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Poultry 2010

Reference of the Health and Management of Chicken Flocks in Urban Settings in Four U.S. Cities, 2010

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Cover photo courtesy Judy Rodriguez

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All participants are to be commended, particularly the feed store operators and urban-chicken owners whose voluntary efforts made this component of the Poultry 2010 study possible.

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Items of Note

Raising chickens in urban environments is a growing phenomenon in the United States. In fact, some cities have recently passed regulations allowing chickens to be kept at residences. For the purpose of this report, urban chicken flocks are defined as flocks of chickens in urban settings that are owned by families, individuals, or groups of individuals. These flocks are not part of the commercial poultry industry; however, they sometimes provide chicken meat and eggs to local food systems, such as farmers' markets.

To our knowledge, NAHMS Poultry 2010 marks the first time that the urban chicken population in the United States has been studied. This report is intended to provide first insights, rather than precise population estimates, about a population for which very little information is available.

Sample and inferences

Four large cities were selected for inclusion in the NAHMS Poultry 2010 urban chicken study: Denver, Colorado; Los Angeles, California; Miami, Florida; and New York City, New York. These cities were selected for geographic and demographic diversity.

Locating chicken owners in these cities presented a unique challenge because a national list of urban-chicken owners is not available. Data collection was accomplished by visiting local feed stores that sold chicken feed and by administering a questionnaire to feed store customers who owned chickens and lived in one of the four geographically defined metropolitan areas. The metropolitan area for each city was defined by Veterinary Services (VS) employees who were familiar with the city, with a goal to limit the boundaries to truly metropolitan areas and exclude the rural outskirts of the cities. As an additional effort to exclude rural areas, chicken owners with single family homes were required to have less than 1 acre of land to be eligible for the study.

New York City presented additional challenges because only one feed store that sold chicken feed was identified. Although it sold a moderate volume of chicken feed, the store reported that its customers tended to purchase large amounts of feed at one time. Therefore, visits to the store by data collectors would be inefficient for locating a sufficient number of chicken owners. The feed store reported that the majority of their customers that purchased chicken feed belonged to a club that maintained a specific chicken-related Web site. The study questionnaire was posted on the club's Web site and also administered at a presentation to club members. This population of urban chicken-owners was English speaking, had Internet access, and was relatively new to chicken ownership (none had raised chickens for more than 5 years). The New York inference population is limited to members of this club.

Flock ownership

Urban-chicken owners differed across cities in a number of ways. Chicken owners in Los Angeles and Miami were more likely to complete the study questionnaire in Spanish, have a longer history of raising chickens, and have larger flock sizes than owners in Denver and New York City. They were also more likely to have chicken breeds other than table egg breeds and to have birds other than chickens. Family tradition was a more important reason to raise chickens for owners in Los Angeles and Miami compared with owners in Denver and New York City, while food source and food quality were more important to owners in Denver and New York City.

Urban chickens as a food source

Very few urban-chicken owners (8.0 percent) had slaughtered chickens for human consumption during the previous 12 months. However, 85.8 percent of owners kept table egg breeds. About 2 of 10 owners in Los Angeles and Miami sold or gave away eggs during the previous 12 months compared with 5 of 10 in Denver and 7 of 10 in New York City.

Urban chicken health resources

Overall, 1 of 10 flocks was seen by a veterinarian for any reason during the previous 12 months. The percentage of flock owners that considered veterinarians to be a very important source of chicken health information ranged from 16.3 percent in Denver to 56.0 percent in Los Angeles. It is likely that veterinarians familiar with chicken medicine are not readily available in some urban areas. Encouraging urban veterinarians to develop these additional skills could be beneficial in keeping flocks of urban chickens healthy.

Human/chicken interaction

The large majority of data for this study were collected prior to the summer 2010 *Salmonella enterica* Enteritidis outbreak related to commercial eggs, which received substantial media coverage. Even so, about one-half of respondents were aware of a connection between poultry and *Salmonella* infection in people. The level of awareness about *Salmonella* did not differ substantially based on whether children were present in the household or whether children had contact with chickens. There were children under the age of 5 in the household for about one-fourth of flocks, and there were children 5 to 17 years of age for about one-half of flocks. Children had contact with chickens for the majority of flocks with children in the household. About one of six flock owners

(15.5 percent) reported that chickens had been inside their house/living spaces in the last 3 months. Nearly 9 of 10 owners always or sometimes required hand washing after handling chickens. Hand washing is an important measure for protecting human health.

Movement and visitors

Movement of chickens into and out of flocks was common. One-half of flocks had flock additions during the previous the 12 months, and most of these additions could be attributed to initial flock startups. About one-fourth of flocks sold or gave away live chickens.

For 18.9 percent of flocks chickens or other birds were able to leave the property, and for about one-fourth of flocks neighbors' chickens were seen at least monthly in the area chickens were kept. Additionally, wild waterfowl and other birds were seen at least monthly in the chicken area for 16.4 and 53.7 percent of flocks, respectively. On the other hand, only 6.9 percent of flock owners reported that chickens were taken to a location where other birds were present (such as a fair or show) and then returned to their flocks. Educational efforts to inform chicken owners of potential disease spreads via these contacts might be helpful for keeping urban chicken flocks healthy.

The majority of flocks (85.9 percent) had no business visitors enter the chicken area during the previous 12 months. For about one-half of flocks, nonbusiness visitors had entered the chicken area during the previous 12 months; 22.9 percent of flocks had 10 or more occurrences of nonbusiness visitors. Visitors are a potential means of introducing disease to a flock, especially if the visitors own or have recently had contact with other birds. Visitor precautions such as footwear protection and hand washing can reduce this risk.

Disposal of dead birds

Overall, 6.4 percent of chickens died during the previous 12 months. For flocks on which any chickens died, the most common primary methods of carcass disposal were landfill/ trash (30.9 percent of flocks), buried on premises (23.6 percent), and taken by predator (21.1 percent).

Highlights of Poultry 2010 Reference of the Health and Management of Chicken Flocks in Urban Settings in the United States, 2010

Most flocks in Denver and New York City (68.0 and 81.8 percent, respectively) had fewer than 10 chickens. Most flocks in Los Angeles and Miami (57.7 and 78.6 percent, respectively) had 10 or more chickens.

Overall, 85.8 percent of flocks had table egg breeds. Flocks with meat breeds; game fowl; pigeon, doves or game birds; and guinea fowl were more common in Los Angeles and Miami than in Denver or New York City.

The majority of flocks in all four cities were located at single family homes. However, in New York City, nearly one-fourth of flocks were located at a community coop and one-third were located at multifamily dwellings.

Chickens were kept in an outdoor pen or barn in approximately 9 of 10 flocks in all four participating cities; 15.5 percent of flocks had chickens residing inside the respondents' house/living space.

Chickens or other birds were able to leave the property in 18.9 percent of flocks. Birds were able to leave the property on a higher percentage of flocks with birds other than chickens compared with flocks with chickens only.

Pet dogs and cats were seen in the chicken area at least monthly in 7 of 10 flocks. Wild birds other than waterfowl were seen in the chicken area at least monthly in 7 of 10 flocks in Denver and New York City and in 4 of 10 flocks in Los Angeles and Miami. Neighbors' chickens were seen at least monthly in 3 of 10 flocks in Los Angeles and Miami.

Diarrhea, unexpected decreased production, and external parasites were each observed in approximately 9 percent of flocks during the previous 3 months.

Overall, 1 of 10 flocks was seen by a veterinarian for any reason during the previous 12 months.

Over one-half of flock owners considered other chicken owners, feed stores, and the Internet to be very important sources of chicken health information.

More than two-thirds of flocks in Denver and New York City had acquired new chickens at least once during the previous 12 months. For flocks in which the family had chickens for less than 1 year, 87.0 percent acquired new chickens once and 13.0 percent acquired new chickens more than once.

Of flocks that acquired new chickens, about one-third (35.4 percent) acquired new chickens from a private individual, and a similar percentage (34.5 percent) got their chickens from a feed or farm store. Mail order/Internet was a more common method of obtaining chickens in Denver than in Los Angeles (26.6 and 9.3 percent of flocks, respectively).

The percentage of flocks that sold or gave away live chickens during the previous 12 months ranged from 17.7 percent in Denver to 37.5 percent in Miami. The percentage of flocks that sold or gave away live chickens increased with flock size.

A private individual was the most common destination of chickens sold or given away. In Los Angeles, 24.4 percent of flocks that sold chickens sold them through a poultry wholesaler or dealer, and 33.3 percent sold them through a feed or farm store.

Flock owners rarely took chickens to a location where other birds were present, such as a fair or show, and then returned the chickens to their flocks (6.9 percent). About 2 of 10 flocks in Los Angeles and Miami sold or gave away eggs during the previous 12 months compared with 5 of 10 flocks in Denver and 7 of 10 flocks in New York City.

About 2 of 3 flocks always or sometimes required hand washing before handling chickens, and 9 of 10 always or sometimes required hand washing after handling chickens. Over 30 percent of flock owners in Los Angeles and Miami always or sometimes required people entering the chicken area to use footbaths, scrub boots/shoes, wear shoe covers, wear dedicated clothing or change clothes, and/or wash hands.

Few flocks (14.1 percent) had any business visitors enter the chicken area during the previous 12 months. However, nearly one-half of flocks (47.5 percent) had nonbusiness visitors enter the chicken area, with 22.9 percent having 10 or more occurrences.

Very few flocks (8.0 percent) had slaughtered chickens for human consumption in the previous 12 months. Overall, 29.3 percent of flocks had at least one chicken death, and 6.4 percent of chickens died in the previous 12 months. Predators accounted for the highest percentage of chicken deaths (44.0 percent). For flocks in which any chickens died, the most common methods of carcass disposal were landfill/trash (30.9 percent), buried on premises (23.6 percent), and taken by predator (21.1 percent).

Only 8.0 percent of flocks rated income as a very or extremely important reason for having chickens. Over one-half of flocks rated fun/hobby, food source, food quality, and

animal welfare concerns as very or extremely important. About 5 of 10 flocks in Los Angeles and Miami ranked family tradition as a very or extremely important reason to have chickens, compared with 2 of 10 flocks in Denver and New York City. Food source and food quality ranked higher in Denver and New York City than in Los Angeles and Miami.

There were children under 5 years of age living in the household for about one-fourth of flocks, and children 5 to 17 years of age living in the household for about one-half of flocks. Children had contact with the chickens for 61.5 percent of flocks in which children under the age of 5 were present, and 77.1 percent of flocks in which children between the ages of 5 and 17 were present.

About one-half of respondents were aware of a connection between poultry and *Salmonella* infection in people. Awareness of an association between poultry and *Salmonella* infection in people did not differ substantially based on whether children were present or if they had contact with chickens.

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Introduction

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

Layers '99 was NAHMS' first national study of poultry and provided baseline health and management information for the table egg industry. Layers '99 estimated the prevalence and associated risk factors of *Salmonella enterica* Enteritidis in U.S. layer flocks.

Poultry 2004 was NAHMS' second study of the U.S. poultry industry. Poultry 2004 provided information regarding bird health, bird movement, and biosecurity practices of backyard flocks, game fowl breeder flocks, and live poultry markets.

The Small Enterprise Chicken study conducted in 2007 was NAHMS' third study of the poultry industry and focused on biosecurity and bird movement on operations with 1,000 to 19,999 chickens.

Poultry 2010 is NAHMS' fourth study of the U.S. poultry industry. During 2009, NAHMS conducted an extensive assessment to determine the information needs of the poultry industry, researchers, and Federal and State governments. This needs assessment resulted in three objectives for the Poultry 2010 study:

1. Describe the structure of commercial poultry industries, including interactions among poultry industry segments, movements, and biosecurity practices. Describe farm-level practices for chicken primary breeder and multiplier flocks. Identify critical factors for disease exclusion (such as *Mycoplasma*).
2. Estimate the prevalence and investigate risk factors associated with clostridial dermatitis (cellulitis/gangrenous dermatitis) on turkey grower farms.
3. Describe bird health, movement, and biosecurity practices of urban chicken flocks in four U.S. cities: Miami, Denver, Los Angeles, and New York City (see maps, p 4-7).

"Reference of the Health and Management of Chicken Flocks in Urban Settings in Four U.S. Cities, 2010" is the first in a series of reports containing information from Poultry 2010. A questionnaire was administered to customers purchasing chicken feed at feed stores in Denver, Los Angeles, and Miami and to chicken owners in New York City visiting a specific chicken-related Web site.

The methods used and the number of respondents in the study can be found in Section II: Methodology, p 70.

Study Objectives and Related Outputs

1. Describe the structure of commercial poultry industries, including interactions among poultry industry segments, movements, and biosecurity practices. Describe farm-level practices for chicken primary breeder and multiplier flocks. Identify critical factors for exclusion of disease (such as *Mycoplasma*).

    - Poultry 2010: Reference of United States Commercial Poultry Industry Structure, expected fall 2011
    - Poultry 2010: Reference of Management Practices on Chicken Breeder Farms in the United States, expected fall 2011
    - Info sheets, expected fall 2011

2. Estimate the prevalence and investigate risk factors associated with clostridial dermatitis (cellulitis/gangrenous dermatitis) on turkey grower farms.

    - Poultry 2010: Clostridial dermatitis on United States Turkey Farms, Interpretive Report, expected spring 2012
    - Info sheets, expected spring 2012

3. Estimate the size of the urban chicken ownership population in Los Angeles. Describe bird health, movement, and biosecurity practices of urban chicken flocks in four U.S. cities: Miami, Denver, Los Angeles and New York City.

    - **Poultry 2010: Reference of the Health and Management of Chicken Flocks in Urban Settings in Four U.S. Cities, May 2011**
    - Urban chicken ownership in L.A. County, expected summer 2011
    - Info sheets, expected Spring 2011

Terms Used in This Report

Community coop: A location where multiple people keep their chickens, similar to a community garden but oriented toward chickens.

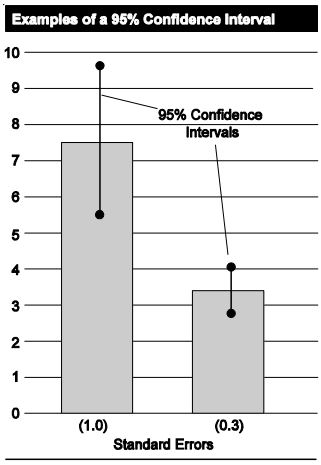
Flock size: Maximum number of chickens—as reported by respondents—kept at the home or at a community coop during the previous 12 months. Small flocks were defined as having 1 to 9 chickens, medium flocks 10 to 24, and large flocks 25 or more.

Game birds: Birds hunted for sport or food, such as quail, pheasant, or partridge.

Game fowl: Breeds of chickens, such as Kelso, Hatch, Claret, and Roundhead, intended primarily for exhibition/competition or game/sport.

Operation average: The average value for all operations; a single value for each operation is summed over all operations reporting and divided by the number of operations reporting. For example, operation average distance chickens traveled is calculated by summing reported average distance over all operations divided by number of operations (see table e., p 40).

Pet birds: Breeds not used for human food and usually housed in cages in the home, e.g., parrots, cockatiels, parakeets, finches, canaries.

