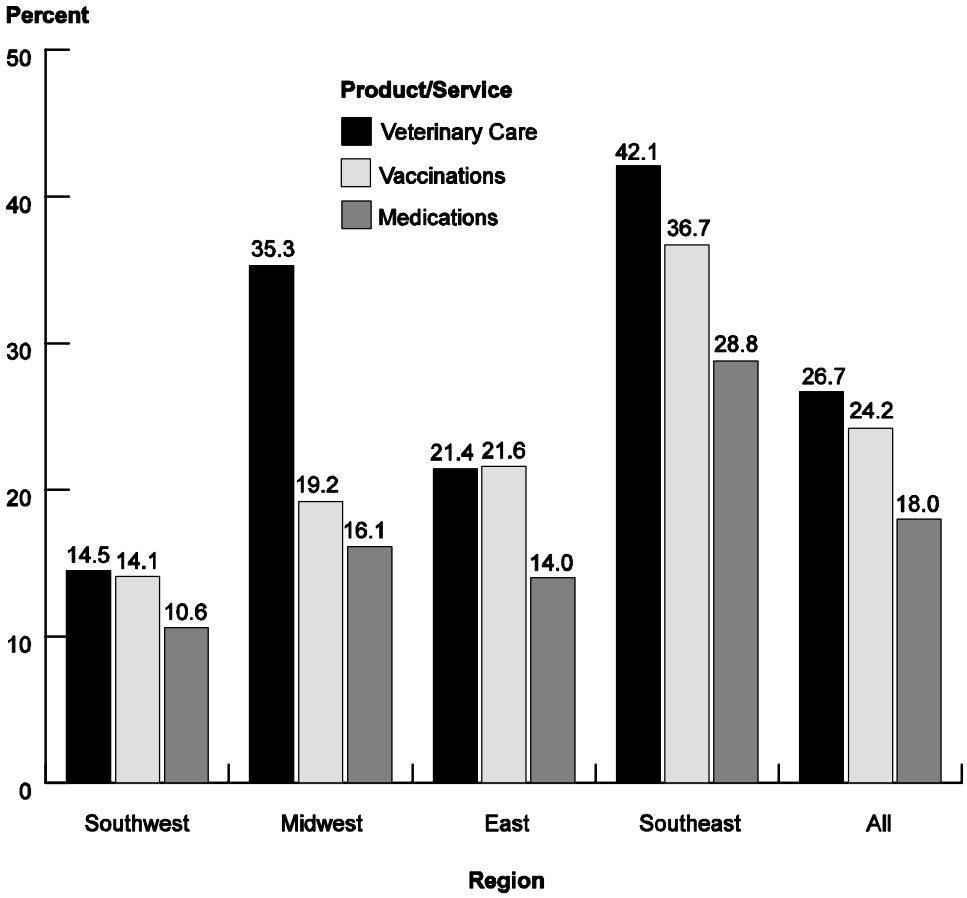
	Percent Backyard Flocks					
	Product/Service					
	Veterinary Care		Vaccinations		Medications	
Score	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
1 Not available	21.9	(5.0)	18.5	(4.7)	14.0	(4.6)
2	4.8	(1.3)	5.7	(1.4)	4.0	(1.2)
3	14.7	(2.6)	18.3	(3.2)	18.7	(3.3)
4	9.4	(2.6)	11.5	(2.7)	12.2	(2.7)
5 Readily available	49.2	(4.8)	46.0	(4.5)	51.1	(4.6)
Total	100.0		100.0		100.0	

Backyard flocks in the Southeast region reported the most difficulty obtaining products/services.

e. Percentage of backyard flocks where availability of products/services for birds was ranked low (score = 1 or 2), by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Product/Service	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Veterinary care	14.5	(4.5)	35.3	(10.9)	21.4	(6.0)	42.1	(10.9)	26.7	(4.9)
Vaccinations	14.1	(4.5)	19.2	(7.3)	21.6	(5.7)	36.7	(11.1)	24.2	(4.8)
Medications	10.6	(3.6)	16.1	(8.2)	14.0	(5.1)	28.8	(11.3)	18.0	(4.6)

Percentage of Backyard Flocks Where Availability of Products/Services for Birds Was Low (Score = 1 or 2), by Region



Small flocks reported more difficulty obtaining products/services (especially medications) compared to large flocks.

f. Percentage of backyard flocks where availability of products/services for birds was ranked low (score = 1 or 2), by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Product/Service	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Veterinary care	29.2	(6.2)	25.1	(5.3)	15.0	(6.8)
Vaccinations	25.7	(5.9)	23.2	(5.3)	18.0	(8.3)
Medications	20.1	(5.8)	17.8	(5.0)	4.2	(4.1)

g. Percentage of backyard flocks where availability of products/services for birds was low (score = 1 or 2), by presence of chickens on the premises:

	Percent Backyard Flocks			
	Chickens Present[1]		Chickens Not Present	
Product/Service	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Veterinary care	27.3	(5.3)	20.0	(8.0)
Vaccinations	24.8	(5.1)	19.0	(7.9)
Medications	18.6	(4.9)	11.9	(6.6)

[1]Based on inventory on day of interview

D. Biosecurity

1. Dedicated footwear and clothing

Overall, 88.6 percent of backyard flocks had no precautions that required dedicated footwear be worn by anyone entering bird areas.

a. Percentage of backyard flocks by primary type of footwear precautions required of anyone entering the bird area:

Precaution	Percent Backyard Flocks	Standard Error
Boots or shoes worn only in bird area	9.0	(2.0)
Disposable boot or shoe covers	0.6	(0.4)
Use of footbath before or after entry	0.1	(0.0)
Scrub boots/shoes before or after entry	1.3	(0.5)
Combination of above	0.4	(0.3)
No requirements	88.6	(2.0)
Total	100.0	

More than 9 out of 10 backyard flocks (96.5 percent) never required anyone to wear dedicated clothing in bird areas. Only 1.2 percent of backyard flocks always required visitors to wear designated clothing in bird areas.

b. Percentage of backyard flocks that required visitors to wear dedicated clothing in bird areas, by frequency of requiring dedicated clothing:

Frequency	Percent Backyard Flocks	Standard Error
Always	1.2	(0.5)
Sometimes	2.3	(1.0)
Never	96.5	(1.1)
Total	100.0	

2. Hand washing

Only 10.9 percent of backyard flocks always required hand washing ***before*** handling birds, while hand washing ***after*** handling birds was always required by 40.2 percent of backyard flocks.

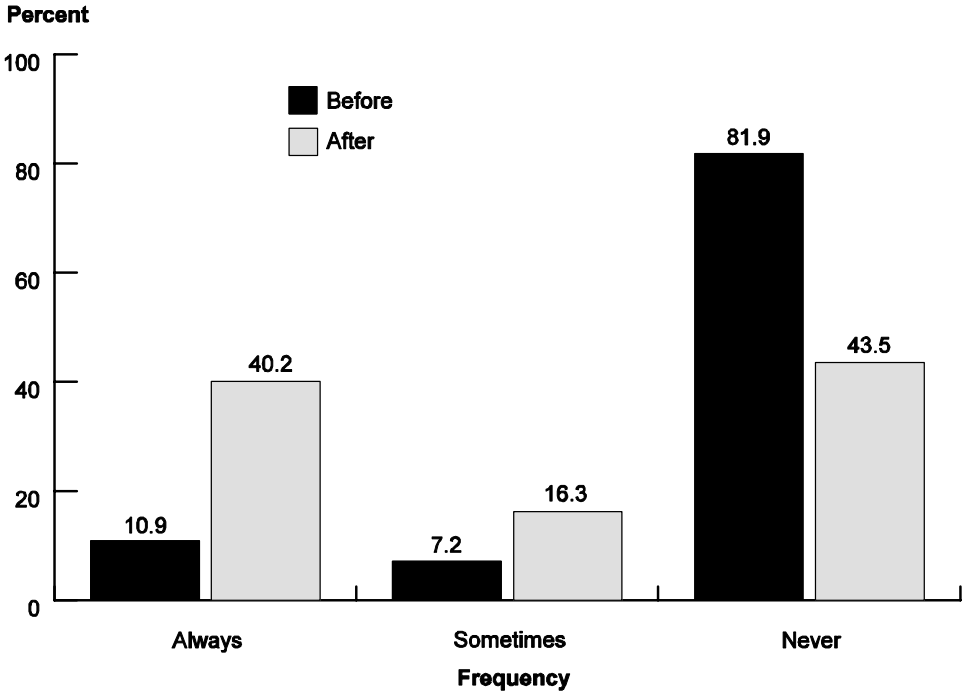
a. Percentage of backyard flocks that required hand washing ***before*** handling poultry, by frequency and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Frequency	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Always	10.7	(3.4)	8.1	(5.0)	13.4	(4.5)	9.1	(3.3)	10.9	(2.1)
Sometimes	11.1	(3.5)	5.0	(3.5)	8.2	(3.2)	2.9	(1.4)	7.2	(1.6)
Never	78.2	(4.2)	86.9	(5.2)	78.4	(5.4)	88.0	(3.7)	81.9	(2.6)
Total	100.0		100.0		100.0		100.0		100.0	