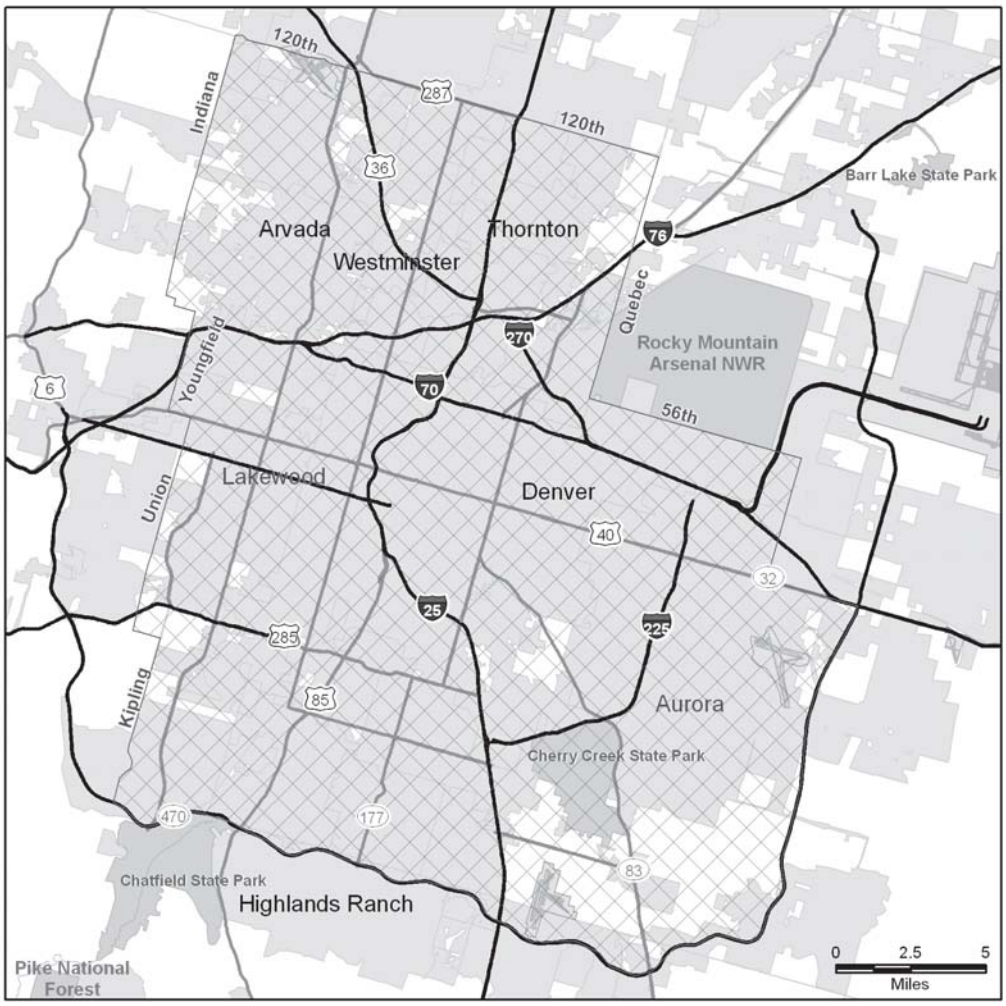


Standard errors: Estimates in this report are provided with a measure of precision called the standard error. A 95-percent confidence interval can be created with bounds equal to the estimate, plus or minus two standard errors. If the only error is sampling error, the confidence intervals created in 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. 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 (—).

Sample results: Results are based on responses from chicken owners in the geographically defined areas of the four participating cities. Respondent data were not weighted and are intended to provide insight about the population rather than precise population estimates (see Section II: Methodology, p 70).

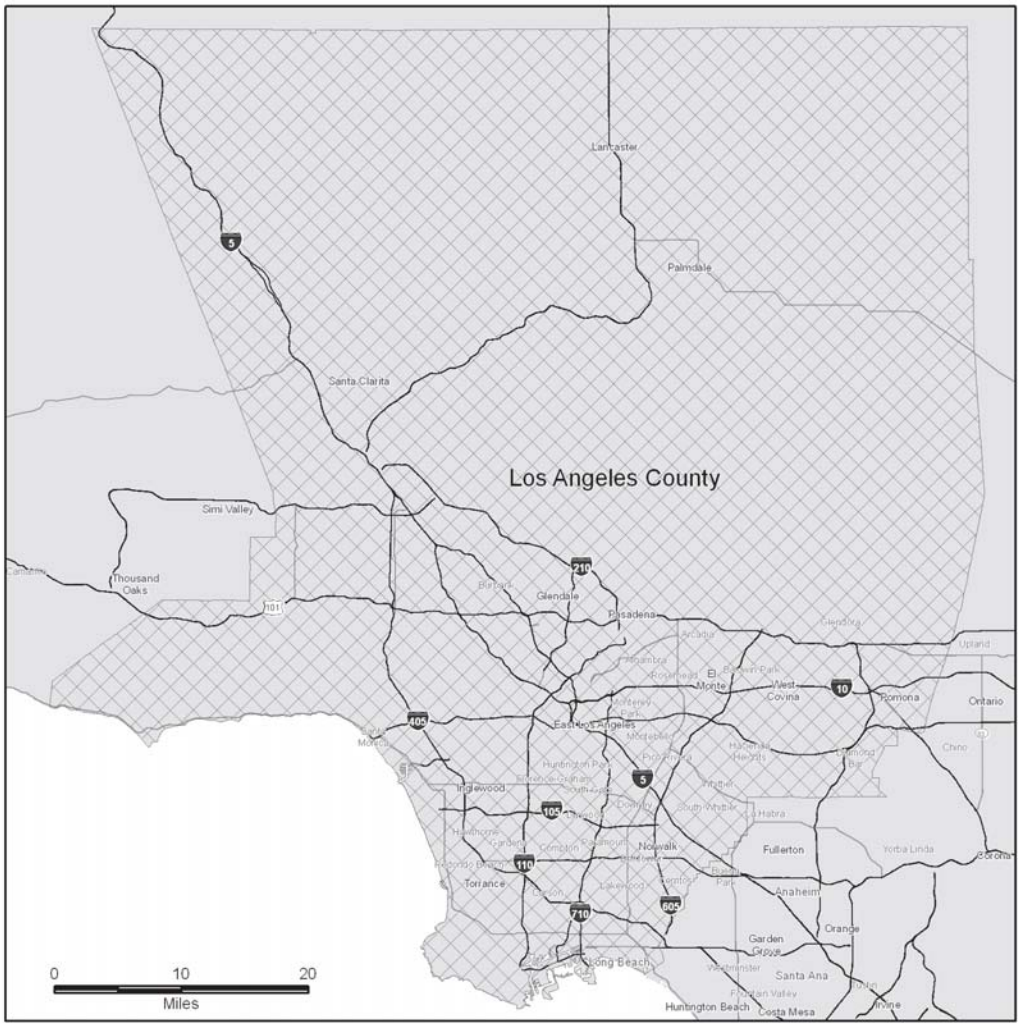
Urban chicken flocks: Flocks of chickens (1 or more) in large cities (urban settings) on less than 1 acre of land owned by families, individuals, or groups of individuals.

Denver geographic area* for the Urban Chicken component of the Poultry 2010 study



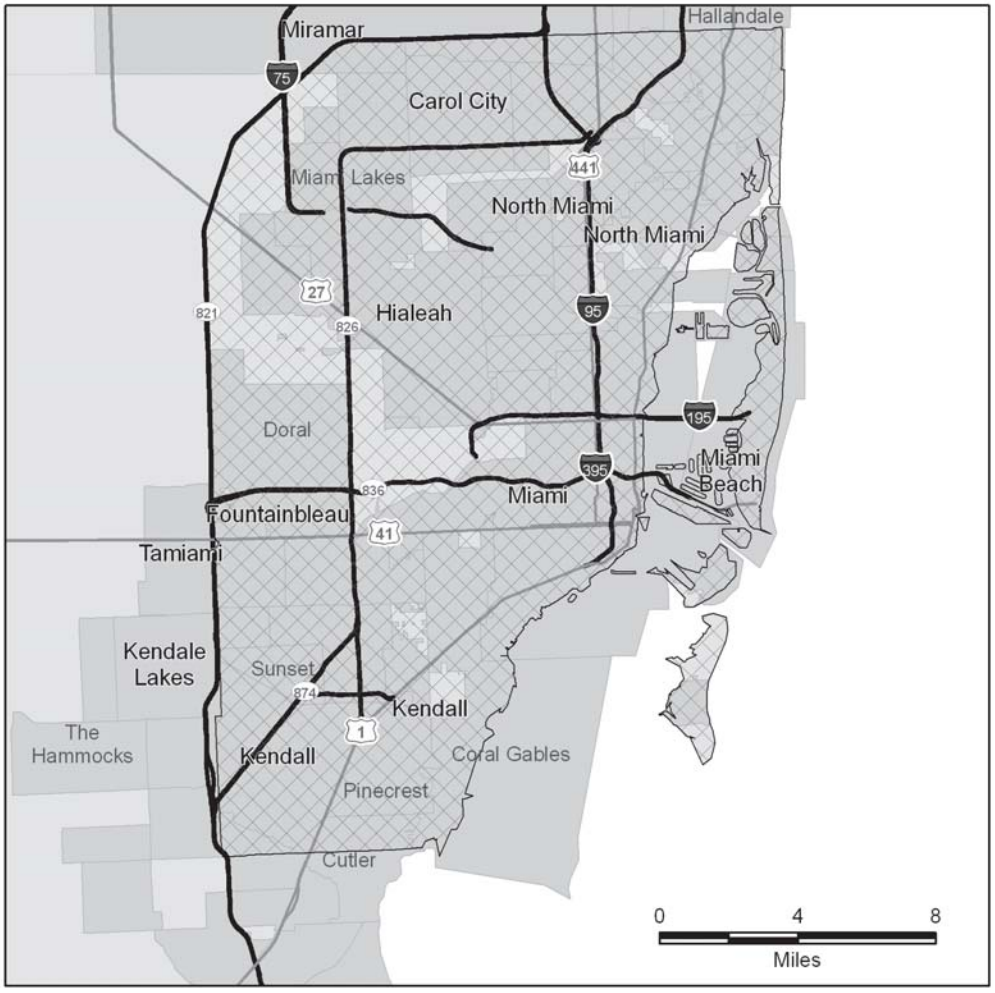
*Hash marks indicate study area.

Los Angeles geographic area* for the Urban Chicken component of the Poultry 2010 study



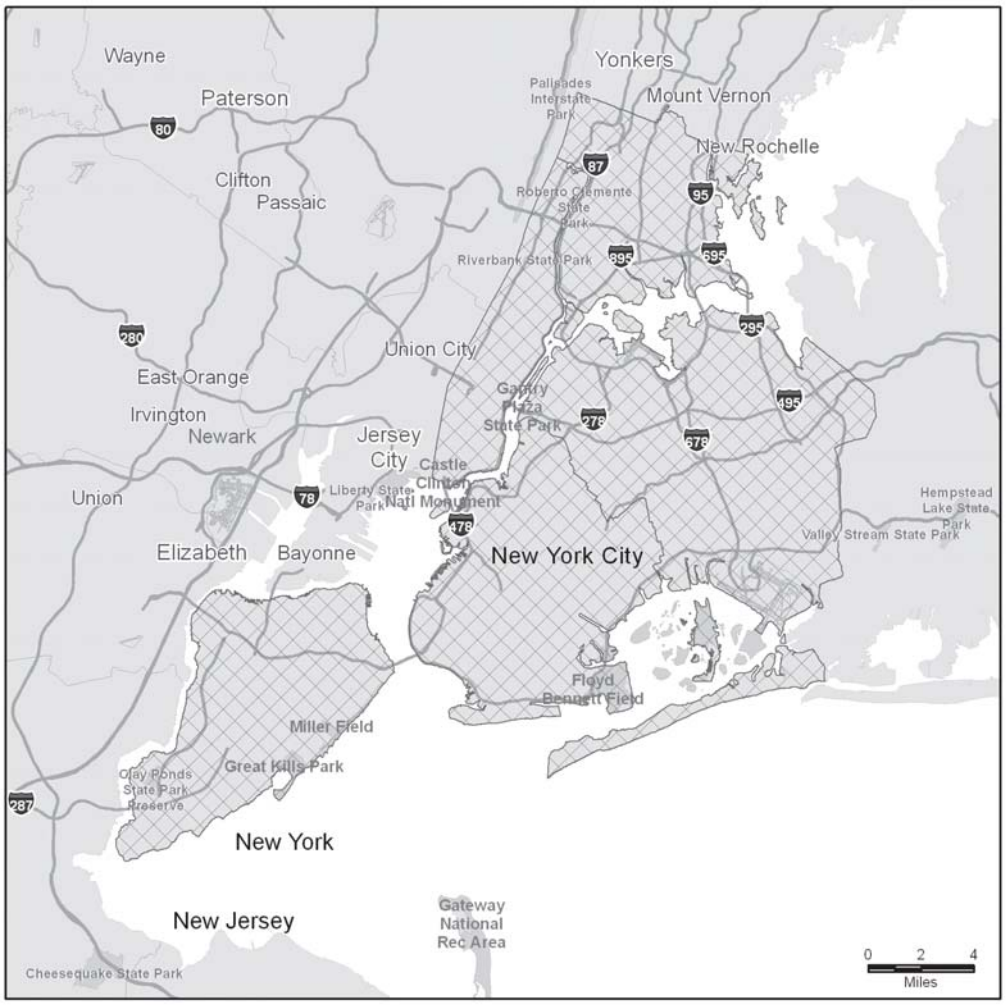
*Hash marks indicate study area.

Miami geographic area* for the Urban Chicken component of the Poultry 2010 study



*Hash marks indicate study area.

New York City geographic area* for the Urban Chicken component of the Poultry 2010 study



*Hatch marks indicate study area.

Section I: Results

A. Management

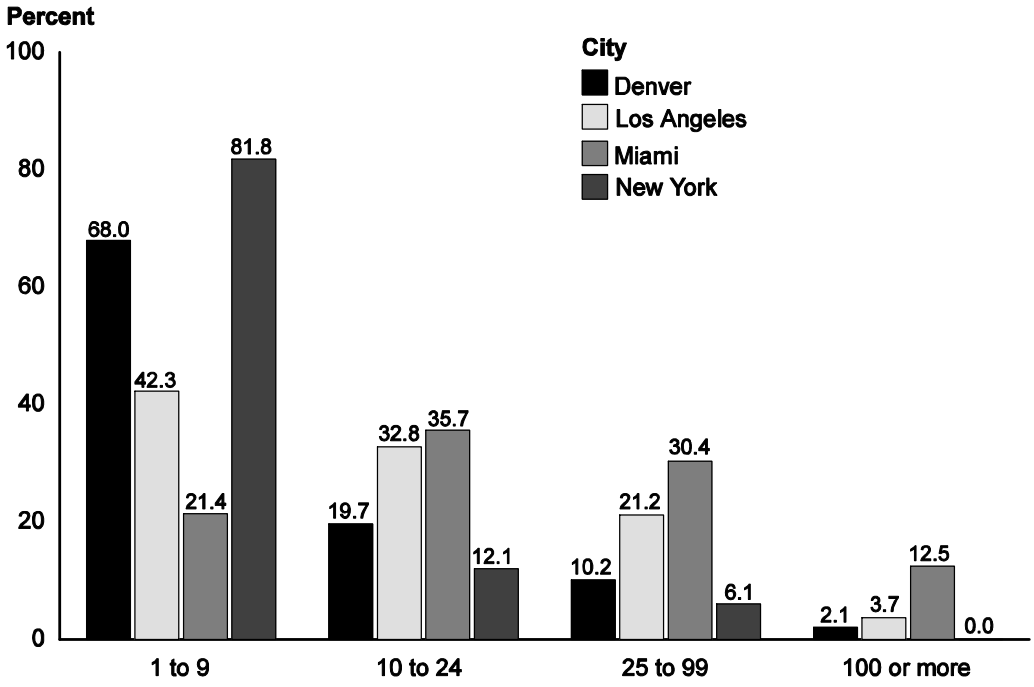
1. Bird types

Most flocks in Denver and New York City had fewer than 10 chickens (68.0 and 81.8 percent, respectively).

a. Percentage of flocks by flock size and by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Flock Size (maximum number of chickens)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1 to 9	68.0	(3.7)	42.3	(3.3)	21.4	(5.7)	81.8	(6.8)	51.5	(2.1)
10 to 24	19.7	(3.3)	32.8	(3.4)	35.7	(6.1)	12.1	(5.8)	27.1	(2.1)
25 to 99	10.2	(2.5)	21.2	(2.9)	30.4	(6.3)	6.1	(4.2)	17.4	(1.8)
100 or more	2.1	(1.2)	3.7	(1.4)	12.5	(4.3)	0.0	(--)	4.0	(0.9)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Flocks by Flock Size and by City



The average maximum number of chickens in flocks during the previous 12 months ranged from 7.8 in New York City to 51.1 in Miami.

b. Average maximum number of chickens in flocks during the previous 12 months, by city:

Average Maximum Number of Chickens

City									
Denver		Los Angeles		Miami		New York		All	
Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
13.1	(1.8)	20.9	(2.1)	51.1	(11.1)	7.8	(1.8)	21.2	(1.8)

Overall, 85.8 percent of flocks had at least some table egg breeds. Flocks that had at least some meat breeds; game fowl; pigeons, doves or game birds; guinea fowl; and pet birds were more common in Los Angeles and Miami than in Denver or New York City.