b. Percentage of backyard flocks that required hand washing ***after*** handling poultry, by frequency and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Frequency	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Always	38.3	(6.3)	24.6	(6.7)	53.7	(6.2)	30.8	(7.7)	40.2	(4.0)
Sometimes	26.5	(7.6)	27.5	(7.4)	14.3	(3.1)	6.9	(2.8)	16.3	(2.9)
Never	35.2	(4.6)	47.9	(7.2)	32.0	(5.3)	62.3	(8.2)	43.5	(4.0)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Backyard Flocks that Required Hand Washing Before/After Handling Poultry, by Frequency



3. Visitors

Approximately half of backyard flocks (53.5 percent) never allowed visitors in bird areas. For backyard flocks that did allow visitors, 14.7 percent always or sometimes asked visitors about previous contact with other birds.

a. Percentage of backyard flocks where visitors such as neighbors, repairmen, meter readers, etc., were allowed in poultry areas, by frequency and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Frequency	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Always	37.1	(8.2)	27.6	(10.3)	15.6	(3.8)	24.1	(6.5)	25.4	(3.6)
Sometimes	17.4	(4.6)	21.3	(7.2)	29.2	(3.9)	16.2	(4.4)	21.1	(2.4)
Never	45.5	(6.7)	51.1	(13.4)	55.2	(4.5)	59.7	(9.2)	53.5	(4.0)
Total	100.0		100.0		100.0		100.0		100.0	

b. Percentage of backyard flocks where visitors such as neighbors, repairmen, meter readers, etc., were allowed in poultry areas, by frequency and by flock size:

	Percent Backyard Flocks					
	Flock Size (Number or Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Frequency	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Always	29.7	(4.8)	21.2	(5.1)	13.7	(6.9)
Sometimes	17.4	(3.3)	27.7	(5.2)	20.1	(7.0)
Never	52.9	(5.0)	51.1	(5.6)	66.2	(10.0)
Total	100.0		100.0		100.0	

c. For backyard flocks where visitors were allowed in the bird area, percentage of backyard flocks that asked about contact with other birds before visitors were allowed in bird area:

Percent Backyard Flocks						
How Frequently Asked						
Always		Sometimes		Never		
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error	Total
3.9	(1.9)	10.8	(2.9)	85.3	(4.0)	100.0

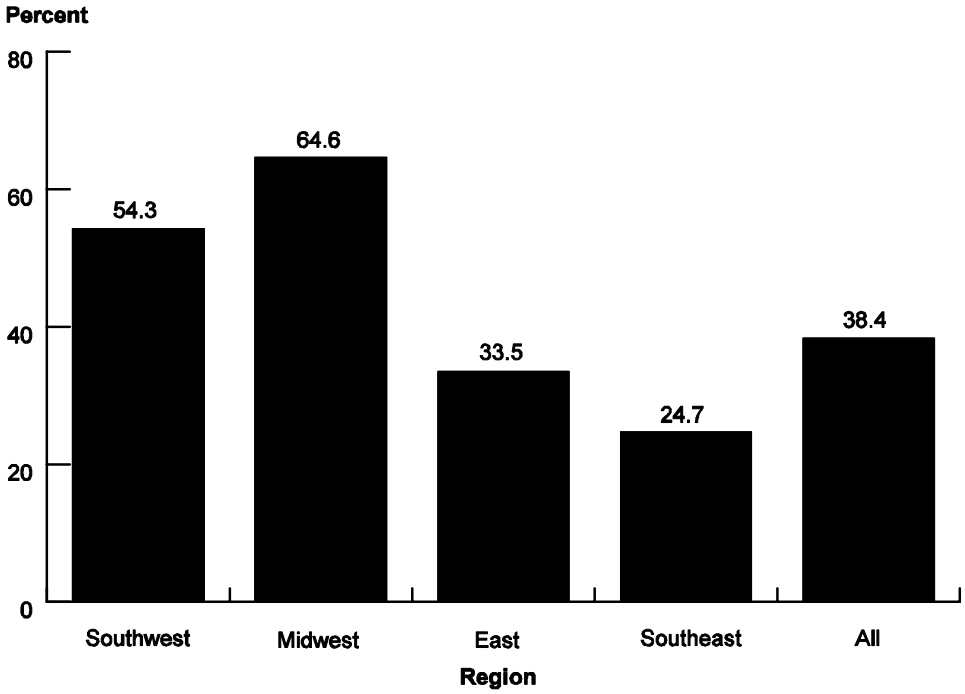
4. Ponds and bird feeders

Ponds that attract wild waterfowl were present in 64.6 percent of backyard flocks in the Midwest region versus 24.7 percent of backyard flocks in the Southeast region. Commercial broiler flocks had the highest percentage of backyard flocks surrounding them with ponds present (43.2 percent) and turkey operations had the fewest (20.2 percent), which may be related to regional differences.

a. Percentage of backyard flocks with a pond on the property that attracts wild waterfowl, by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
54.3	(5.3)	64.6	(8.6)	33.5	(4.1)	24.7	(7.3)	38.4	(3.6)

Percentage of Backyard Flocks with a Pond on the Property That Attracts Wild Waterfowl, by Region



b. Percentage of backyard flocks with a pond on the property that attracts wild waterfowl, by type of commercial operation at center of sampling circle:

Percent Backyard Flocks					
Type of Operation					
Broilers		Layers		Turkeys	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
43.2	(4.2)	34.8	(5.5)	20.2	(8.5)

Over half of backyard flocks (52.4 percent) that raised domestic waterfowl had a pond on the property that attracted wild waterfowl.

c. Percentage of backyard flocks with a pond on the property that attracts wild waterfowl, by presence of domestic waterfowl:

Percent Backyard Flocks			
Waterfowl Present		No Waterfowl	
Percent	Standard Error	Percent	Standard Error
52.4	(5.6)	34.1	(4.6)

Photo: Judy Rodriguez

Wild-bird feeders were on the property of 40.0 percent of backyard flocks.

d. Percentage of backyard flocks with a wild-bird feeder on the property, by region:

Percent Backyard Flock									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
36.0	(5.2)	43.2	(7.3)	48.6	(5.7)	34.8	(8.7)	40.0	(3.8)

E. Bird Movement

1. Introduction of birds

Fertilized eggs for hatching were brought into 8.2 percent of backyard flocks in the previous 12 months.

a. Percentage of backyard flocks where fertilized eggs for hatching were brought into the flock in the previous 12 months, by region:

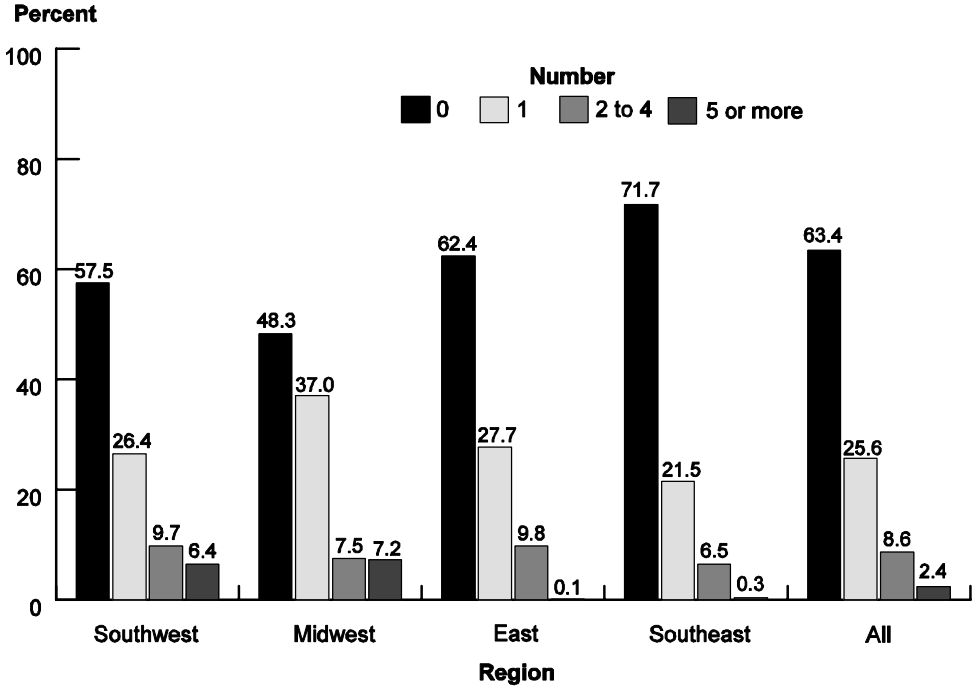
Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
10.8	(3.5)	8.3	(3.7)	8.1	(3.3)	5.9	(3.1)	8.2	(1.8)

The percentage of backyard flocks that had one or more introductions of new birds ranged from 28.3 percent in the Southeast region to 51.7 percent in the Midwest region.

b. Percentage of backyard flocks by number of times in the previous 12 months new birds were introduced into the flock, by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Number	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
0	57.5	(5.5)	48.3	(6.5)	62.4	(4.8)	71.7	(7.9)	63.4	(3.7)
1	26.4	(5.7)	37.0	(7.9)	27.7	(4.5)	21.5	(7.2)	25.6	(3.4)
2 to 4	9.7	(3.0)	7.5	(5.4)	9.8	(3.2)	6.5	(2.6)	8.6	(1.7)
5 or more	6.4	(2.9)	7.2	(4.0)	0.1	(0.1)	0.3	(0.3)	2.4	(0.9)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Backyard Flocks by Number of Times in the Previous 12 Months New Birds Were Introduced into the Flock, by Region

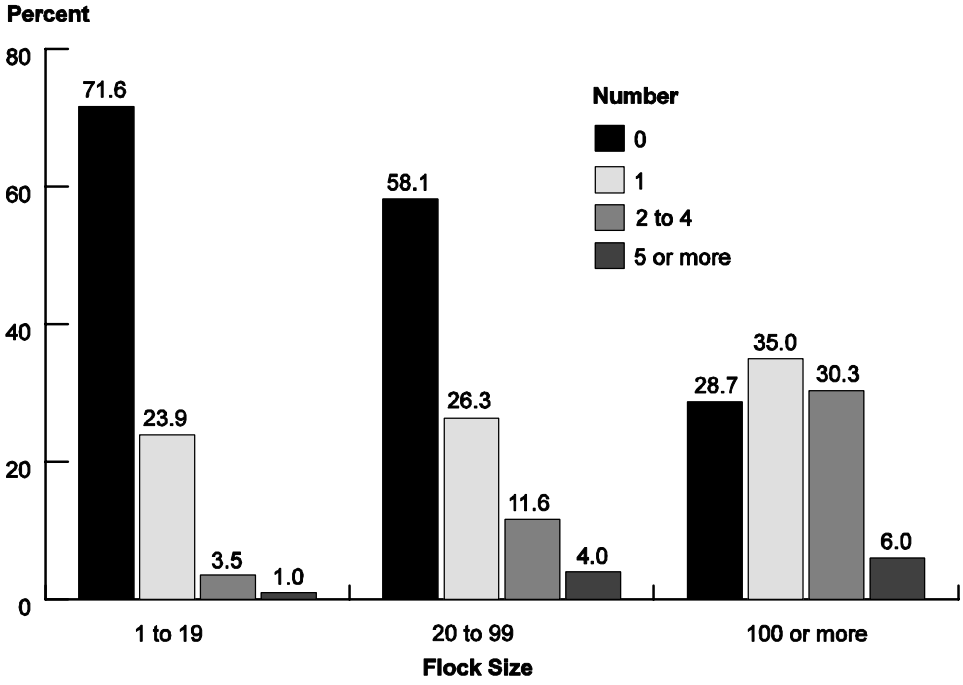


Numbers of introductions increased as flock size increased. More than two-thirds of large backyard flocks (71.3 percent) had one or more bird introductions during the previous 12 months, compared to 41.9 and 28.4 percent of medium and small flocks, respectively.

c. Percentage of backyard flocks by number of times in the previous 12 months new birds were introduced into the flock, by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Number	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
0	71.6	(4.0)	58.1	(6.0)	28.7	(10.0)
1	23.9	(3.8)	26.3	(5.6)	35.0	(15.1)
2 to 4	3.5	(1.2)	11.6	(2.9)	30.3	(10.3)
5 or more	1.0	(1.0)	4.0	(1.7)	6.0	(5.5)
Total	100.0		100.0		100.0	

Percentage of Backyard Flocks by Number of Times in the Previous 12 Months New Birds Were Introduced into the Flock, by Flock Size



For backyard flocks that introduced new birds in the previous 12 months, a similar percentage brought on day-old chicks, young stock, and adult birds (38.2, 43.0, and 36.6 percent of backyard flocks, respectively).

d. For backyard flocks that introduced new birds in the previous 12 months, percentage of backyard flocks by age group of birds introduced:

Percent Backyard Flocks					
Age Group					
Day-Old Chicks		**Young Stock** (Not Yet Reproductive Age)		**Adult Birds** (Reproductive Age)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
38.2	(5.0)	43.0	(5.8)	36.6	(5.2)

Half of the backyard flocks (49.9 percent) that introduced new birds in the previous 12 months had no other birds onsite at the time birds were introduced; 29.2 percent isolated the new additions from the rest of the flock, and 20.9 percent placed new arrivals with the existing flock.

e. For backyard flocks that introduced new birds in the previous 12 months, percentage of backyard flocks that usually separated or quarantined new birds from the rest of the flock upon arrival:

Separated New Birds	Percent Backyard Flocks	Standard Error
Yes	29.2	(5.0)
No	20.9	(4.8)
No other birds present on arrival	49.9	(5.7)
Total	100.0	

More than two-thirds (68.5 percent) of backyard flocks that isolated new arrivals did so for 21 days or longer.

f. For backyard flocks that separated or quarantined new birds, percentage of backyard flocks by days separated or quarantined:

Days Separated	Percent Backyard Flocks	Standard Error
1 to 6	7.5	(3.9)
7 to 20	24.0	(7.2)
21 to 30	31.3	(8.7)
31 or more	37.2	(9.2)
Total	100.0	

The majority of backyard flocks with new flock additions (60.0 percent) obtained the new birds from within their same county. Obtaining birds from outside the United States was extremely rare (0.2 percent of backyard flocks).

g. For backyard flocks that introduced new birds in the previous 12 months, percentage of backyard flocks by source location of new birds:

Location	Percent Backyard Flocks	Standard Error
Within same county	60.0	(5.1)
Outside premises county but within State	29.3	(4.6)
Outside State but within the United States	22.0	(5.1)
Outside the United States	0.2	(0.2)

Although 22.2 percent of backyard flocks with new arrivals obtained birds from outside their State or outside the United States (table g), less than 10 percent reported that any birds came with a health certificate.

h. For backyard flocks that introduced new birds in the previous 12 months, percentage of backyard flocks by proportion of new birds that came with a health certificate:

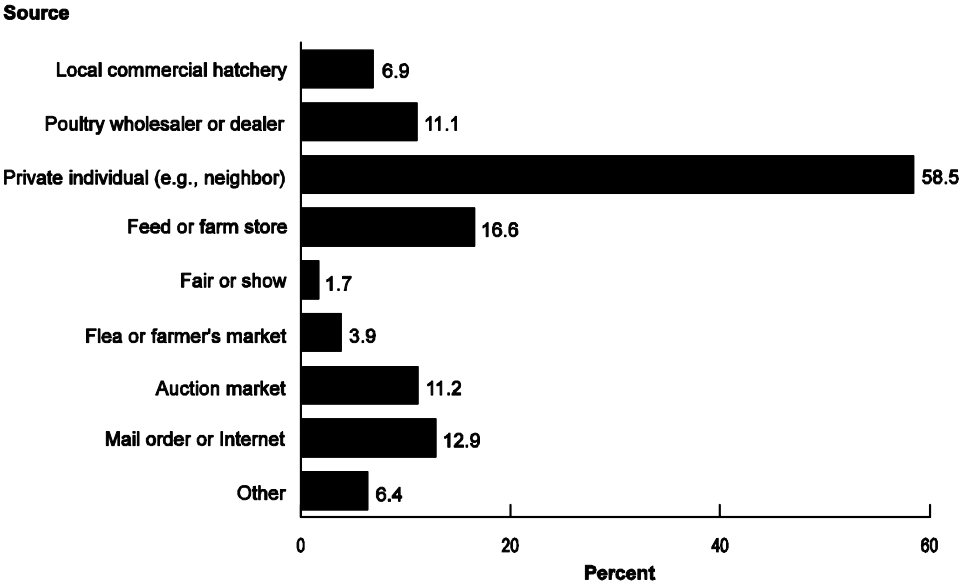
Proportion	Percent Backyard Flocks	Standard Error
All	7.3	(3.1)
Some	1.0	(0.8)
None	91.7	(3.2)
Total	100.0	

The majority of backyard flocks with new-bird arrivals (58.5 percent) obtained birds from private individuals such as neighbors or friends.

i. For backyard flocks that introduced new birds in the previous 12 months, percentage of backyard flocks by source of introduced birds:

Source	Percent Backyard Flocks	Standard Error
Local commercial hatchery	6.9	(2.9)
Poultry wholesaler or dealer	11.1	(4.5)
Private individual (e.g., neighbor)	58.5	(5.8)
Feed or farm store	16.6	(3.1)
Fair or show	1.7	(0.8)
Flea or farmer's market	3.9	(1.6)
Auction market	11.2	(3.3)
Mail order or Internet	12.9	(5.0)
Other	6.4	(2.8)

For Backyard Flocks that Introduced New Birds in the Previous 12 Months, Percentage of Backyard Flocks by Source of Introduced Birds



2. Sales

Overall, 17.8 percent of backyard flocks sold or gave away live birds in the previous 12 months.

a. Percentage of backyard flocks that sold or gave away any live birds in the previous 12 months, by region:

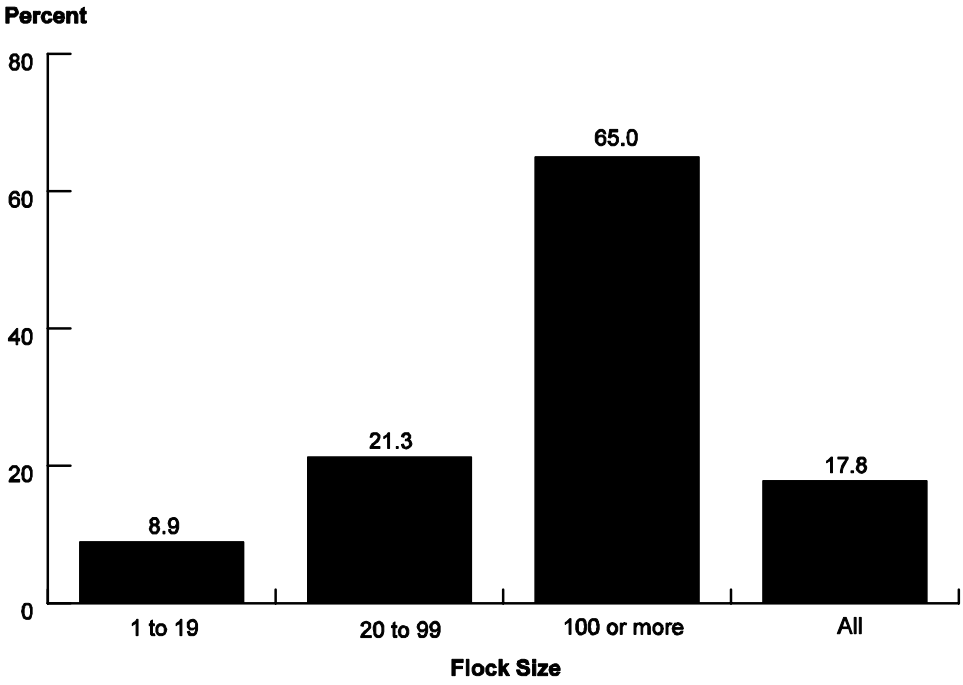
Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
19.0	(4.9)	13.7	(6.7)	23.9	(4.6)	11.6	(2.9)	17.8	(2.4)

Movement of birds from backyard flocks increased as flock size increased, with 65 percent of large flocks selling or giving away live birds.

b. Percentage of backyard flocks that sold or gave away any live birds in the previous 12 months, by flock size:

Percent Backyard Flocks					
Flock Size (Number of Birds)					
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
8.9	(2.2)	21.3	(4.1)	65.0	(15.6)

Percentage of Backyard Flocks That Sold or Gave Away Any Live Birds in the Previous 12 Months, by Flock Size



The most common means by which backyard flocks sold or gave away birds was to sell or give them to a private individual (76.1 percent of backyard flocks), followed by auction markets (20.8 percent of backyard flocks).

c. For backyard flocks that sold or gave away any live birds in the previous 12 months, percentage of backyard flocks by means birds were sold or given away:

Means	Percent Backyard Flocks	Standard Error
Poultry wholesaler or dealer	0.5	(0.5)
Private individual (e.g., neighbor)	76.1	(5.2)
Feed or farm store	4.6	(3.0)
Fair or show	2.5	(2.1)
Live bird market	0.3	(0.3)
Flea or farmer's market	6.8	(3.7)
Auction market	20.8	(5.2)
Mail order or Internet	0.0	(--)
Other	7.0	(3.9)

Four out of five backyard flocks that sold or gave away birds (80.2 percent) did so within their county. Less than 2.0 percent moved birds outside the United States.

d. For backyard flocks that sold or gave away birds in the previous 12 months, percentage of backyard flocks by location birds were sent:

Location	Percent Backyard Flocks	Standard Error
Within same county	80.2	(5.4)
Outside premises county but within State	37.4	(6.0)
Outside State but within the United States	7.7	(3.8)
Outside the United States	1.9	(1.9)

3. Other locations with birds

Only 3.6 percent of backyard producers moved birds to locations (such as fairs, shows, etc.) where other birds were present. Number of movements increased as flock size increased.

a. Percentage of backyard flocks that sent birds to locations (e.g., fairs, shows, etc.) where other birds were present and returned the birds to the flock, by number of times in the previous 12 months and by flock size:

	Percent Backyard Flocks							
	Flock Size (Number of Birds)							
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)		**All**	
Times	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
0	98.2	(0.9)	97.1	(1.2)	81.1	(9.4)	96.4	(1.0)
1	1.7	(0.9)	1.6	(0.9)	0.6	(0.6)	1.6	(0.6)
2 to 4	0.1	(0.0)	1.0	(0.7)	4.8	(4.1)	0.8	(0.4)
5 or more	0.0	(--)	0.3	(0.3)	13.5	(9.1)	1.2	(0.8)
Total	100.0		100.0		100.0		100.0	

Most producers who took birds to shows, etc., and returned them to their flocks went to events that were within the same county or within the State. None reported taking birds outside the United States and returning them.

b. For backyard flocks that took birds to another location and returned them, percentage of backyard flocks by location birds were taken:

Location	Percent Backyard Flocks	Standard Error
Within same county	50.3	(14.7)
Outside premises county but within State	57.1	(14.2)
Outside State but within the United States	20.5	(15.1)
Outside the United States	0.0	(--)

For backyard flocks that sent birds to events where other birds were present and returned them, 54.3 percent reported never isolating birds from the remainder of the flock upon their return.

c. For backyard flocks that took birds to another location and returned them, percentage of backyard flocks by frequency of isolating those birds from the flock upon their return:

Frequency	Percent Backyard Flocks	Standard Error
Always	40.8	(16.8)
Sometimes	0.0	(--)
Never	54.3	(16.7)
No other birds on premises	4.9	(3.5)
Total	100.0	