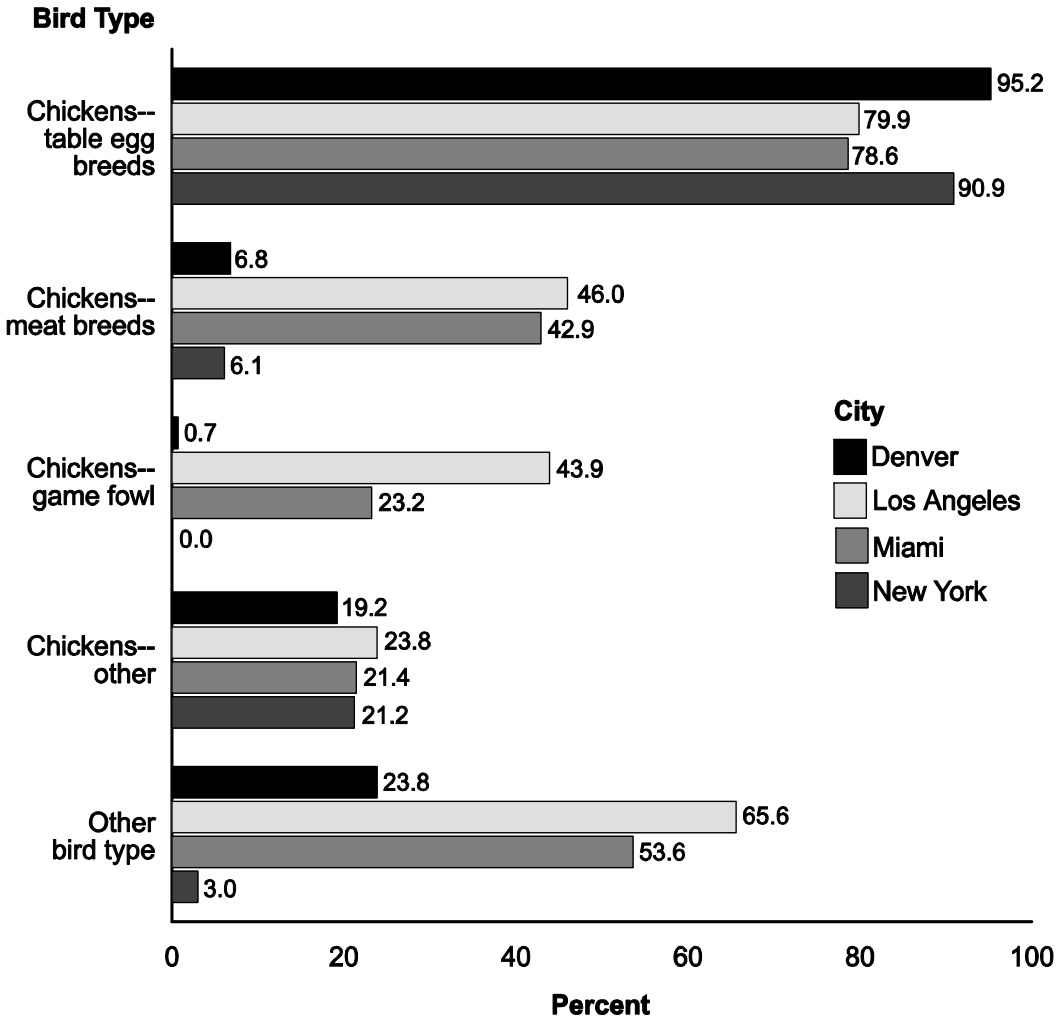
c. Percentage of flocks by bird type and by city:

Percent Flocks

City

Bird Type	Denver		Los Angeles		Miami		New York		All	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Chickens:										
Table egg breeds (e.g., Leghorn, Plymouth Rock, Rhode Island Red)	95.2	(1.8)	79.9	(2.9)	78.6	(5.2)	90.9	(5.1)	85.8	(1.6)
Meat breeds (e.g., Cornish, Sex-links)	6.8	(2.1)	46.0	(3.4)	42.9	(6.6)	6.1	(4.2)	29.0	(1.9)
Game fowl (e.g., Kelso, Hatch, Claret)	0.7	(0.7)	43.9	(3.2)	23.2	(5.7)	0.0	(—)	22.9	(1.6)
Others (e.g., show/exhibition, Silkie, Sebright, Ancona, Bantam)	19.2	(3.2)	23.8	(3.1)	21.4	(5.3)	21.2	(7.2)	21.7	(2.0)
Turkeys	5.5	(1.6)	17.5	(2.6)	14.3	(4.6)	0.0	(—)	11.6	(1.4)
Ducks/other water-fowl (e.g., geese, swans)	12.3	(2.7)	18.5	(2.7)	23.2	(5.7)	0.0	(—)	15.6	(1.7)
Pigeons, doves, or game birds (e.g., quail, pheasant)	5.5	(1.8)	36.0	(3.2)	33.9	(6.1)	3.0	(3.0)	22.6	(1.8)
Guinea fowl	0.0	(—)	10.1	(2.1)	14.3	(4.7)	0.0	(—)	6.4	(1.1)
Pet birds (breeds not used for food and usually housed in cages in the home, e.g., parrots, cockatiels, parakeets, finches, canaries)	8.9	(2.3)	54.5	(3.6)	37.5	(6.2)	0.0	(—)	32.3	(2.0)
Other species of birds	0.7	(0.7)	2.1	(1.0)	1.8	(1.8)	0.0	(—)	1.4	(0.6)

Percentage of Flocks by Bird Type and by City



Over one-half of flocks in Los Angeles and Miami (65.6 and 53.6 percent, respectively) had other species of birds in addition to chickens.

d. Percentage of flocks that had other species of birds in addition to chickens, by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
23.8	(3.4)	65.6	(3.3)	53.6	(5.7)	3.0	(3.0)	44.7	(2.0)

The percentage of flocks that had other species of birds in addition to chickens increased with flock size.

e. Percentage of flocks that had other species of birds in addition to chickens, by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
31.1	(2.9)	52.2	(4.3)	68.1	(4.8)

Overall, table egg breeds accounted for 32.0 percent of birds in flocks and were the predominant breeds in New York City and Denver. In Los Angeles flocks, game fowl accounted for 24.0 percent of birds but were extremely rare in flocks in Denver and New York City. Also, Los Angeles flocks had a higher percentage of pet birds than flocks in Denver and New York City.

f. Percentage of birds in flocks by bird type and by city:

Percent Birds

City

	Denver		Los Angeles		Miami		New York		All	
Bird Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Chickens:										
Table egg breeds (e.g., Leghorn, Plymouth Rock, Rhode Island Red)	58.5	(4.6)	22.5	(2.1)	26.1	(4.8)	63.6	(15.5)	32.0	(2.2)
Meat breeds (e.g., Cornish, Sex-links)	8.0	(3.0)	11.4	(2.3)	16.1	(5.0)	18.9	(15.6)	12.3	(2.0)
Game fowl (e.g., Kelso, Hatch, Claret)	0.1	(0.1)	24.0	(2.9)	9.6	(3.6)	0.0	(—)	14.2	(1.9)
Others (e.g., show/exhibition, Silkie, Sebright, Ancona, Bantam)	15.8	(4.6)	5.5	(1.2)	4.7	(1.3)	6.1	(2.7)	7.4	(1.3)
Turkeys	3.3	(1.4)	2.2	(0.4)	3.9	(1.8)	0.0	(—)	2.8	(0.7)
Ducks/other water-fowl (e.g., geese, swans)	9.7	(2.7)	2.6	(0.5)	7.3	(2.4)	0.0	(—)	5.4	(0.9)
Pigeons, doves, or game birds (e.g., quail, pheasant)	3.2	(1.3)	16.2	(3.1)	19.4	(6.5)	11.4	(10.5)	14.4	(2.5)
Guinea fowl	0.0	(—)	1.2	(0.3)	7.3	(2.9)	0.0	(—)	2.7	(1.1)
Pet birds (breeds not used for food and usually housed in cages in the home, e.g., parrots, cockatiels, parakeets, finches, canaries)	1.3	(0.4)	13.7	(2.1)	5.5	(2.1)	0.0	(—)	8.4	(1.2)
Other species of birds	0.1	(0.1)	0.7	(0.4)	0.1	(0.1)	0.0	(—)	0.4	(0.2)
Total	100.0		100.0		100.0		100.0		100.0	

Table egg breeds accounted for nearly one-half of the chickens in all flocks (48.5 percent), ranging from 35.5 percent of chickens in Los Angeles to 71.8 percent in New York City. Game fowl accounted for 37.8 percent of chickens in Los Angeles.

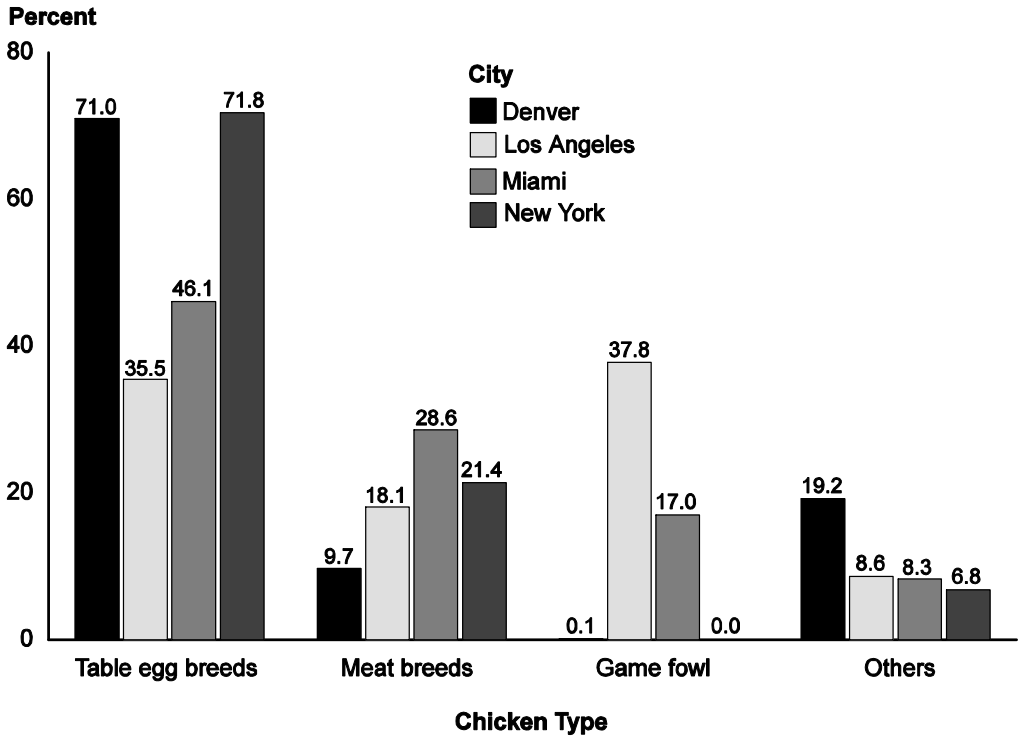
g. Percentage of chickens by chicken type and by city:

Percent Chickens

City

	Denver		Los Angeles		Miami		New York		All	
Chicken Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Table egg breeds (e.g., Leghorn, Plymouth Rock, Rhode Island Red)	71.0	(5.1)	35.5	(3.1)	46.1	(7.0)	71.8	(16.2)	48.5	(2.7)
Meat breeds (e.g., Cornish, Sex-links)	9.7	(3.6)	18.1	(3.5)	28.6	(7.2)	21.4	(17.0)	18.7	(2.8)
Game fowl (e.g., Kelso, Hatch, Claret)	0.1	(0.1)	37.8	(3.9)	17.0	(6.4)	0.0	(--)	21.6	(2.8)
Others (e.g., show/exhibition, Silkie, Sebright, Ancona, Bantam)	19.2	(5.6)	8.6	(2.0)	8.3	(2.4)	6.8	(3.2)	11.2	(1.9)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Chickens by Chicken Type and by City



The percentage of table egg breeds in the flock decreased as flock size increased.

h. Percentage of chickens by chicken type and by flock size:

	Percent Chickens					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Chicken Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Table egg breeds (e.g., Leghorn, Plymouth Rock, Rhode Island Red)	79.8	(2.5)	54.2	(3.5)	39.2	(3.8)
Meat breeds (e.g., Cornish, Sex-links)	8.1	(1.7)	15.9	(2.6)	22.2	(4.2)
Game fowl (e.g., Kelso, Hatch, Claret)	3.9	(1.2)	18.7	(2.7)	26.7	(4.3)
Others (e.g., show/ exhibition, Silkie, Sebright, Ancona, Bantam)	8.2	(1.6)	11.2	(2.2)	11.9	(2.9)
Total	100.0		100.0		100.0	

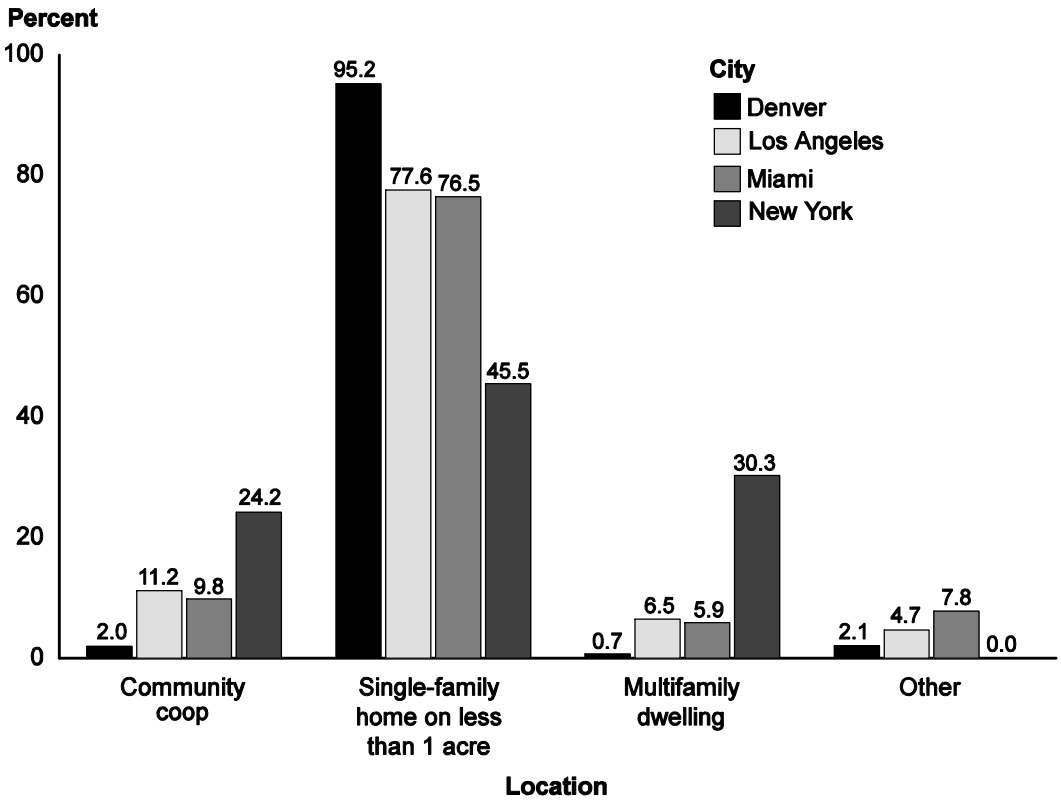
2. Location where chickens were kept

The majority of flocks (81.2 percent) were located at single family homes. In New York City, nearly one-fourth of flocks (24.2 percent) were located at a community coop and one-third (30.3 percent) were located at multifamily dwellings. “Other” locations where birds were kept included place of business, classroom, or someone else’s home.

a. Percentage of flocks by location where chickens were kept and by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Location	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Community coop	2.0	(1.1)	11.2	(2.3)	9.8	(4.1)	24.2	(7.6)	8.7	(1.3)
Single-family home on less than 1 acre	95.2	(1.7)	77.6	(3.1)	76.5	(6.2)	45.5	(8.8)	81.2	(1.8)
Multifamily dwelling (e.g., apartment, condo)	0.7	(0.7)	6.5	(1.9)	5.9	(3.4)	30.3	(8.1)	6.3	(1.2)
Other	2.1	(1.2)	4.7	(1.6)	7.8	(3.9)	0.0	(--)	3.8	(1.0)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Flocks by Location Where Chickens were Kept and by City



Flock location was similar across size groups.