Half of respondents (50.7) had been to a location that had live birds in the 3 months prior to the interview. Generally, respondents did not take biosecurity precautions upon returning to their own bird areas. The most common precaution taken was to wash hands (30.4 percent of backyard flocks) (table f).

d. Percentage of backyard flocks where respondent visited a location that had live birds (e.g., a market, feed store with birds, fair, or neighbor's backyard flock) in the 3 months prior to the interview, by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
52.7	(8.1)	40.9	(5.7)	51.0	(7.1)	49.8	(7.8)	50.7	(4.3)

Photo: Judy Rodriguez

e. Percentage of backyard flocks where respondent visited a location that had live birds (e.g., market, feed store with birds, fair, or neighbor's backyard flock) in the 3 months prior to the interview, by flock size:

Percent Backyard Flocks					
Flock Size (Number of Birds)					
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
45.0	(4.8)	60.9	(6.5)	50.3	(15.0)

f. For backyard flocks where respondent visited a location that had live birds, percentage of backyard flocks where the following biosecurity measures were taken before re-entering their own bird areas:

Biosecurity Measure Taken	Percent Backyard Flock	Standard Error
Change clothes	12.1	(3.2)
Change boots or shoes (or use foot covers)	13.4	(3.6)
Wash hands	30.4	(5.3)
Shower	11.0	(3.0)
Other precautions	1.7	(1.0)

F. Carcass and Litter Disposal

1. Dead birds

Just over half of all backyard flocks (55.2 percent) had at least one bird death (other than birds slaughtered for human consumption) in the previous 12 months prior to the interview, ranging from 41.8 percent of backyard flocks in the Southeast region to 77.0 percent of backyard flocks in the Midwest region. Fewer small flocks (42.9 percent) had at least one death compared to medium flocks (73.4 percent) and large flocks (69.8 percent).

a. Percentage of backyard flocks that had any birds die in the previous 12 months (not counting birds slaughtered for human consumption), by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
64.4	(5.8)	77.0	(7.6)	57.1	(5.9)	41.8	(7.2)	55.2	(3.7)

b. Percentage of backyard flocks that had any birds die in the previous 12 months (other than birds slaughtered for human consumption), by flock size:

Percent Backyard Flocks					
Flock Size (Number of Birds)					
Small (1 to 19)		Medium (20 to 99)		Large (100 to 999)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
42.9	(4.7)	73.4	(4.8)	69.8	(16.4)

Bird death loss in the previous 12 months was 10.8 percent. Although large flocks were more likely than small flocks to have had at least one death (table b), the number of deaths as a percentage of bird inventory decreased as flock size increased.

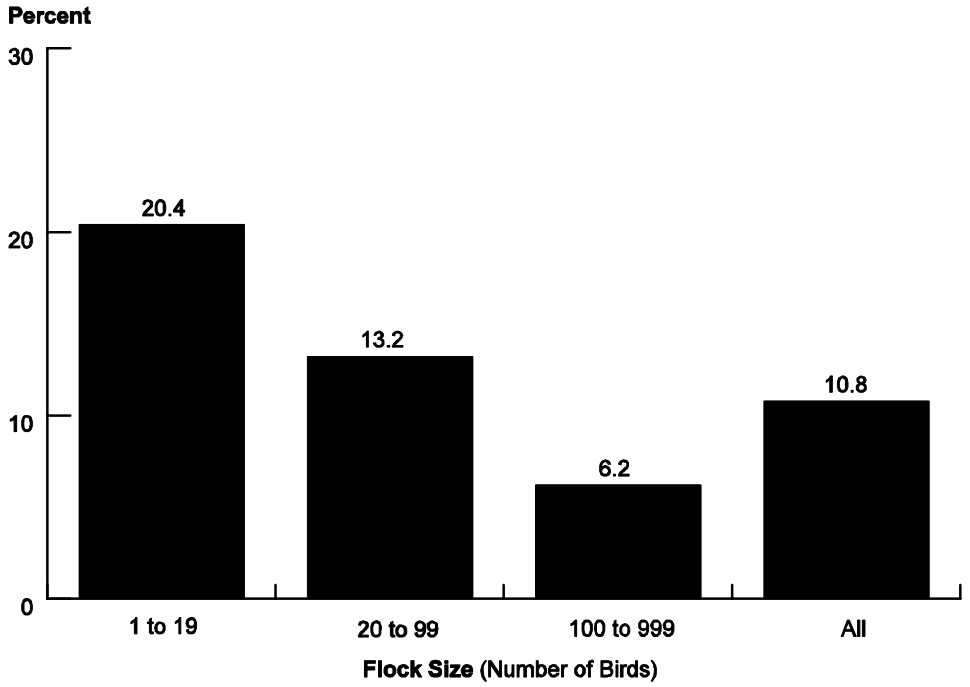
c. Number of birds that died in the previous 12 months (other than birds slaughtered for human consumption), as a percentage of inventory on day of interview, by region:

Percent Birds									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
17.8	(3.8)	14.4	(2.8)	8.5	(1.3)	6.7	(2.2)	10.8	(1.3)

d. Number of birds that died in the 12 months prior to the interview (other than birds slaughtered for human consumption), as a percentage of inventory on day of interview, by flock size:

Percent Birds					
Flock Size (Number of Birds)					
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
20.4	(3.0)	13.2	(2.4)	6.2	(1.8)

Number of Birds That Died in the Previous 12 Months (Other Than Birds Slaughtered for Human Consumption), as a Percentage of Inventory on Day of Interview, by Flock Size

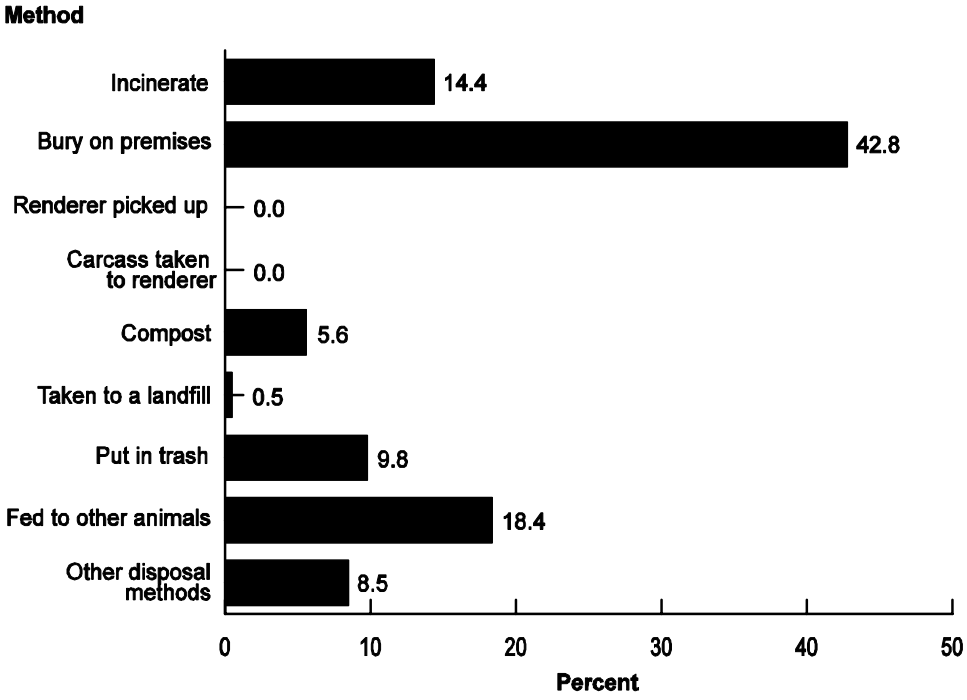


Burial on the premises was the most common method of disposing of dead birds. In the Midwest region, the most common method of disposing of dead birds was to feed them to other animals. The practice of feeding dead birds to other animals decreased as flock size increased. Disposal practices did not differ significantly by type of commercial operation in the center of the sampling circles. “Other” disposal methods included disposing with manure or placing carcasses in a field or pasture.