b. Percentage of flocks by location where chickens were kept and by flock size:

Percent Flocks

Flock Size (maximum number of chickens)

Location	**Small** (1–9) Pct.	Std. Error	**Medium** (10–24) Pct.	Std. Error	**Large** (25 or more) Pct.	Std. Error
Community coop	6.2	(1.6)	8.4	(2.7)	15.7	(4.0)
Single-family home on less than 1 acre	85.7	(2.2)	78.5	(4.0)	73.5	(4.9)
Multifamily dwelling (e.g., apartment, condo)	6.2	(1.5)	6.6	(2.4)	6.0	(2.6)
Other	1.9	(0.9)	6.5	(2.4)	4.8	(2.4)
Total	100.0		100.0		100.0	

3. Ability to leave the property

Overall, birds (either chickens or other birds) could leave the property on 18.9 percent of flocks. Specific information regarding how chickens were able to leave the property was not collected. Chickens might have been kept in an unfenced area.

a. Percentage of flocks in which chickens or other birds could leave the property (even if they did not leave), by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
14.4	(2.9)	21.3	(3.0)	27.3	(6.2)	12.1	(5.8)	18.9	(1.9)

Birds could leave the property on a higher percentage of flocks with birds other than chickens compared with flocks with chickens only.

b. Percentage of flocks in which chickens or other birds could leave the property (even if they did not leave), by bird type:

Percent Flocks			
Bird Type			
Chickens Only		Chickens and Other Birds	
Percent	Std. Error	Percent	Std. Error
13.8	(2.3)	25.4	(3.2)

4. Wild-bird feeder on property

The percentage of flocks that had a wild-bird feeder at the location where chickens were kept was similar across cities. Overall, 29.0 percent of flocks had a wild-bird feeder in the chicken area.

a. Percentage of flocks with a wild-bird feeder at the location where chickens were kept, by city:

Percent Flocks

City

	Denver		Los Angeles		Miami		New York		All	
Wild-bird Feeder?	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Yes	30.1	(3.9)	31.9	(3.2)	20.8	(5.8)	21.2	(7.2)	29.0	(2.2)
No	69.9	(3.9)	52.7	(3.5)	64.1	(6.6)	78.8	(7.2)	62.2	(2.3)
Did not know	0.0	(--)	15.4	(2.6)	15.1	(4.6)	0.0	(--)	8.8	(1.3)
Total	100.0		100.0		100.0		100.0		100.0	

The percentage of flocks with a wild-bird feeder was similar across size groups.

b. Percentage of flocks with a wild-bird feeder at the location where chickens were kept, by flock size:

Percent Flocks

Flock Size (maximum number of chickens)

	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Wild-bird Feeder?	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Yes	30.7	(3.1)	24.1	(4.0)	31.1	(4.8)
No	64.7	(3.2)	59.8	(4.6)	58.9	(5.1)
Did not know	4.6	(1.4)	16.1	(3.4)	10.0	(3.2)
Total	100.0		100.0		100.0	

5. Chicken housing

Chickens were kept in an outdoor pen or barn on approximately 9 of 10 flocks in each city; 15.5 percent of flocks had chickens residing inside the respondent's house/living space.

a. Percentage of flocks that were ever kept in the following types of housing during the previous 3 months, by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Housing Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Inside house/ living space	24.8	(3.6)	9.8	(2.2)	11.5	(4.5)	12.1	(5.8)	15.5	(1.7)
In an outdoor poultry pen or poultry house/barn	91.7	(2.3)	89.1	(2.3)	94.2	(3.3)	90.9	(5.1)	90.8	(1.4)
In the basement or garage	14.5	(2.9)	2.2	(1.1)	1.9	(1.9)	6.1	(4.2)	6.8	(1.2)
Somewhere else	2.1	(1.1)	2.7	(1.2)	3.8	(2.6)	6.1	(4.2)	2.9	(0.8)

The percentages of flocks by housing types were similar across size groups.

b. Percentage of flocks that were ever kept in the following types of housing during the previous 3 months, by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Housing Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Inside house/living space	19.0	(2.6)	11.7	(3.1)	11.6	(3.5)
In an outdoor poultry pen or poultry house/barn	89.4	(2.1)	90.1	(2.8)	95.3	(2.3)
In the basement or garage	6.9	(1.7)	5.4	(2.2)	8.1	(2.9)
Somewhere else	2.8	(1.1)	3.6	(1.8)	2.3	(1.6)

6. Animal contact

Wild birds other than waterfowl were seen daily in the usual chicken area in 39.5 percent of flocks. Pet dogs and cats were seen daily in the chicken area in 62.6 percent of flocks. Over three of four flocks rarely or never saw wild waterfowl or the neighbors' chickens and/or other birds in the chicken area (83.6 and 75.2 percent of flocks, respectively).

a. Percentage of flocks by frequency, during the previous 3 months, that the following animals were seen or evidence of them was seen in the usual chicken area:

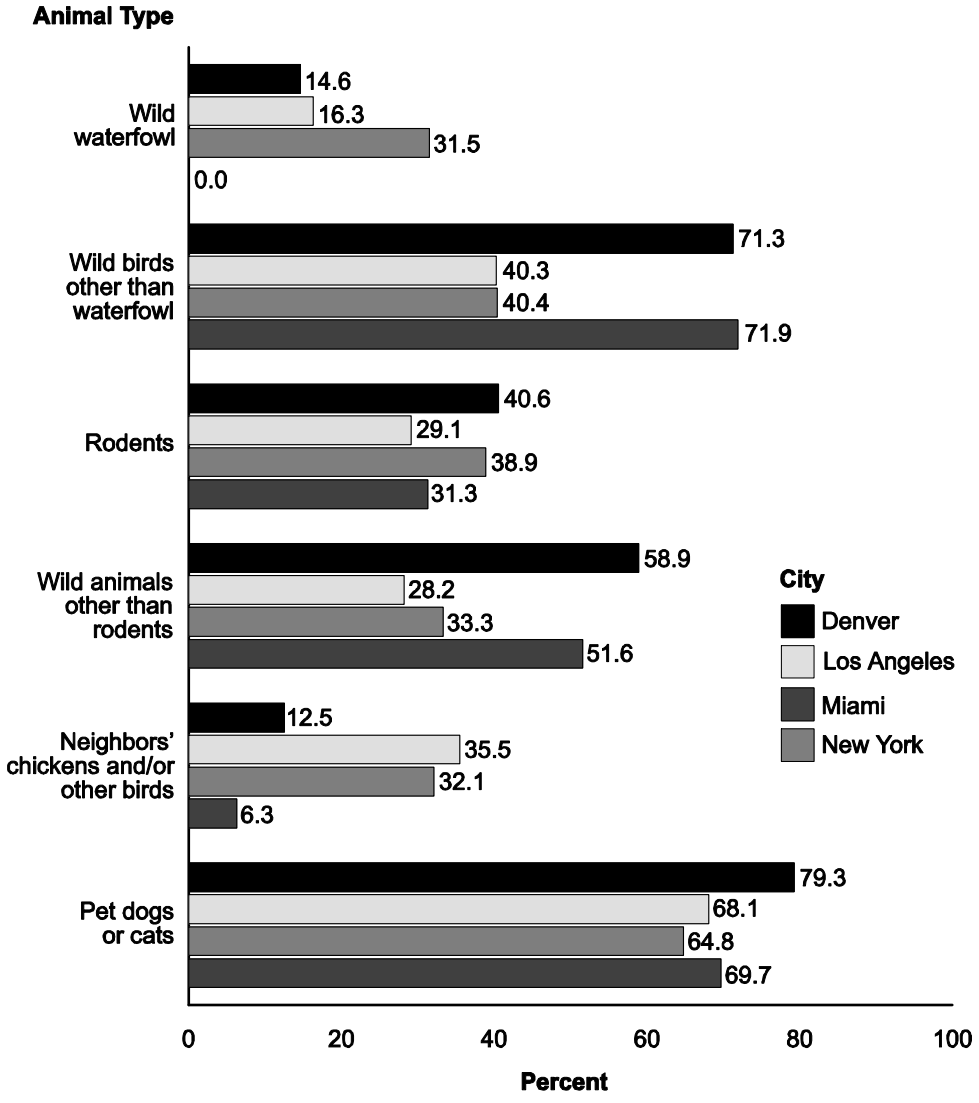
	Percent Flocks								
	Frequency								
	Daily		Weekly		Monthly		Rarely or Never		
Animal Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Wild waterfowl (e.g., ducks, geese)	8.7	(1.3)	5.1	(1.1)	2.6	(0.8)	83.6	(1.8)	100.0
Wild birds other than waterfowl	39.5	(2.2)	8.3	(1.4)	5.9	(1.2)	46.3	(2.3)	100.0
Rodents (rats or mice)	10.7	(1.5)	10.5	(1.5)	13.4	(1.7)	65.4	(2.3)	100.0
Wild animals other than rodents (e.g., feral cats, raccoons, foxes, skunks, opossums, etc.)	13.0	(1.6)	13.4	(1.6)	15.2	(1.7)	58.4	(2.3)	100.0
Neighbors' chickens and/or other birds	14.3	(1.7)	4.9	(1.0)	5.6	(1.1)	75.2	(2.0)	100.0
Pet dogs or cats	62.6	(2.3)	6.2	(1.2)	2.9	(0.8)	28.3	(2.1)	100.0

Wild birds other than waterfowl were seen in the usual chicken area at least monthly in 7 of 10 flocks in Denver and New York City and in 4 of 10 flocks in Los Angeles and Miami. Neighbors' chickens were seen at least monthly in one-third of flocks in Los Angeles and Miami. Overall, pet dogs or cats were seen in the usual chicken area in 7 of 10 flocks.

b. Percentage of flocks in which, during the previous 3 months, the following animals were seen or evidence of them was seen in the usual chicken area **at least monthly**, by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Animal Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Wild waterfowl (e.g., ducks, geese)	14.6	(2.9)	16.3	(2.7)	31.5	(5.9)	0.0	(--)	16.4	(1.8)
Wild birds other than waterfowl	71.3	(3.8)	40.3	(3.5)	40.4	(6.3)	71.9	(8.1)	53.7	(2.3)
Rodents (e.g., rats or mice)	40.6	(4.1)	29.1	(3.3)	38.9	(7.0)	31.3	(8.3)	34.6	(2.3)
Wild animals other than rodents (e.g., feral cats, raccoons, foxes, skunks, opossums, etc.)	58.9	(4.0)	28.2	(3.2)	33.3	(7.0)	51.6	(9.1)	41.6	(2.3)
Neighbors' chickens and/or other birds	12.5	(2.7)	35.5	(3.4)	32.1	(6.4)	6.3	(4.3)	24.8	(2.0)
Pet dogs or cats	79.3	(3.4)	68.1	(3.2)	64.8	(6.7)	69.7	(8.1)	71.7	(2.1)

Percentage of Flocks in which, During the Previous 3 Months, the Following Animals were Seen or Evidence of Them was Seen in the Usual Chicken Area at Least Monthly, by City



Rodents were seen in the usual chicken area during the previous 3 months in a lower percentage of small flocks than large flocks (26.8 and 47.7 percent, respectively). A similar relationship was shown for neighbors' chickens and/or other birds.

c. Percentage of flocks in which, during the previous 3 months, the following animals were seen or evidence of them was seen in the usual chicken area **at least monthly**, by animal type and by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Animal Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Wild waterfowl (e.g., ducks, geese)	12.6	(2.2)	21.4	(3.9)	19.3	(4.2)
Wild birds other than waterfowl	53.8	(3.2)	47.7	(4.7)	60.9	(5.2)
Rodents (e.g., rats or mice)	26.8	(3.0)	39.1	(4.6)	47.7	(5.3)
Wild animals other than rodents (e.g., feral cats, raccoons, foxes, skunks, opossums, etc.)	46.0	(3.3)	36.7	(4.6)	36.8	(5.2)
Neighbors' chickens and/or other birds	16.3	(2.5)	32.1	(4.5)	36.4	(5.1)
Pet dogs or cats	70.0	(3.0)	75.7	(4.1)	70.8	(4.8)

7. Proximity to other poultry

Overall, 36.8 percent of flocks were located within 0.1 mile of the nearest neighbor with poultry. A similar percentage (34.8 percent) did not know the distance to the nearest neighbor with poultry.

Percentage of flocks by approximate distance (in miles) from chicken area to the nearest neighbor with poultry, and by city:

Percent Flocks

	City									
	Denver		Los Angeles		Miami		New York		All	
Distance (Miles)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Less than 0.10	33.1	(4.0)	45.7	(3.6)	25.9	(6.3)	18.8	(7.0)	36.8	(2.3)
0.10 to 0.24	2.8	(1.4)	5.9	(1.7)	5.6	(3.0)	6.3	(4.3)	4.8	(1.0)
0.25 to 0.99	9.0	(2.4)	4.8	(1.6)	9.3	(4.1)	15.6	(6.5)	7.6	(1.3)
1.00 or more	9.6	(2.5)	17.0	(2.6)	29.6	(6.3)	15.6	(6.5)	16.0	(1.7)
Did not know	45.5	(4.2)	26.6	(3.2)	29.6	(6.3)	43.7	(8.9)	34.8	(2.3)
Total	100.0		100.0		100.0		100.0		100.0	

Photo courtesty Judy Rodriguez

B. Health and Health Care

1. Chicken health

External parasites were observed in 15.0 percent of flocks in Los Angeles during the previous 3 months. Only 2.0 percent of flocks in Denver observed respiratory problems. In general, a smaller percentage of flocks in Denver and Los Angeles observed health problems than flocks in New York City. “Other” problems included internal parasites and heat stress.

a. Percentage of flocks in which the following health problems were observed during the previous 3 months, by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Problem	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Diarrhea	6.8	(2.0)	7.0	(1.9)	5.7	(3.2)	39.4	(8.6)	9.3	(1.3)
Respiratory (nasal/eye discharge, cough/rattle/ sneeze, “snicking”)	2.0	(1.2)	8.0	(1.9)	17.0	(5.2)	12.1	(5.8)	7.4	(1.2)
Neurologic (falling over, weakness, trembling)	0.7	(0.7)	3.2	(1.3)	1.9	(1.9)	0.0	(--)	1.9	(0.7)
Weight loss	4.1	(1.6)	5.3	(1.6)	0.0	(--)	0.0	(--)	3.8	(0.9)
Feed refusal/depression (droopy birds)	2.7	(1.4)	3.2	(1.3)	5.7	(3.1)	3.0	(3.0)	3.3	(0.9)
Unexpected decreased production (egg laying, hatchability, weight gain)	5.5	(1.9)	8.6	(2.0)	7.5	(3.8)	24.2	(7.6)	8.6	(1.3)
Unexplained death loss	6.1	(2.0)	5.9	(1.7)	9.4	(4.0)	12.1	(5.8)	6.9	(1.2)
External parasites (lice/mites)	4.1	(1.7)	15.0	(2.5)	5.7	(3.3)	6.1	(4.2)	9.3	(1.4)
Lameness/ leg problems	4.8	(1.7)	3.7	(1.4)	3.8	(2.7)	15.2	(6.3)	5.0	(1.0)
Other	1.4	(1.0)	0.5	(0.5)	1.9	(1.9)	15.2	(6.3)	2.1	(0.7)
Any of the above	21.9	(3.4)	29.0	(3.2)	39.6	(6.9)	63.6	(8.5)	30.6	(2.2)

A higher percentage of large flocks (46.6 percent) had at least one health problem during the previous 3 months compared with small flocks (25.0 percent), although large flocks had more birds available to become sick. A lower percentage of small flocks observed respiratory problems compared with medium and large flocks.

b. Percentage of flocks in which the following health problems were observed during the previous 3 months, by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Problem	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Diarrhea	11.5	(2.1)	7.9	(2.6)	5.6	(2.4)
Respiratory (nasal/eye discharge, cough/rattle/ sneeze, “snicking”)	1.8	(0.9)	11.4	(2.9)	15.7	(3.9)
Neurologic (falling over, weakness, trembling)	1.4	(0.8)	0.9	(0.9)	4.5	(2.2)
Weight loss	3.7	(1.3)	2.6	(1.5)	5.6	(2.4)
Feed refusal/depression (droopy birds)	3.2	(1.2)	3.5	(1.7)	3.4	(2.0)
Unexpected decreased production (egg laying, hatchability, weight gain)	10.2	(2.0)	3.5	(1.7)	11.2	(3.3)
Unexplained death loss	4.1	(1.4)	5.3	(2.1)	15.7	(3.8)
External parasites (lice/mites)	6.5	(1.7)	8.8	(2.6)	16.9	(4.0)
Lameness/leg problems	3.2	(1.2)	4.4	(1.9)	10.1	(3.2)
Other	3.2	(1.2)	1.8	(1.2)	0.0	(--)
Any of the above	25.0	(2.8)	28.9	(4.3)	46.6	(5.3)