e. For backyard flocks that had any birds die in the previous 12 months, percentage of backyard flocks by primary method of disposing of dead birds and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Method	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Incinerate	23.1	(5.5)	18.1	(7.6)	10.8	(4.0)	5.6	(3.1)	14.4	(2.9)
Bury on premises	44.0	(8.7)	12.6	(5.3)	42.0	(6.7)	49.1	(13.0)	42.8	(5.1)
Renderer picked up	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)
Carcass taken to renderer	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)
Compost	0.4	(0.4)	18.4	(8.7)	12.6	(2.8)	0.6	(0.6)	5.6	(1.2)
Taken to a landfill	0.0	(--)	6.8	(4.5)	0.4	(0.4)	0.0	(--)	0.5	(0.3)
Put in trash	2.2	(1.6)	3.6	(2.7)	9.1	(4.5)	23.5	(13.6)	9.8	(4.1)
Fed to other animals	23.6	(5.8)	39.1	(11.8)	13.3	(4.7)	12.7	(4.7)	18.4	(3.0)
Other disposal methods	6.7	(4.8)	1.4	(1.3)	11.8	(4.2)	8.5	(4.6)	8.5	(2.5)
Total	100.0		100.0		100.0		100.0		100.0	

For Backyard Flocks that had Any Birds Die in the Previous 12 Months, Percentage of Backyard Flocks by Primary Method of Disposing of Dead Birds



f. For backyard flocks that had any birds die in the previous 12 months, percentage of backyard flocks by primary method of disposing of dead birds and by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Method	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Incinerate	7.7	(3.0)	23.4	(5.8)	5.9	(3.1)
Bury on premises	39.5	(7.0)	46.1	(8.6)	42.5	(15.2)
Renderer picked up	0.0	(--)	0.0	(--)	0.0	(--)
Carcass taken to renderer	0.0	(--)	0.0	(--)	0.0	(--)
Compost	3.3	(1.5)	7.5	(2.6)	7.6	(5.8)
Taken to a landfill	0.4	(0.4)	0.9	(0.6)	0.0	(--)
Put in trash	13.6	(7.9)	2.9	(1.4)	22.1	(12.2)
Fed to other animals	25.1	(5.1)	14.2	(3.7)	6.9	(4.4)
Other disposal methods	10.4	(4.3)	5.0	(2.0)	15.0	(7.3)
Total	100.0		100.0		100.0	

g. For backyard flocks that had any birds die in the previous 12, percentage of backyard flocks by primary method of disposing of dead birds and by type of commercial operation in the center of the sampling circle:

	Percent Backyard Flocks					
	Type of Operation					
	Broilers		Layers		Turkeys	
Method	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Incinerate	16.7	(3.8)	8.4	(4.1)	14.1	(8.5)
Bury on premises	34.9	(5.9)	59.6	(10.0)	53.3	(13.0)
Renderer picked up	0.0	(--)	0.0	(--)	0.0	(--)
Carcass taken to renderer	0.0	(--)	0.0	(--)	0.0	(--)
Compost	7.5	(1.7)	2.0	(1.5)	1.5	(1.6)
Taken to a landfill	0.5	(0.3)	0.0	(--)	2.3	(2.4)
Put in trash	8.1	(5.6)	12.7	(6.7)	13.8	(8.1)
Fed to other animals	21.0	(3.9)	15.5	(5.5)	8.7	(7.5)
Other disposal methods	11.3	(3.8)	1.8	(1.4)	6.3	(5.0)
Total	100.0		100.0		100.0	

2. Litter

The most common method used for disposing of poultry litter and manure was to spread on fields/gardens at the premises. Nearly half of backyard flocks (47.0 percent) reported not having enough litter/manure to deal with.

a. Percentage of backyard flocks by method that best describes how the backyard flock disposed of used poultry litter and manure, and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Method	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Place in manure shed/composted	1.5	(1.1)	5.4	(4.2)	7.4	(2.6)	5.7	(3.5)	4.9	(1.5)
Leave in an outdoor pile	1.4	(1.0)	1.5	(1.5)	12.0	(4.1)	2.2	(1.4)	5.2	(1.5)
Spread on field/garden at premises location	27.5	(4.0)	49.6	(13.3)	60.3	(5.5)	30.6	(8.9)	40.3	(3.7)
Taken to a landfill or put in trash	0.5	(0.4)	2.3	(2.1)	1.9	(1.7)	1.4	(1.4)	1.3	(0.7)
Haul away (sell or give away)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)	0.0	(--)
Other disposal methods	4.0	(2.4)	0.0	(--)	0.0	(--)	0.0	(--)	1.3	(0.8)
Do not have enough litter/manure to deal with	65.1	(4.3)	41.2	(14.7)	18.4	(3.6)	60.1	(7.4)	47.0	(3.2)
Total	100.0		100.0		100.0		100.0		100.0	

The majority of small flocks (56.0 percent) did not have enough poultry litter or manure to warrant special methods of disposal. Medium and large flocks most commonly spread manure on fields/gardens (55.5 percent and 51.2 percent, respectively).

b. Percentage of backyard flocks by method that best describes how the backyard flock disposed of used poultry litter and manure, and by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Method	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Place in manure shed/composted	5.2	(2.1)	3.9	(1.9)	7.2	(5.1)
Leave in an outdoor pile	5.9	(2.2)	2.5	(1.3)	11.8	(6.9)
Spread on field/garden at premises location	30.7	(4.9)	55.5	(5.2)	51.2	(13.5)
Taken to a landfill or put in trash	1.2	(0.9)	1.7	(1.2)	0.8	(0.8)
Haul away (sell or give away)	0.0	(--)	0.0	(--)	0.0	(--)
Other disposal methods	1.0	(1.0)	0.0	(--)	9.7	(7.1)
Do not have enough litter/manure to deal with	56.0	(4.5)	36.4	(4.8)	19.3	(8.8)
Total	100.0		100.0		100.0	

G. Producer Characteristics

1. Reason for having birds

The most common reason for having birds was for fun/hobby, which ranked very high for 40.6 percent of backyard flocks. About one in four producers ranked family tradition, food, and lifestyle very high as reasons for having birds. Other reasons included children, insect control, and a general liking for birds.

a. Percentage of backyard flocks by reasons for having birds and by level of importance[1] of those reasons:

	Percent Backyard Flocks								
	Importance								
	Low (1 to 3)		Moderate (4 to 6)		High (7 to 9)		Very High (10)		
Reason	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Total**
Family tradition	37.4	(3.0)	16.1	(2.3)	18.7	(2.9)	27.8	(3.7)	100.0
Fun/hobby	17.2	(2.2)	13.9	(2.1)	28.3	(3.7)	40.6	(4.2)	100.0
Extra income	88.7	(2.0)	4.5	(1.1)	2.9	(0.9)	3.9	(1.2)	100.0
Food	44.2	(3.3)	13.4	(2.7)	17.0	(2.6)	25.4	(3.0)	100.0
Lifestyle/ambiance	35.4	(4.3)	19.8	(3.0)	18.7	(3.1)	26.1	(3.7)	100.0
Clubs/social interactions (4H, avian organizations)	93.1	(1.4)	2.5	(0.8)	1.3	(0.5)	3.1	(0.9)	100.0
Other reasons to have birds	92.0	(1.9)	1.4	(0.6)	1.1	(0.6)	5.5	(1.6)	100.0

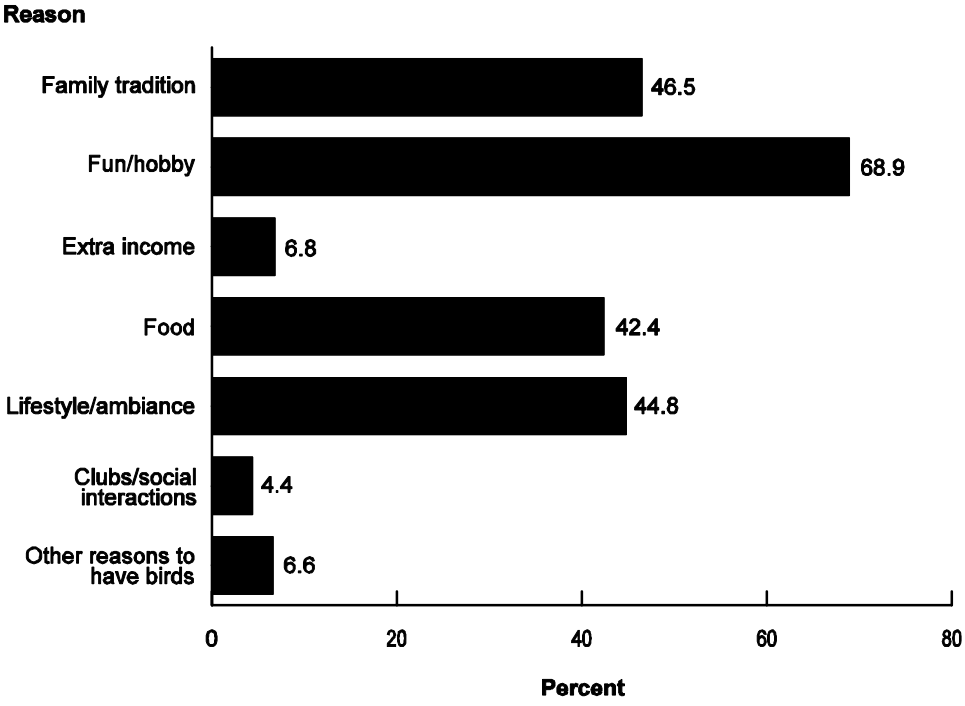
[1] On a scale of 1 to 10, with 1 being least important and 10 being most important

Family tradition ranked high or very high as a reason to have birds on 46.5 percent of premises, ranging from 23.9 percent in the Midwest region to 54.5 percent in the Southeast region.

b. Percentage of backyard flocks that rated the following reasons for having birds as high or very high, by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Reason	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Family tradition	50.9	(5.5)	23.9	(6.2)	37.0	(5.6)	54.5	(6.7)	46.5	(3.4)
Fun/hobby	77.7	(5.4)	40.4	(10.2)	58.7	(4.9)	74.2	(4.5)	68.9	(2.8)
Extra income	6.3	(2.6)	9.0	(4.2)	10.6	(2.9)	3.3	(2.0)	6.8	(1.4)
Food	35.6	(6.0)	50.0	(10.2)	51.3	(4.8)	39.1	(7.5)	42.4	(3.4)
Lifestyle/ambiance	47.7	(7.2)	43.1	(9.9)	43.4	(6.5)	43.5	(9.1)	44.8	(4.3)
Clubs/social interactions (4H, avian organizations)	5.8	(2.0)	11.0	(6.1)	5.3	(1.9)	1.3	(1.3)	4.4	(1.0)
Other reasons to have birds	4.4	(3.3)	15.7	(4.1)	6.5	(2.9)	7.6	(3.2)	6.6	(1.8)

Percentage of Backyard Flocks That Rated the Following Reasons for Having Birds as High or Very High



As a reason for having birds, extra income increased in importance as flock size increased, although for large flocks it remained less important than most other reasons.

c. Percentage of backyard flocks that rated the following reasons for having birds as high or very high, by flock size:

	Percent Backyard Flocks					
	Flock Size (Number of Birds)					
	Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Reason	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Family tradition	42.4	(4.7)	52.0	(5.5)	52.8	(11.6)
Fun/hobby	68.7	(3.9)	66.9	(5.1)	77.5	(7.6)
Extra income	2.4	(1.1)	9.5	(3.1)	26.4	(9.7)
Food	37.3	(4.5)	51.3	(6.3)	42.7	(15.0)
Lifestyle/ambiance	44.7	(5.3)	43.2	(6.2)	50.9	(13.7)
Clubs/social interactions (4H, avian organizations)	4.0	(1.3)	5.7	(2.2)	2.1	(1.6)
Other reasons to have birds	6.7	(2.4)	4.2	(1.6)	15.6	(8.0)

Food source was higher in importance for backyard flocks with chickens compared to backyard flocks without chickens.

d. Percentage of backyard flocks that rated the following reasons for having birds as high or very high, by presence of chickens in the backyard flocks:

	Percent Backyard Flocks			
	Chickens Present		Chickens Not Present	
Reason	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Family tradition	47.8	(3.6)	33.5	(8.9)
Fun/hobby	68.6	(3.0)	71.1	(8.2)
Extra income	6.7	(1.5)	7.9	(4.7)
Food	45.7	(3.7)	10.0	(5.0)
Lifestyle/ambiance	43.9	(4.6)	52.7	(8.4)
Clubs/social interactions (4H, avian organizations)	4.2	(1.1)	6.5	(3.8)
Other reasons to have birds	6.8	(1.9)	4.4	(2.5)

2. Years of bird ownership

Although 40.8 percent of flock owners had raised birds on their premises for 10 or more years, another 43.0 percent had raised birds for fewer than 5 years, indicating a large turnover of backyard-flock producers or a recent increase in flock ownership.

a. Percentage of backyard flocks by number of years birds had been raised by the family on that premises, and by region:

	Percent Backyard Flocks									
	Region									
	Southwest		Midwest		East		Southeast		All	
Number of Years	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Fewer than 5	44.5	(6.3)	37.4	(7.0)	36.2	(6.1)	49.0	(6.9)	43.0	(3.6)
5 to 9	17.2	(3.6)	25.2	(4.9)	10.3	(3.3)	19.8	(5.4)	16.2	(2.4)
10 to 19	16.7	(3.5)	25.9	(8.1)	30.6	(4.5)	7.4	(2.6)	18.5	(2.3)
20 or more	21.6	(4.4)	11.5	(4.5)	22.9	(4.4)	23.8	(6.5)	22.3	(2.9)
Total	100.0		100.0		100.0		100.0		100.0	

3. Employment in commercial poultry industry

Overall, very few backyard flocks (3.5 percent) had someone in the household who worked for a commercial poultry operation, ranging from 0.9 percent of backyard flocks in the Southeast region to 8.5 percent of backyard flocks in the Midwest region.

a. Percentage of backyard flocks where someone in the household worked for a commercial poultry production or processing facility, by region:

Percent Backyard Flocks									
Region									
Southwest		Midwest		East		Southeast		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
2.2	(1.5)	8.5	(5.7)	6.6	(2.8)	0.9	(0.6)	3.5	(1.1)

The percentage of backyard flocks where someone worked on a commercial operation decreased as flock size increased.

b. Percentage of backyard flocks where someone in the household worked for a commercial poultry production or processing facility, by flock size:

Percent Backyard Flocks					
Flock Size (Number of Birds)					
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
4.3	(1.7)	2.9	(1.5)	0.3	(0.3)

c. Percentage of backyard flocks where someone in the household worked for a commercial poultry production or processing facility, by type of commercial operation in the center of the sampling circle:

Percent Backyard Flocks					
Type of Operation					
Broilers		**Layers**		**Turkeys**	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
3.4	(1.4)	2.2	(1.3)	5.8	(4.5)

4. Membership in avian associations

Overall, only 2.0 percent of backyard-flock owners belonged to a poultry or avian association; 17.9 percent of large-flock owners (100 to 999 birds) belonged to such a group.

a. Percentage of backyard flocks where owner belonged to a poultry or avian association, by flock size:

Percent Backyard Flocks							
Flock Size (Number of Birds)							
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)		**All**	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
0.3	(0.3)	0.7	(0.4)	17.9	(9.2)	2.0	(0.8)

5. "Biosecurity for the Birds" awareness

The USDA's "Biosecurity for the Birds" campaign was familiar to 15.4 percent of backyard-flock producers. Backyard-flock producers with chickens were more familiar with the campaign than backyard-flock producers without chickens.

a. Percentage of backyard flocks where respondent had heard of USDA's "Biosecurity for the Birds" educational campaign, by region:

Percent Backyard Flocks									
Region									
Southwest		**Midwest**		**East**		**Southeast**		**All**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
15.2	(3.9)	12.4	(4.9)	12.1	(3.8)	19.3	(7.1)	15.4	(3.0)

b. Percentage of backyard flocks where respondent had heard of USDA's "Biosecurity for the Birds" educational campaign, by flock size:

Percent Backyard Flocks					
Flock Size (Number of Birds)					
Small (1 to 19)		**Medium** (20 to 99)		**Large** (100 to 999)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
16.2	(4.2)	12.0	(3.4)	23.8	(16.3)

c. Percentage of backyard flocks where respondent had heard of USDA's "Biosecurity for the Birds" educational campaign, by presence of chickens on the premises:

Percent Backyard Flocks			
Chickens Present		**Chickens Not Present**	
Percent	**Standard Error**	**Percent**	**Standard Error**
16.5	(3.2)	5.0	(3.5)

Section II: Methodology

A. Needs Assessment

NAHMS develops study objectives by exploring existing literature and contacting industry members and other stakeholders about their informational needs and priorities during a needs assessment phase. For Poultry ’04, the following activities were conducted:

- A focus group consisting of industry, State, Federal, and university representatives met at the World Poultry Exposition in Atlanta, Georgia, in January 2002.