2. Health care

Overall, 1 of 10 flocks (9.9 percent) was seen by a veterinarian for any reason during the previous 12 months.

a. Percentage of flocks in which a veterinarian looked at the chicken(s) for any reason during the previous 12 months, by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
11.0	(2.5)	9.3	(2.1)	9.1	(3.6)	9.1	(5.1)	9.9	(1.4)

The percentage of flocks seen by a veterinarian did not differ substantially by flock size.

b. Percentage of flocks in which a veterinarian looked at the chicken(s) for any reason during the previous 12 months, by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
6.9	(1.7)	9.9	(2.8)	16.9	(4.0)

The percentage of flocks in which chickens received treatments, medications, or vaccines/shots during the previous 12 months ranged from 15.8 percent of flocks in Denver to 43.6 percent of flocks in Los Angeles.

c. Percentage of flocks in which chicken(s) received treatments, medications, or vaccines/shots during the previous 12 months, by city:

Percent Flocks

City

Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
15.8	(3.1)	43.6	(3.5)	32.7	(6.1)	21.2	(7.2)	30.5	(2.1)

The percentage of flocks that received treatments, medications, or vaccines/shots during the previous 12 months increased with flock size.

d. Percentage of flocks in which chicken(s) received treatments, medications, or vaccines/shots during the previous 12 months, by flock size:

Percent Flocks

Flock Size (maximum number of chickens)

Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
19.2	(2.7)	31.8	(4.4)	56.2	(5.1)

3. Health resources

Over one-half of flock owners considered other chicken owners, feed stores, and the Internet to be very important sources of chicken health information. Books were the most common “other” source of information. Poultry veterinarians might not be readily available in urban areas so, even if considered very important, they might not be accessible.

a. Percentage of flocks by level of importance of the following sources of chicken health information:

	Percent Flocks						
	Level of Importance						
	Very Important		Somewhat Important		Not Important		
Source of Information	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Veterinarian (private practitioner)	39.2	(2.2)	31.0	(2.2)	29.8	(2.1)	100.0
Extension service	27.8	(2.2)	33.7	(2.2)	38.5	(2.3)	100.0
Other chicken owners	52.5	(2.4)	25.9	(2.1)	21.6	(1.9)	100.0
Feed store	59.0	(2.3)	25.5	(2.0)	15.5	(1.7)	100.0
Magazines/journals	44.7	(2.3)	28.5	(2.2)	26.8	(2.1)	100.0
Internet	55.8	(2.4)	24.6	(2.1)	19.6	(1.9)	100.0
Other	4.1	(0.9)	1.9	(0.7)	94.0	(1.1)	100.0

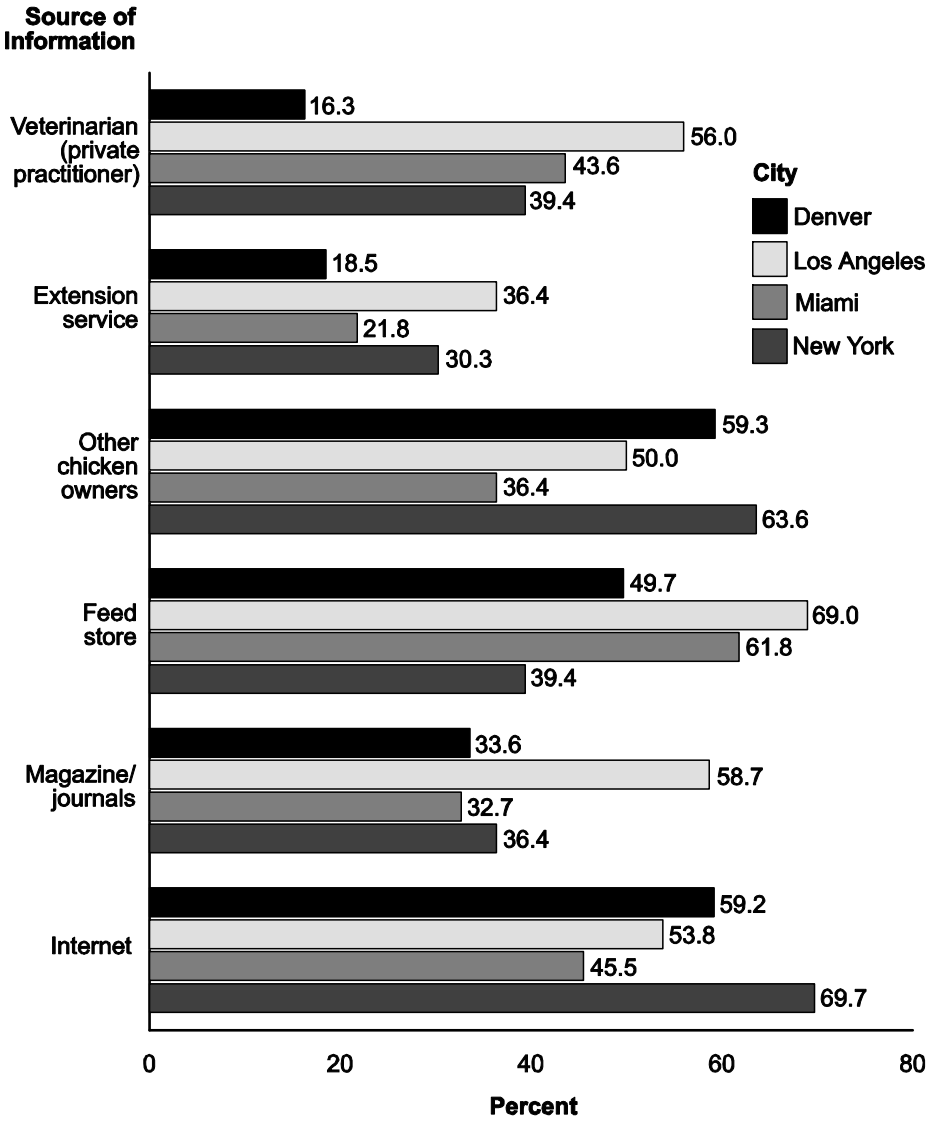
Veterinarians were considered a very important source of chicken health information on 16.3 percent of flocks in Denver, 56.0 percent in Los Angeles, 43.6 percent in Miami, and 39.4 percent in New York City. Feed stores were considered a very important source of information on about two-thirds of flocks in Los Angeles and Miami; this finding might have been influenced by the fact that the study survey was conducted in feed stores.

b. Percentage of flocks that ranked the following sources of chicken health information **very important,** by city:

Percent Flocks

	City									
	Denver		Los Angeles		Miami		New York		All	
Source of Information	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Veterinarian (private practitioner)	16.3	(3.0)	56.0	(3.5)	43.6	(6.8)	39.4	(8.6)	39.2	(2.2)
Extension service	18.5	(3.2)	36.4	(3.5)	21.8	(5.7)	30.3	(8.1)	27.8	(2.2)
Other chicken owners	59.3	(3.9)	50.0	(3.7)	36.4	(6.3)	63.6	(8.5)	52.5	(2.4)
Feed store	49.7	(4.1)	69.0	(3.3)	61.8	(6.4)	39.4	(8.6)	59.0	(2.3)
Magazine/ journals	33.6	(4.0)	58.7	(3.5)	32.7	(6.0)	36.4	(8.5)	44.7	(2.3)
Internet	59.2	(4.0)	53.8	(3.7)	45.5	(6.4)	69.7	(8.1)	55.8	(2.4)
Other source	8.8	(2.3)	0.5	(0.5)	0.0	(--)	9.1	(5.1)	4.1	(0.9)

Percentage of Flocks that Ranked the Following Sources of Chicken Health Information Very Important, by City



As expected, the percentages of flocks that ranked chicken health information sources very important did not differ substantially by flock size.

c. Percentage of flocks that ranked the following sources of chicken health information **very important,** by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Source of Information	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Veterinarian (private practitioner)	31.9	(3.0)	46.5	(4.6)	47.2	(5.2)
Extension service	23.7	(2.9)	26.3	(4.1)	39.3	(5.2)
Other chicken owners	52.6	(3.3)	50.9	(4.7)	54.5	(5.2)
Feed store	56.9	(3.3)	62.3	(4.6)	59.6	(5.0)
Magazine/journals	38.1	(3.3)	52.6	(4.6)	50.6	(5.2)
Internet	61.1	(3.2)	48.2	(4.5)	52.8	(5.3)
Other source	6.5	(1.7)	1.8	(1.2)	1.1	(1.1)

C. Chicken Movement

1. Flock additions

More than two-thirds of flocks in Denver and New York City had acquired new chickens at least once during the previous 12 months. While nearly one-half of flocks in Miami (46.3 percent) had not acquired any new chickens during the previous 12 months, about one-fourth of Miami flocks (24.1 percent) had acquired new chickens three or more times.

a. Percentage of flocks by number of times during the previous 12 months new chickens were acquired (not including those hatched on site), and by city:

Percent Flocks

City

Number of Times	Denver		Los Angeles		Miami		New York		All	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
0	23.8	(3.5)	59.2	(3.4)	46.3	(6.2)	33.3	(8.3)	43.2	(2.2)
1	54.4	(4.2)	23.8	(3.0)	16.7	(4.8)	57.6	(8.7)	36.2	(2.2)
2	13.6	(2.9)	4.8	(1.6)	12.9	(4.5)	6.1	(4.2)	9.0	(1.4)
3 or more	8.2	(2.3)	12.2	(2.4)	24.1	(5.9)	3.0	(3.0)	11.6	(1.5)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Flocks by Number of Times During the Previous 12 Months New Chickens were Acquired (not Including Those Hatched on Site), and by City

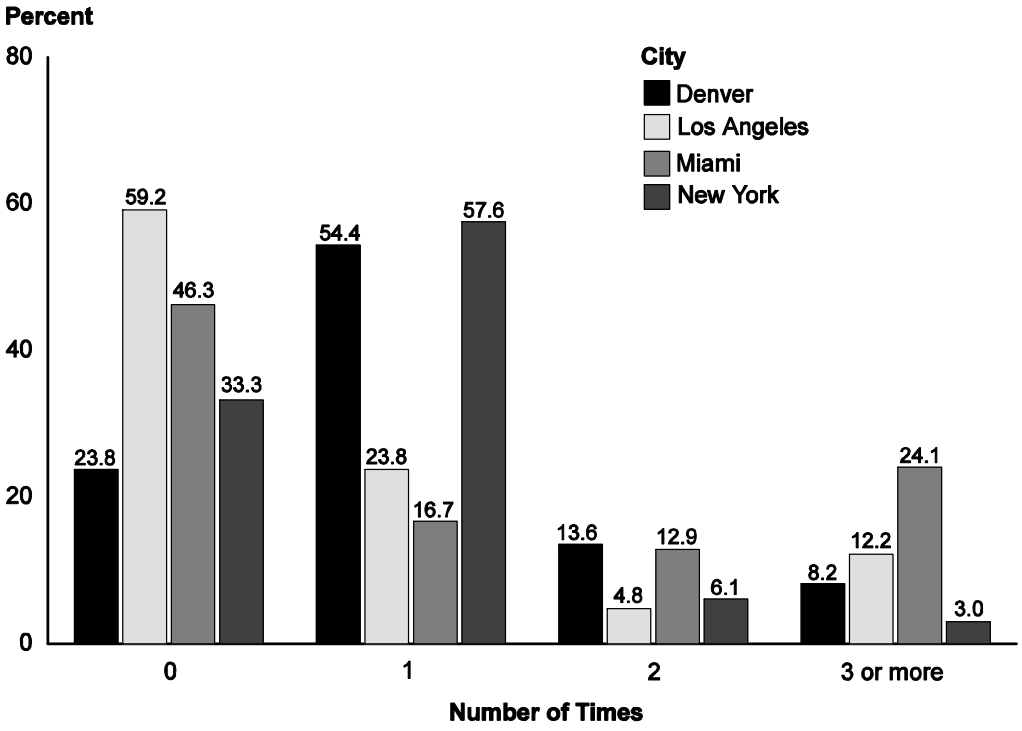


Photo courtesy Judy Rodriguez

About one-half of small flocks (50.2 percent) had acquired new chickens once during the previous 12 months. One-third of large flocks (33.7 percent) acquired new chickens three or more times.

b. Percentage of flocks by number of times during the previous 12 months new chickens were acquired (not including those hatched on site), and by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Number of Times	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
0	39.7	(3.3)	48.7	(4.4)	44.9	(5.2)
1	50.2	(3.4)	27.0	(4.0)	13.5	(3.7)
2	6.9	(1.7)	13.9	(3.2)	7.9	(2.8)
3 or more	3.2	(1.2)	10.4	(2.9)	33.7	(5.0)
Total	100.0		100.0		100.0	

For flocks in which the family had chickens for less than 1 year, 87.0 percent had acquired new chickens once during the previous 12 months. This finding probably reflects initial flock startups. In contrast, less than one-half of flocks in which the family had chickens for 1 year or longer had any acquisitions during the previous 12 months.

c. Percentage of flocks by number of times during the previous 12 months new chickens were acquired (not including those hatched on site), and by number of years the family had been raising chickens:

	Percent Flocks					
	Number of Years Chickens Raised					
	Less than 1		1–4		5 or More	
Number of Times	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
0	0.0	(—)	51.1	(4.2)	58.6	(3.6)
1	87.0	(3.5)	27.0	(3.7)	18.9	(2.9)
2	8.7	(2.9)	11.7	(2.7)	7.7	(2.0)
3 or more	4.3	(2.1)	10.2	(2.6)	14.8	(2.7)
Total	100.0		100.0		100.0	

For flocks that had acquired new chickens during the previous 12 months, about one-third (35.4 percent) got them from a private individual; a similar percentage (34.5 percent) got their chickens from a feed or farm store. Mail order/Internet was a more common method of obtaining chickens in Denver than in Los Angeles (26.6 and 9.3 percent of flocks, respectively). Local hatcheries were a more common source in Los Angeles than in Denver (33.3 and 11.9 percent of flocks, respectively).

d. For flocks that had acquired new chickens during the previous 12 months, percentage of flocks that acquired any new chickens from the following sources, by city:

Percent Flocks

	City									
	Denver		Los Angeles		Miami[1]		New York[1]		All[2]	
Source	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Local hatchery	11.9	(3.1)	33.3	(5.9)					18.9	(2.6)
Local farm	23.9	(4.0)	25.9	(5.6)					26.7	(3.0)
Private individual (e.g., friend, neighbor)	25.7	(4.3)	42.6	(6.5)					35.4	(3.3)
Fair or show	5.5	(2.2)	3.7	(2.5)					3.9	(1.3)
Feed or farm store	33.0	(4.2)	55.6	(6.7)					34.5	(3.1)
Mail order or Internet	26.6	(4.2)	9.3	(4.0)					18.4	(2.7)
Poultry wholesaler or dealer	7.3	(2.5)	5.6	(3.2)					7.8	(1.9)
Other	0.9	(0.9)	0.0	(—)					1.0	(0.7)

[1] Too few to report.
[2] Includes all four cities.

Mail-order chicks were shipped more than 1,000 miles, on average.

e. For flocks that had acquired new chickens during the previous 12 months, operation average distance (in miles) chickens traveled to arrive at the flock, by source:

Source	Operation Average Distance (miles)	Std. Error
Local hatchery	22	(8)
Local farm	42	(5)
Private individual (e.g., friend, neighbor)	52	(23)
Fair or show*		
Feed or farm store	15	(2)
Mail order or Internet	1,104	(165)
Poultry wholesaler or dealer*		
Other*		

*Too few to report.

2. Removal of chickens

The percentage of flocks that sold or gave away live chickens ranged from 17.7 percent in Denver to 37.5 percent in Miami.

a. Percentage of flocks that sold or gave away any live chickens during the previous 12 months, by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
17.7	(3.2)	26.7	(3.2)	37.5	(6.5)	18.2	(6.8)	24.3	(2.1)

The percentage of flocks that sold or gave away live chickens increased with flock size.

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

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
8.7	(1.9)	29.8	(4.2)	54.9	(5.3)

Overall, a private individual was the most common destination of chickens sold or given away (76.9 percent of flocks). In Los Angeles, 24.4 percent of flocks that sold or gave away chickens sent them to a poultry wholesaler or dealer and 33.3 percent sent them to a feed or farm store. In Denver, only 3.8 percent of flocks sold or gave away chickens using a feed or farm store. Examples of “other” destinations included Internet sales and birds being confiscated.

c. For flocks that sold or gave away live chickens during the previous 12 months, percentage of flocks by destination of chickens and by city:

Percent Flocks									
	City								
	Denver		**Los Angeles**		**Miami[1]**		**New York[1]**		**All[2]**	
Destination	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Live-bird market[3]	11.5	(6.3)	22.2	(5.9)					17.6	(3.9)
Private individual (e.g., friend, neighbor)	88.5	(6.3)	64.4	(7.1)					76.9	(4.4)
Poultry wholesaler or dealer	0.0	(—)	24.4	(6.1)					12.1	(3.2)
Fair or show	11.5	(6.1)	11.1	(4.6)					9.9	(3.1)
Feed or farm store	3.8	(3.8)	33.3	(6.9)					20.9	(4.2)
Other	11.5	(6.3)	2.2	(2.2)					5.5	(2.4)

[1]Too few to report.
[2]Includes all four cities.
[3]Respondents might have interpreted live-bird markets to include bird swaps.

For live chickens sold or given away to a private individual, the average distance chickens traveled was 20 miles.

d. For flocks that sold or gave away live chickens during the previous 12 months, operation average distance chickens traveled (in miles) to get to destination, by destination:

Destination	Operation Average Distance (miles)	Std. Error
Live-bird market	6	(2)
Private individual (e.g., friend, neighbor)	20	(5)
Poultry wholesaler or dealer*		
Fair or show*		
Feed or farm store	9	(7)
Other*		

*Too few to report.

3. Other locations with birds

Only 6.9 percent of flock owners took chickens to a location such as a fair or show where other birds were present and then returned the chickens to their flocks.

a. Percentage of flocks that took chickens to a location such as a fair or show where other birds were present and then returned the chickens to the flock during the previous 12 months, by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
7.9	(1.8)	5.7	(1.8)	12.8	(4.6)	0.0	(—)	6.9	(1.2)

The percentage of flock owners that took chickens to a location such as a fair or show where other birds were present ranged from 2.4 percent of small flocks to 12.5 percent of large flocks.

b. Percentage of flocks that took chickens to a location such as a fair or show where other birds were present and then returned the chickens to the flock during the previous 12 months, by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
2.4	(1.0)	11.2	(3.0)	12.5	(3.6)

4. Egg movement

About 2 of 10 flocks in Los Angeles and Miami sold or gave away eggs compared with about 5 of 10 flocks in Denver and 7 of 10 flocks in New York City.

a. Percentage of flocks that sold or gave away any hatching or table eggs during the previous 12 months, by city:

Percent Flocks									
City									
Denver		**Los Angeles**		**Miami**		**New York**		**All**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
49.3	(4.2)	18.4	(2.9)	20.0	(5.5)	71.9	(8.1)	33.8	(2.2)

The percentage of flocks that sold or gave away eggs was similar across size groups.

b. Percentage of flocks that sold or gave away any hatching or table eggs during the previous 12 months, by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
30.7	(2.9)	37.4	(4.6)	37.2	(5.1)

D. Biosecurity

1. Biosecurity practices

About one-half of flocks (45.7 percent) always required hand washing before handling chickens and about three-fourths (77.1 percent) always required hand washing after handling chickens. About two-thirds of the practices listed below were never required.

a. Percentage of flocks by frequency that the following practices were required for people (including family) entering the chicken area:

	Percent Flocks						
	Frequency						
	Always		Sometimes		Never		
Practice	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Use of footbath before entry	13.3	(1.6)	14.0	(1.6)	72.7	(2.0)	100.0
Scrub boots/shoes before entry	17.2	(1.8)	12.6	(1.5)	70.2	(2.1)	100.0
Wear shoe covers, wear dedicated shoes, or change shoes	20.5	(1.9)	19.5	(1.9)	60.0	(2.3)	100.0
Wear dedicated clothing or change clothing before entering	10.7	(1.4)	22.6	(2.0)	66.7	(2.2)	100.0
Wash hands before handling chickens	45.7	(2.3)	20.0	(1.9)	34.3	(2.2)	100.0
Wash hands after handling chickens	77.1	(1.9)	11.2	(1.5)	11.7	(1.5)	100.0

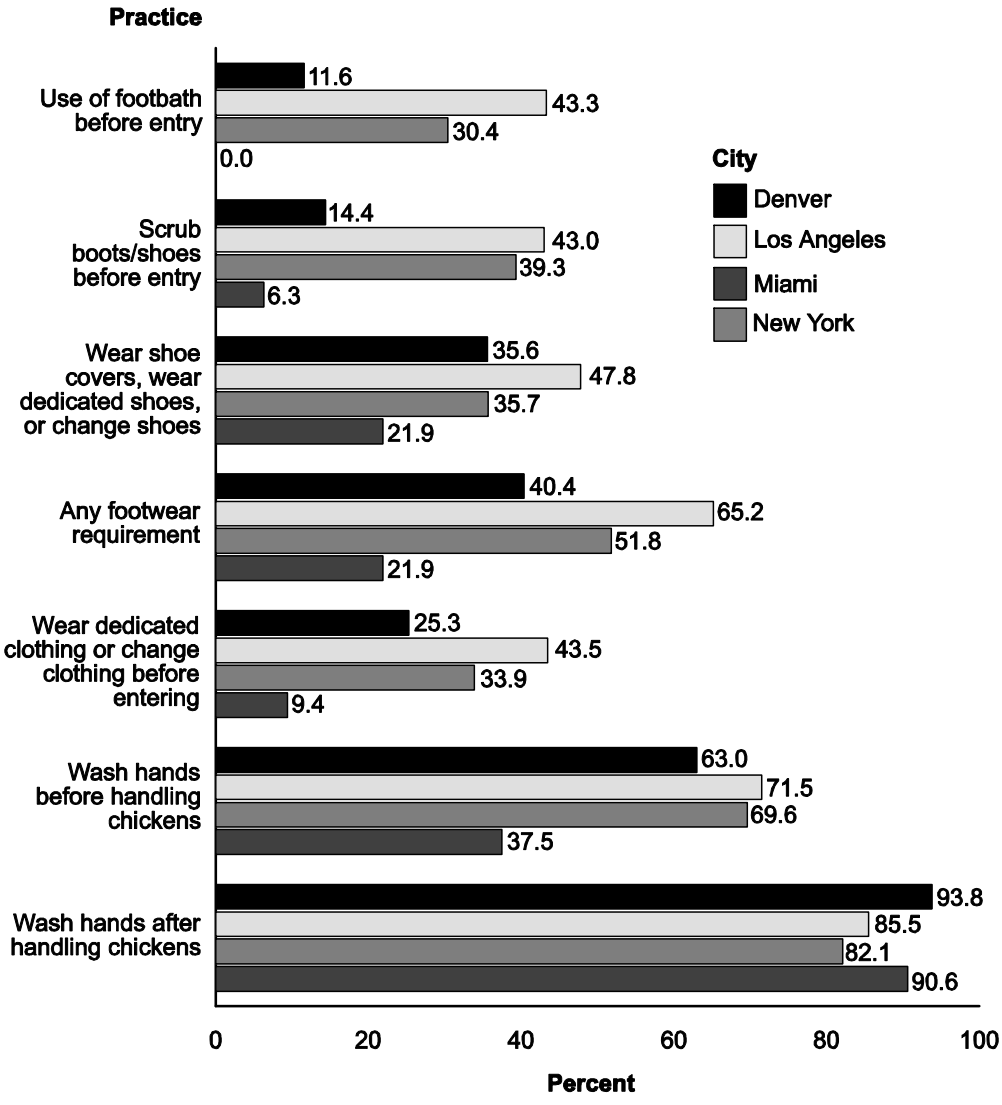
Over 30 percent of flocks in Los Angeles and Miami always or sometimes required people entering the chicken area to use footbaths, scrub boots/shoes, wear shoe covers, wear dedicated clothing or change clothes, and/or wash hands.

b. Percentage of flocks that always or sometimes required the following practices for people (including family) entering the chicken area, by city:

Percent Flocks

	City									
	Denver		Los Angeles		Miami		New York		All	
Practice	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Use of footbath before entry	11.6	(2.7)	43.3	(3.4)	30.4	(6.3)	0.0	(—)	27.3	(2.0)
Scrub boots/shoes before entry	14.4	(2.9)	43.0	(3.5)	39.3	(6.8)	6.3	(4.3)	29.8	(2.1)
Wear shoe covers, wear dedicated shoes, or change shoes	35.6	(4.0)	47.8	(3.6)	35.7	(6.2)	21.9	(7.4)	40.0	(2.3)
Any footwear requirement	40.4	(4.1)	65.2	(3.3)	51.8	(6.8)	21.9	(7.4)	51.5	(2.3)
Wear dedicated clothing or change clothing before entering	25.3	(3.6)	43.5	(3.6)	33.9	(6.1)	9.4	(5.2)	33.3	(2.2)
Wash hands before handling chickens	63.0	(3.9)	71.5	(3.2)	69.6	(5.9)	37.5	(8.7)	65.7	(2.2)
Wash hands after handling chickens	93.8	(2.0)	85.5	(2.3)	82.1	(4.8)	90.6	(5.2)	88.3	(1.5)

Percentage of Flocks that Always or Sometimes Required the Following Practices for People (Including Family) Entering the Chicken Area, by City



A higher percentage of large flocks than small flocks had footwear requirements. Over 30 percent of medium and large flocks required each of the biosecurity practices listed below.

c. Percentage of flocks that always or sometimes required the following practices for people (including family) entering the chicken area, by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Practice	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Use of footbath before entry	21.2	(2.6)	31.3	(4.2)	37.1	(5.1)
Scrub boots/shoes before entry	24.0	(2.8)	35.7	(4.5)	36.4	(5.1)
Wear shoe covers, wear dedicated shoes, or change shoes	35.9	(3.2)	43.5	(4.6)	45.5	(5.3)
Any footwear requirement	44.7	(3.3)	55.7	(4.6)	62.9	(5.0)
Wear dedicated clothing or change clothing before entering	27.2	(3.0)	42.6	(4.5)	36.4	(5.2)
Wash hands before handling chickens	64.1	(3.2)	70.4	(4.2)	63.6	(5.1)
Wash hands after handling chickens	87.6	(2.1)	90.4	(2.7)	87.5	(3.4)

2. Visitors

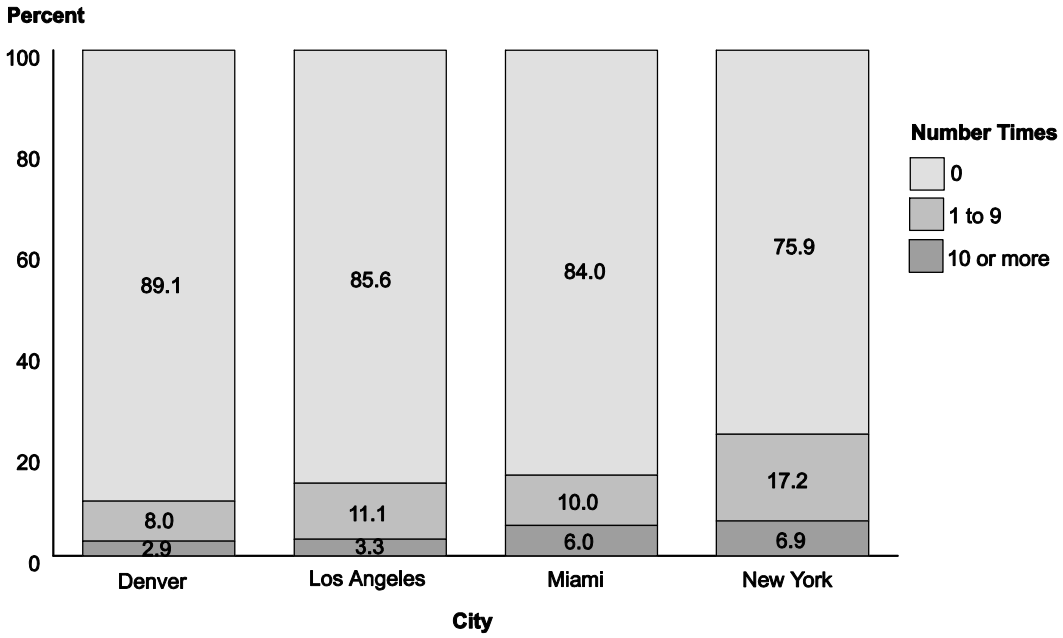
The majority of flocks (85.9 percent) had no business visitors enter the chicken area during the previous 12 months. About one-half of flocks had nonbusiness visitors enter the chicken area, with 22.9 percent having 10 or more occurrences. About 4 of 10 flocks in Denver and 6 of 10 flocks in New York City had nonbusiness visitors enter the chicken area 10 or more times.

a. Percentage of flocks by number of times the following types of visitors entered the chicken area during the previous 12 months, and by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Number of Times	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Business visitors[1]										
0	89.1	(2.7)	85.6	(2.6)	84.0	(5.2)	75.9	(8.1)	85.9	(1.7)
1 to 9	8.0	(2.3)	11.1	(2.3)	10.0	(3.9)	17.2	(7.1)	10.3	(1.5)
10 or more	2.9	(1.4)	3.3	(1.3)	6.0	(3.3)	6.9	(4.8)	3.8	(1.0)
Total	100.0		100.0		100.0		100.0		100.0	
Nonbusiness visitors[2]										
0	30.9	(3.8)	72.3	(3.2)	68.1	(6.9)	9.4	(5.2)	52.5	(2.2)
1 to 9	29.5	(3.9)	20.6	(3.0)	21.3	(6.1)	31.2	(8.3)	24.6	(2.1)
10 or more	39.6	(4.1)	7.1	(1.9)	10.6	(4.7)	59.4	(8.8)	22.9	(1.9)
Total	100.0		100.0		100.0		100.0		100.0	

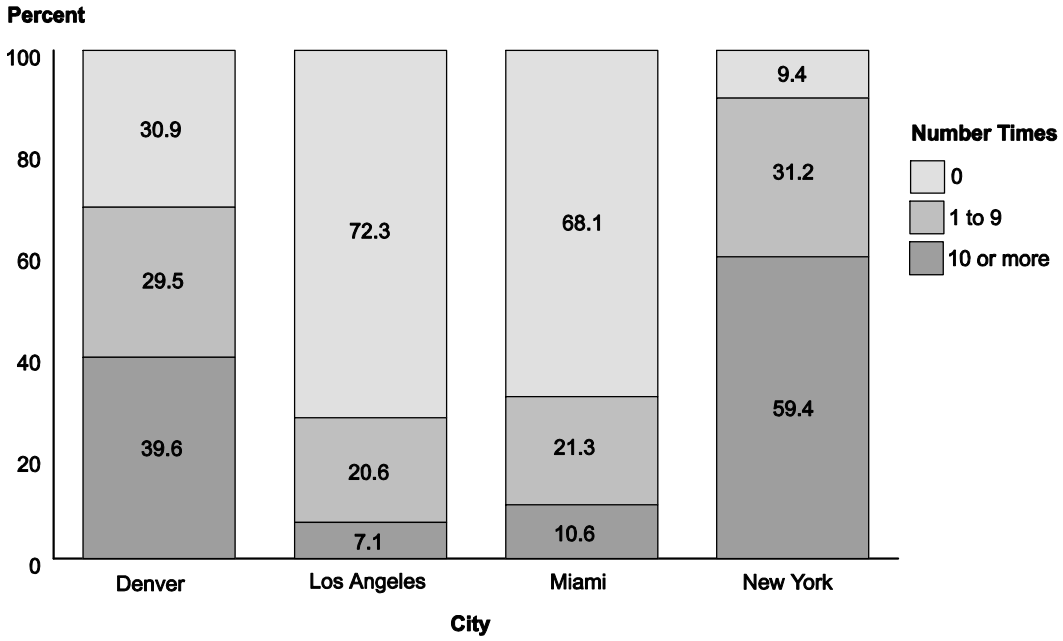
[1]Veterinarian, extension agent, customers purchasing chicken products, bird dealer/buyer, meter reader, other service person, etc.
[2]School groups, friends, neighbors, etc.