- A needs assessment questionnaire was distributed to poultry veterinarians via the presidents of the egg layer, broiler, and turkey veterinary groups. This questionnaire was also distributed to State and Federal veterinarians and laboratory and research personnel.

- Discussions were held with each of the poultry veterinary groups at the American Association of Avian Pathologists (AAAP) meeting in Denver, Colorado, in July 2002.

- Additional discussions occurred at USAHA Transmissible Diseases of Poultry Committee. This committee recommended that Poultry ’04 focus its efforts on addressing bird health, movement, and biosecurity practices of nontraditional poultry industries.

B. Sampling and Estimation

1. State selection

The initial selection of States to be included in the study was done using the NASS January 2004 poultry report. The top 10 States in terms of numbers of layers, broilers, and turkeys were selected. This process resulted in 16 States in the sample. South Carolina and Oklahoma were added due to their high combined value of production and both States’ interest. The 18 States* accounted for 80 percent of the Nation’s broilers produced, 74 percent of egg production, and 84 percent of turkeys raised.

* AL, AR, CA, DE, GA, IA, IN, MD, MN, MO, MS, NC, OH, OK, PA, SC, TX, VA

2. Commercial poultry operation selection

The NASS 2002 census was used to select commercial operations with at least 10,000 chickens or at least 5,000 turkeys. The list was sorted by type of operation (broiler, layer, turkey) and geographically. A systematic random sample was selected, with the number of operations allocated to each State proportional to the value of production for that State. A letter was sent to the selected operation requesting permission to use the location of the operation as the center of a circle to canvass for backyard flocks. The State-allocated number of operations was randomly selected within operation type strata, among those agreeing to participate. Addresses of participating operations were forwarded to the NAHMS coordinator in the respective State.

3. Residence identification and sampling

A 1-mile radius circle was “drawn” around each selected commercial operation. All residences within 1 mile of the selected commercial operation were identified. For circles with 20 or fewer residences, all residences were contacted. For apartment buildings and mobile home parks with less than 100 units, 5 randomly selected contacts were made, and for complexes with 100 or more units, 10 randomly selected contacts were made. For subpopulations of single-family homes in the circles, the following minimum sampling rules were used:

- Fewer than 200 homes: 20 contacts.
- 200 to 600 homes: contact 10 percent.
- More than 600 homes: 60 contacts.

These contacts were distributed throughout the neighborhood. Other homes in the circle (outside the neighborhood) were not included in this subsample and were sampled separately. Canvassers were instructed not to selectively visit residences where poultry was visible.

4. Population inferences

Inferences cover the population of backyard/small production flocks within 1 mile of a commercial operation in 18 States. All respondent data were statistically weighted to reflect the population from which they were selected. The inverse of the probability of selection for each commercial operation was the initial selection weight (commercial operation weight). This weight was adjusted for the number of residences located within the circle divided by the number of contacts made, within each residence type (single family, apartment, mobile home park). The weight was further adjusted by the sum of weights for residences that qualified for the survey (backyard flocks, had birds other than pet birds) divided by the sum of weights for backyard flocks that completed the questionnaire. This adjustment was made within State, residence type, and total number of residences within the circle (fewer than 20 residences, 20 to 99 residences, 100 residences or more).

C. Data Collection

Veterinary medical officers and animal health technicians canvassed circles between October 1 and December 1, 2004. Residences with birds other than pet birds (backyard flocks) were asked to complete a questionnaire. The interview took approximately 20 minutes to complete.

D. Data analysis

1. Validation and estimation

Data were entered into a SAS data set. Validation checks were performed to identify numeric extremes, improper categorical responses, skip patterns not followed, and relational checks. Weighted point estimates were generated using SUDAAN software, which accounts for sampling methodology and clustering.

2. Response rate

Locations of 350 commercial operations were provided to APHIS by NASS, of which 349 circles were canvassed. A total of 10,579 residences were contacted. Of these, 763 qualified to participate in the survey (backyard flocks, had birds other than or in addition to pet birds) and of those qualified, 540 (70.8 percent) participated.

Residence Type	Total Residences	Residences Contacted[1]
Single family	19,481	9,839
Apartment	1,086	594
Mobile home	406	146
Total	20,973	10,579

[1]See Section II, B3 for description of sampling plan

Appendix I: Sample Profile

1. Number of **circles** by type of commercial operation at the center, and by region:

	Number of Circles				
	Region				
Type of Operation	**Southwest**	**Midwest**	**East**	**Southeast**	**All**
Broiler	56	11	49	93	209
Layer	20	14	19	24	77
Turkey	9	20	22	12	63
Total	85	45	90	129	349

2. Number of **respondents** by type of commercial operation at center of circle:

Number of Respondents			
Type of Commercial Operation			
Broiler	**Layer**	**Turkey**	**Total**
329	147	64	540

3. Number of **respondents** by region:

Number of Respondents				
Region				
Southwest	**Midwest**	**East**	**Southeast**	**Total**
186	53	183	118	540

4. Number of **respondents** by flock size (total birds):

Number of Respondents			
Flock Size			
1 to 19	**20 to 99**	**100 to 999**	**Total**
295	201	44	540

5. Number of **respondents** by presence of chickens:

Number of Respondents		
Chickens Present	**Chickens Not Present**	**Total**
483	57	540

Appendix II: U.S. Poultry Statistics—2004

Region	State	Broiler Production (1,000 Head)	Eggs Produced (Million)	Turkeys Raised (1,000 Head)
Southwest	California	(1)	5,380	15,700
	Oklahoma	243,800	937	(1)
	Texas	620,700	4,825	(1)
	Total	864,500	11,142	15,700
Midwest	Indiana	(1)	6,256	13,300
	Iowa	(1)	11,613	9,000
	Minnesota	46,300	2,930	46,500
	Missouri	(1)	1,865	21,500
	Total	46,300	22,664	90,300
East	Delaware	240,700	(1)	(1)
	Maryland	284,600	843	750
	Ohio	41,600	7,355	5,800
	Pennsylvania	133,500	6,585	12,000
	Virginia	263,000	761	19,700
	Total	963,400	15,544	38,250
Southeast	Alabama	1,052,000	2,099	(1)
	Arkansas	1,241,500	3,565	28,500
	Georgia	1,298,900	5,038	(1)
	Mississippi	827,800	1,606	(1)
	North Carolina	720,200	2,522	39,000
	South Carolina	204,500	1,351	12,000
	Total	5,344,900	16,181	79,500
Total (18 States)		7,219,100	65,531	223,750
		82.6% of U.S.	73.5% of U.S.	84.7% of U.S.
Other published States		692,300	21,943	17,348
Nonpublished States		829,250	1,657	23,109
Total U.S. (50 States)		8,740,650	89,131	264,207

(1) State-level estimate is included within the nonpublished States category to avoid disclosing individual operations.

Appendix III: Poultry ‘04 Study Objectives and Related Outputs

Objectives: Provide a basic understanding of bird health, management, and movement practices of nontraditional poultry industries, such as live-bird markets, gamefowl, and backyard flocks.

- **Part I: Reference of Health and Management of Backyard/Small Production Flocks in the United States, 2004, August 2005**
- Part II: Reference of Health and Management of Gamefowl Breeder Flocks in the United States, 2004, expected August 2005
- Part III: Reference of Management Practices in Live Poultry Markets in the United States, 2004, spring 2006
- Part IV: Reference of Health and Management of Backyard/Small Production Flocks and Gamefowl Breeder Flocks in the United States, 2004
- Highlights: Health and Management of Backyard/Small Production Flocks in the United States, 2004, Info Sheet, summer 2005
- Highlights: Health and Management of Gamefowl Breeder Flocks in the United States, 2004, summer 2005
- Highlights: Management Practices in Live Poultry Markets in the United States, 2004, spring 2006