Percentage of Flocks by Number of Times Business Visitors* Entered the Chicken Area During the Previous 12 Months, and by City



*Veterinarian, extension agent, customers purchasing chicken products, bird dealer/buyer, meter reader, other service person, etc.

Percentage of Flocks by Number of Times Nonbusiness Visitors* Entered the Chicken Area During the Previous 12 Months, and By City



*School groups, friends, neighbors, etc.

The percentage of flocks in which **business** visitors entered the chicken area 10 or more times during the previous 12 months ranged from 0.5 percent of small flocks to 12.6 percent of large flocks. The percentage of flocks in which **nonbusiness** visitors entered the chicken area 10 or more times ranged from 27.8 percent of small flocks to 10.9 percent of large flocks.

b. Percentage of flocks by number of times the following types of visitors entered the chicken area during the previous 12 months, and by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Number of Times	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Business visitors[1]						
0	93.0	(1.8)	85.5	(3.4)	70.1	(4.9)
1 to 9	6.5	(1.7)	11.8	(3.1)	17.3	(4.0)
10 or more	0.5	(0.5)	2.7	(1.6)	12.6	(3.6)
Total	100.0		100.0		100.0	
Nonbusiness visitors[2]						
0	47.8	(3.1)	59.1	(4.6)	55.4	(5.4)
1 to 9	24.4	(2.9)	18.2	(3.7)	33.7	(5.2)
10 or more	27.8	(2.9)	22.7	(3.9)	10.9	(3.4)
Total	100.0		100.0		100.0	

[1]Veterinarian, extension agent, customers purchasing chicken products, bird dealer/buyer, meter reader, other service person, etc.

[2]School groups, friends, neighbors, etc.

E. Slaughter and Death Loss

1. Chickens slaughtered for human consumption

Very few flocks (8.0 percent) slaughtered chickens for human consumption.

a. Percentage of flocks in which any chickens were slaughtered or sold for human consumption during the previous 12 months, by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
10.2	(2.4)	6.3	(1.8)	10.9	(4.1)	3.1	(3.1)	8.0	(1.3)

The percentage of flocks that slaughtered chickens for human consumption increased with flock size.

b. Percentage of flocks in which any chickens were slaughtered or sold for human consumption during the previous 12 months, by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
2.7	(1.1)	7.0	(2.4)	22.5	(4.3)

Home slaughter was the most common method of slaughtering chickens for human consumption.

c. For flocks in which any chickens were slaughtered for human consumption, percentage of flocks by method of slaughter:

Method	Percent Flocks	Std. Error
Home slaughter	67.8	(7.7)
Mobile slaughter facility	0.0	(--)
Chickens transported to a slaughter facility	29.0	(7.8)
Other	3.2	(3.2)

2. Mortality

Overall, 29.3 percent of flocks had at least one chicken death during the previous 12 months, ranging from 17.2 percent of flocks in Los Angeles to 49.1 percent of flocks in Miami.

a. Percentage of flocks in which any chickens died* during the previous 12 months, by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
37.4	(4.0)	17.2	(2.7)	49.1	(6.2)	28.1	(8.1)	29.3	(2.1)

*Includes chickens euthanized (put down), but excludes chickens slaughtered for human consumption.

The percentage of flocks with at least one chicken death during the previous 12 months increased with flock size, most likely because larger flocks had more birds available to die.

b. Percentage of flocks in which any chickens died* during the previous 12 months, by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
21.2	(2.8)	30.7	(4.2)	47.2	(5.1)

*Includes chickens euthanized (put down), but excludes chickens slaughtered for human consumption.

Overall, 6.4 percent of chickens died during the previous 12 months. The percentage of chickens that died was similar across cities.

c. Number of chickens that died* during the previous 12 months, as a percentage of maximum chicken inventory during the previous 12 months, by city:

Percent Chickens									
City									
Denver		**Los Angeles**		**Miami**		**New York**		**All**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
10.8	(1.8)	4.4	(1.5)	6.2	(1.9)	5.5	(1.4)	6.4	(1.0)

*Includes chickens euthanized (put down), but excludes chickens slaughtered for human consumption.

Although large flocks were more likely than small flocks to have at least one chicken death (see table b., p 54), the percentage of chickens that died in large flocks was not higher than the percentage that died in small flocks.

d. Number of chickens that died* during the previous 12 months, as a percentage of maximum chicken inventory during the previous 12 months, by flock size:

Percent Chickens

Flock Size (maximum number of chickens)

Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
9.0	(1.7)	8.0	(1.6)	5.5	(1.3)

*Includes chickens euthanized (put down), but excludes chickens slaughtered for human consumption.

Predators accounted for the highest percentage of chicken deaths (44.0 percent). Old age and unknown causes each accounted for 13.1 percent of deaths.

e. For chickens that died[1] during the previous 12 months, percentage of chicken deaths by cause of death (as reported by owner) and by city:

Percent Deaths

City

	Denver		**Los Angeles**		**Miami**		**New York[2]**		**All**	
Cause of Death	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Predators	60.1	(6.5)	50.0	(15.9)	21.0	(6.3)			44.0	(6.5)
Illness/disease	19.7	(5.9)	10.1	(5.7)	18.2	(13.2)			16.5	(5.1)
Injury	2.4	(1.3)	4.2	(2.4)	11.9	(4.6)			6.0	(2.0)
Old age	4.8	(2.1)	23.2	(9.4)	14.2	(6.0)			13.1	(3.3)
Other known cause	6.3	(4.0)	7.1	(6.1)	8.5	(8.3)			7.3	(3.5)
Unknown cause	6.7	(2.8)	5.4	(2.8)	26.2	(8.2)			13.1	(3.6)
Total	100.0		100.0		100.0				100.0	

[1]Includes chickens euthanized (put down), but excludes chickens slaughtered for human consumption.
[2]Too few to report.

Cause of death did not differ substantially by flock size. Standard errors in the following table are large due to the small number of deaths represented in the sample.

f. For chickens that died* during the previous 12 months, percentage of chicken deaths by cause of death (as reported by owner) and by flock size:

Percent Deaths

Flock Size (maximum number of chickens)

Cause of Death	**Small** (1–9) Pct.	Std. Error	**Medium** (10–24) Pct.	Std. Error	**Large** (25 or more) Pct.	Std. Error
Predators	46.1	(7.3)	60.7	(7.7)	36.8	(10.6)
Illness/disease	22.5	(5.5)	8.9	(3.1)	17.9	(8.3)
Injury	4.5	(2.7)	3.0	(1.6)	7.7	(3.2)
Old age	10.1	(4.1)	12.6	(4.3)	14.1	(5.1)
Other known cause	6.7	(4.2)	1.5	(1.1)	9.7	(5.7)
Unknown cause	10.1	(4.6)	13.3	(5.9)	13.8	(5.6)
Total	100.0		100.0		100.0	

*Includes chickens euthanized (put down), but excludes chickens slaughtered for human consumption.

Photo courtesy Judy Rodriguez

3. Carcass disposal

For flocks in which any chickens died, the most common primary methods of carcass disposal were landfill/trash (30.9 percent of flocks), buried on premises (23.6 percent), and taken by predator (21.1 percent).

For flocks on which any chickens died* during the previous 12 months, percentage of flocks by primary method of disposing of dead chickens:

Method	Percent Flocks	Std. Error
Predator took carcass (no disposal)	21.1	(3.7)
Incinerated (burned)	10.6	(2.7)
Buried on premises	23.6	(3.8)
Renderer picked up	2.4	(1.4)
Carcass taken to renderer	0.8	(0.8)
Composted	4.1	(1.8)
Taken to a landfill or put in trash	30.9	(4.2)
Fed to other animals or left for scavengers	1.6	(1.1)
Other disposal method	4.9	(2.0)
Total	100.0	

*Includes chickens euthanized (put down), but excludes chickens slaughtered for human consumption.

F. Characteristics of Urban Chicken Owners

1. Reasons for having chickens

Income was reported as the least important reason for having chickens, with three-fourth of flocks (74.2 percent) rating it a 1 (not important) on a scale of 1 to 5. Only 6.0 percent of flocks rated income as extremely important (score = 5). Over one-third of flocks rated fun/hobby, food source, food quality, animal welfare concerns, and environmental concerns as extremely important reasons for having chickens. A learning experience for kids and family tradition were extremely important reasons for having chickens in 3 of 10 flocks. The most common “other” reason for having chickens was for pets/companionship.

a. Percentage of flocks by level of importance of the following reasons for having chickens:

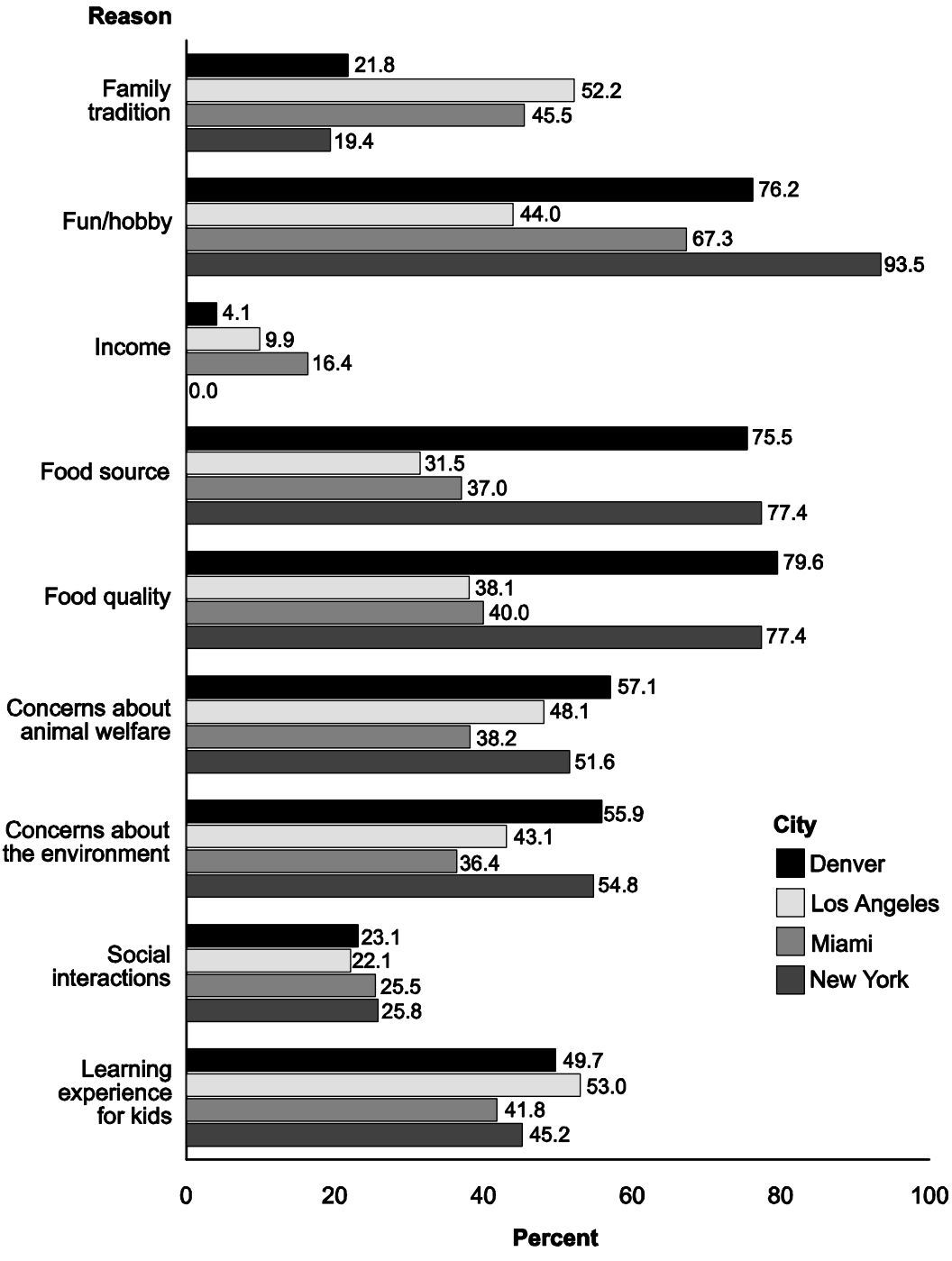
	Percent Flocks										
	Level of Importance										
	1 (not important)		2		3		4		5 (extremely Important)		
Reason	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Family tradition	32.3	(2.1)	8.9	(1.4)	20.7	(2.0)	8.9	(1.4)	29.2	(2.1)	100.0
Fun/hobby	11.1	(1.5)	5.5	(1.1)	21.2	(2.0)	22.9	(2.0)	39.3	(2.3)	100.0
Income	74.2	(2.1)	7.7	(1.3)	10.1	(1.5)	2.0	(0.7)	6.0	(1.1)	100.0
Food source (eggs, meat)	25.2	(1.9)	6.5	(1.2)	16.9	(1.8)	14.8	(1.7)	36.6	(2.2)	100.0
Food quality (e.g., freshness, health)	25.6	(2.0)	7.0	(1.3)	11.3	(1.6)	15.0	(1.7)	41.1	(2.2)	100.0
Concerns about animal welfare	25.1	(2.1)	6.8	(1.2)	17.9	(1.9)	14.7	(1.7)	35.5	(2.3)	100.0
Concerns about the environment	26.2	(2.2)	6.8	(1.2)	19.4	(2.0)	13.6	(1.7)	34.0	(2.3)	100.0
Social interactions (e.g., 4-H, clubs)	47.8	(2.4)	12.1	(1.6)	16.9	(1.8)	10.6	(1.5)	12.6	(1.6)	100.0
Learning experience for kids	27.3	(2.2)	6.0	(1.2)	16.9	(1.8)	17.9	(1.9)	31.9	(2.3)	100.0
Other	90.4	(1.4)	0.2	(0.2)	1.2	(0.5)	1.7	(0.6)	6.5	(1.2)	100.0

About one-half of flocks in Los Angeles and Miami ranked family tradition as a very or extremely important reason to have chickens, compared with about one-fifth of flocks in Denver and New York City. Food source and food quality ranked higher in Denver and New York City compared with Los Angeles and Miami. Nearly all flocks in New York City (93.5 percent) ranked fun/hobby as very or extremely important.

b. Percentage of flocks that rated the following reasons for having chickens as **very** or **extremely important** (Score = 4 or 5 on a scale of 1 to 5), by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Reason	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Family tradition	21.8	(3.4)	52.2	(3.6)	45.5	(6.7)	19.4	(7.2)	38.1	(2.3)
Fun/hobby	76.2	(3.5)	44.0	(3.6)	67.3	(6.4)	93.5	(4.5)	62.2	(2.2)
Income	4.1	(1.7)	9.9	(2.2)	16.4	(4.8)	0.0	(—)	8.0	(1.3)
Food source (eggs, meat)	75.5	(3.5)	31.5	(3.4)	37.0	(6.0)	77.4	(7.6)	51.4	(2.2)
Food quality (e.g., freshness, health)	79.6	(3.2)	38.1	(3.6)	40.0	(6.4)	77.4	(7.6)	56.1	(2.2)
Concerns about animal welfare	57.1	(3.9)	48.1	(3.5)	38.2	(6.8)	51.6	(9.1)	50.2	(2.4)
Concerns about the environment	55.9	(4.0)	43.1	(3.6)	36.4	(6.6)	54.8	(9.1)	47.6	(2.4)
Social interactions (e.g., 4-H, clubs)	23.1	(3.2)	22.1	(3.1)	25.5	(5.7)	25.8	(8.0)	23.2	(2.0)
Learning experience for kids	49.7	(4.0)	53.0	(3.6)	41.8	(6.8)	45.2	(9.1)	49.8	(2.4)
Other	10.2	(2.5)	6.6	(1.8)	3.6	(2.6)	16.1	(6.7)	8.2	(1.3)

Percentage of Flocks that Rated the Following Reasons for Having Chickens as Very or Extremely Important (Score = 4 or 5 on a Scale of 1 to 5), by City



The importance of family tradition as a reason for having chickens increased from small to large flocks, while the importance of food source, food quality, and environmental concerns decreased from small to large flocks.

c. Percentage of flocks that rated the following reasons for having chickens as **very** or **extremely important** (Score = 4 or 5 on a scale of 1 to 5), by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Reason	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Family tradition	31.0	(3.1)	43.8	(4.7)	48.3	(5.3)
Fun/hobby	67.6	(3.1)	60.7	(4.6)	50.6	(5.2)
Income	4.7	(1.4)	12.5	(3.1)	10.3	(3.3)
Food source (eggs, meat)	59.3	(3.1)	46.4	(4.6)	37.9	(5.1)
Food quality (e.g., freshness, health)	63.3	(3.2)	52.7	(4.6)	42.5	(5.3)
Concerns about animal welfare	54.0	(3.4)	46.4	(4.7)	46.0	(5.3)
Concerns about the environment	53.0	(3.4)	46.4	(4.7)	35.3	(5.2)
Social interactions (e.g., 4-H, clubs)	21.9	(2.8)	25.0	(4.0)	24.1	(4.6)
Learning experience for kids	47.9	(3.3)	50.0	(4.8)	54.0	(5.3)
Other	10.2	(2.0)	8.0	(2.6)	3.4	(2.0)

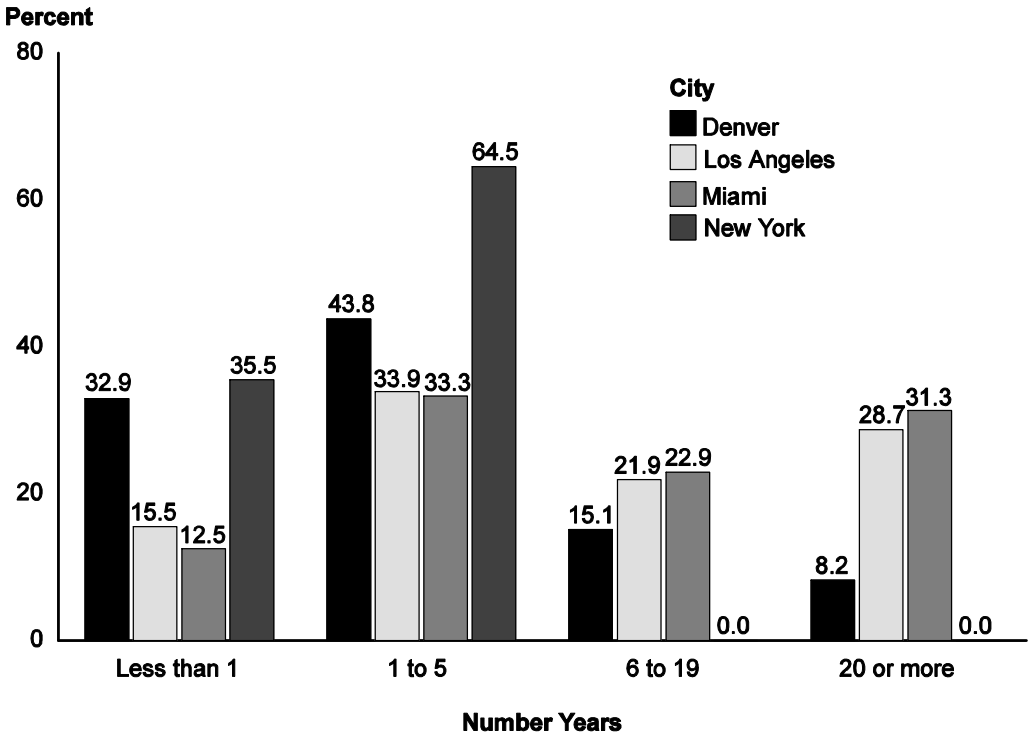
2. Years of chicken ownership

On over one-half of flocks in Los Angeles and Miami the family had been raising chickens for 6 or more years. The family had been raising chickens for 5 years or less on three-fourths of flocks in Denver and all flocks in New York City.

a. Percentage of flocks by number of years the family had been raising chickens, and by city:

	Percent Flocks									
	City									
	Denver		Los Angeles		Miami		New York		All	
Number of Years	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Less than 1	32.9	(3.9)	15.5	(2.6)	12.5	(4.8)	35.5	(8.7)	23.1	(2.0)
1 to 5	43.8	(4.1)	33.9	(3.5)	33.3	(6.6)	64.5	(8.7)	39.8	(2.4)
6 to 19	15.1	(3.0)	21.9	(3.1)	22.9	(5.9)	0.0	(—)	17.8	(1.9)
20 or more	8.2	(2.3)	28.7	(3.3)	31.3	(7.1)	0.0	(—)	19.3	(1.9)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Flocks by Number of Years the Family had been Raising Chickens, and by City



The percentage of flocks in which the family had been raising chickens for less than 1 year decreased with flock size, while the percentage of flocks in which the family had been raising chickens for 20 years or more increased with flock size.

b. Percentage of flocks by number of years the family had been raising chickens, and by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Number Years	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Less than 1	36.7	(3.3)	10.3	(2.9)	4.9	(2.4)
1 to 5	43.3	(3.4)	42.1	(4.6)	28.1	(5.0)
6 to 19	11.0	(2.1)	19.6	(3.9)	32.9	(5.2)
20 or more	9.0	(1.9)	28.0	(4.3)	34.1	(5.3)
Total	100.0		100.0		100.0	

3. Children in household

There were children under 5 years of age living in the household for about one-fourth of flocks (24.7 percent), and children 5 to 17 years of age living in the household for about one-half of flocks (50.8 percent). In Los Angeles, about three-fourths of flocks had children living in the household (71.4 percent).

a. Percentage of flocks with children of the following ages living in the household, by city:

	Percent Flocks									
	City									
	Denver		**Los Angeles**		**Miami**		**New York**		**All**	
Age (Years)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Under 5	16.6	(3.1)	37.3	(3.5)	13.0	(4.1)	6.9	(4.8)	24.7	(2.0)
5 to 17	45.5	(4.0)	62.2	(3.6)	27.8	(6.3)	48.3	(9.4)	50.8	(2.4)
Either	49.0	(4.0)	71.4	(3.3)	37.0	(6.5)	51.7	(9.4)	57.6	(2.3)

The percentage of flocks in which children were living in the household was similar across flock sizes.

b. Percentage of flocks with children of the following ages living in the household, by flock size:

	Percent Flocks					
	Flock Size (maximum number of chickens)					
	Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Age (Years)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Under 5	20.5	(2.7)	29.5	(4.3)	29.1	(4.8)
5 to 17	48.4	(3.4)	50.9	(4.7)	57.0	(5.2)
Either	54.4	(3.4)	58.0	(4.6)	65.1	(5.0)

Children had contact with the chickens on 61.5 percent of flocks in which children under the age of 5 were present and 77.1 percent of flocks in which children between the ages of 5 to 17 were present.

c. For flocks with children of the following ages living in the household, percentage of flocks in which children had contact with the chickens:

Age (years)	**Percent Flocks**	**Std. Error**
Under 5	61.5	(5.1)
5 to 17	77.1	(2.8)

4. Awareness of *Salmonella*

About one-half of respondents (46.0 percent) were aware of a connection between poultry and *Salmonella* infection in people, ranging from 30.2 percent of respondents in Los Angeles to 65.3 percent of respondents in Denver. Common sources for this knowledge included television, the Internet, books, and word of mouth.

a. Percentage of flocks in which the respondent was aware of the connection between poultry contact (such as contact with chicks or ducks) and *Salmonella* infection in people, by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
65.3	(3.9)	30.2	(3.3)	40.0	(6.2)	58.1	(9.0)	46.0	(2.3)

Awareness of a connection between poultry and *Salmonella* infection in people was similar across flock sizes.

b. Percentage of flocks in which the respondent was aware of a connection between poultry contact (such as contact with chicks or ducks) and *Salmonella* infection in people, by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
48.6	(3.3)	44.7	(4.5)	41.4	(5.2)

One-half of households in which children had contact with chickens were aware of a connection between poultry and *Salmonella* infection in people. Awareness of a connection between poultry and *Salmonella* infection in people did not differ substantially based on whether children were present or whether children had contact with chickens.

c. Percentage of flocks in which the respondent was aware of a connection between poultry contact (such as contact with chicks or ducks) and *Salmonella* infection in people, by whether children living in the household had contact with the chickens:

Percent Flocks					
Children* Had Chicken Contact?					
Yes		No		No Children in Household	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
50.0	(3.8)	35.7	(6.4)	45.7	(3.7)

*Under 18 years of age.

5. Membership in avian associations

Overall, respondents or family members belonged to an avian association in 1 of 10 flocks (9.5 percent), ranging from 1.1 percent of flocks in Los Angeles to 18.4 percent of flocks in Denver.

a. Percentage of flocks in which the respondent or respondent's family members belonged to any type of poultry or avian association (including 4-H, FFA), by city:

Percent Flocks									
City									
Denver		Los Angeles		Miami		New York		All	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
18.4	(2.6)	1.1	(0.8)	14.3	(4.1)	10.0	(5.6)	9.5	(1.2)

Membership in an avian association did not differ substantially by flock size.

b. Percentage of flocks in which the respondent or respondent's family members belonged to any type of poultry or avian association (including 4-H, FFA), by flock size:

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
6.5	(1.5)	12.3	(2.9)	13.5	(3.5)

6. "Biosecurity for Birds" awareness

Overall, 29.4 percent of respondents had heard of the USDA's "Biosecurity for Birds" campaign.

a. Percentage of flocks in which the respondent had heard of USDA's "Biosecurity for Birds" educational campaign, by city:

Percent Flocks									
City									
Denver		**Los Angeles**		**Miami**		**New York**		**All**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
21.1	(3.2)	34.1	(3.5)	39.3	(6.3)	22.6	(7.6)	29.4	(2.2)

Respondents had heard of the USDA's "Biosecurity for Birds" campaign on about one-third of medium and large flocks (36.8 and 36.4 percent, respectively).

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

Percent Flocks					
Flock Size (maximum number of chickens)					
Small (1–9)		**Medium** (10–24)		**Large** (25 or more)	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
22.6	(2.8)	36.8	(4.5)	36.4	(5.1)

Biosecurity practices were similar for respondents that had heard of the USDA's "Biosecurity for Birds" campaign and for those that had not heard of it.

c. Percentage of flocks that always or sometimes required the following biosecurity practices for people (including family members) entering the chicken area, by whether the respondent had heard of USDA's "Biosecurity for Birds" educational campaign:

	Percent Flocks			
	Heard of "Biosecurity for Birds"?			
	Yes		**No**	
Practice	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Use of footbath before entry	29.8	(4.0)	26.4	(2.4)
Scrub boots/shoes before entry	36.4	(4.2)	27.2	(2.5)
Wear shoe covers, wear dedicated shoes, or change shoes	43.0	(4.4)	39.1	(2.8)
Any footwear requirement	52.9	(4.4)	50.8	(2.8)
Wear dedicated clothing or change clothing before entering	40.5	(4.3)	30.6	(2.7)
Wash hands before handling chickens	71.9	(4.0)	63.9	(2.7)
Wash hands after handling chickens	90.9	(2.5)	87.8	(1.8)

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 2010, the following activities were conducted:

- A focus group consisting of industry, State, Federal, and university representatives met at the International Poultry Exposition in Atlanta, Georgia in January 2008.
- A needs assessment questionnaire was distributed to poultry veterinarians via the presidents of the egg layer, broiler, turkey, and primary breeder 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 meetings in New Orleans, Louisiana in July 2008, and in Seattle, Washington in July 2009.
- Additional discussions occurred at the United States Animal Health Association Transmissible Diseases of Poultry Committee meeting. This committee recommended studying urban chickens.

B. Sampling and Data Collection

1. City selection

Four large cities were selected for inclusion in the urban chicken study: Denver, Colorado; Los Angeles, California; Miami, Florida; and New York City, New York. These cities were selected because they were geographically diverse. Also, it was hypothesized that two of these cities (Los Angeles and Miami) had a long history of chicken ownership, and the other two cities had a shorter history of chicken ownership.

2. Feed stores

Customers of feed stores in Denver, Los Angeles, and Miami were asked to complete a confidential questionnaire. The questionnaire was available in English and Spanish.

Feed stores that sold chicken feed within the metropolitan areas of Denver, Los Angeles, and Miami were identified using public online directories and/or lists available to State or Federal governments. All identified feed stores were contacted for participation. The only eligibility requirement for feed stores was that they estimated having at least five customers purchasing chicken feed on an average Saturday. Feed stores that agreed to participate were visited by APHIS and State data collectors, most often on Saturdays.

3. Additional data collection methods

In New York City, only one large feed store was identified. Although selling a moderate volume of feed, the store reported that customers tended to purchase large amounts of feed at one time, and, therefore, the number of customers on any given day may not meet the five customer requirement. This feed store reported that the majority of their chicken- feed customers belonged to a chicken club in New York. An educational presentation was offered to members of this chicken club by an APHIS data collector, and attendees were asked to complete the questionnaire. The presentation was advertised on the club's Web site. Additionally, the questionnaire was accessible to members via the club's Web site. All completed questionnaires in New York City were from this source. Chicken owners who did not belong to this club are not represented in this study.

In Denver, data collectors attended three county fairs in addition to feed store visits. The fairs yielded 10 questionnaires. These respondents might have increased the Denver estimates regarding chicken movement to fairs, etc. Respondents had to meet the eligibility requirements (see item 4 below).

4. Respondent eligibility requirements

Customers who entered participating feed stores while data collectors were present were eligible to complete the questionnaire if they met the following eligibility requirements:

- Had at least one chicken on the day they completed the questionnaire
- If the respondent lived in a single family home, the home had to be on less than 1 acre of land
- Lived within a defined geographic area (see maps at the beginning of this report) or kept their chickens in a community coop located within the defined geographic area.

These requirements were intended to limit the study to chicken owners in truly urban areas, as opposed to the outskirts of urban areas. Respondents were offered a $10 coupon toward their purchase at the feed store that day as an incentive to complete the questionnaire.

Data collection was conducted between June and September 2010.

C. Data Analysis

1. Validation

Data collectors sent completed Survey of Chicken Owners questionnaires to NAHMS. Data entry and validation were completed by NAHMS staff using SAS. New York City questionnaires that were completed on the Internet were downloaded by NAHMS staff and imported into SAS.

2. Estimation

A stratified random sample was assumed, with the strata being individual feed stores. In Denver, all three fairs were considered to be a single stratum. In New York City, the chicken club was the sole stratum. Point estimates were generated using SUDAAN software, which accounts for clustering. Respondent data were not statistically weighted and are intended to provide insight about the population rather than precise population estimates.

3. Sample results

Results cover the limited population of chicken owners in the geographically defined areas in the four cities. Inferences cannot be made to a larger population of chicken owners.

Denver: Results cover chicken owners who met the eligibility requirements and visited feed stores or county fairs.
Los Angeles: Results cover chicken owners who met the eligibility requirements and visited feed stores.
Miami: Results cover chicken owners who met the eligibility requirements and visited feed stores.
New York City: Results cover members of a particular chicken club who had online access and met the eligibility requirements.

4. Response rates

a. Feed stores

City	Number of Participating Feed Stores
Denver	6
Los Angeles	7
Miami	7
New York	0

b. Respondents

	Number of Completed Surveys			
	Response Category			
City	Survey Complete	Survey Refused	Total	Response Rate (percent)
Denver	147	11	158	93.0
Los Angeles	200	32	232	86.2
Miami	86	23	109	78.9
New York	33	*	33	*
Total	466	66	532	87.6

*Number refusals could not be determined in New York.

	Number of Usable Surveys				
	Category				
City	Usable	Not Eligible	Illegible or Duplicate	Total	Usable (percent)
Denver	147	0	0	147	100.0
Los Angeles	189	5	6	200	94.5
Miami	56	27*	3	86	65.1
New York	33	0	0	33	100.0
Total	425	32	9	466	91.2

*Initially, questionnaires were accidentally collected from ineligible respondents.

Appendix: Sample Profile

A. Number of Respondents by Flock Size

Flock Size	**Number Respondents** (usable)
1 to 9	219
10 to 24	115
25 or more	91
Total	425

B. Number of Respondents by Language and by City (usable)

	Respondents				
	Language				
	English		**Spanish**		
City	**Number**	**Percent**	**Number**	**Percent**	**Total**
Denver	142	96.5	5	3.5	147
Los Angeles	59	31.2	130	68.8	189
Miami	33	58.9	23	41.1	56
New York	33	100.0	0	0.0	33
Total	267		158		425