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System

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# Urban Chicken Ownership in Four U.S. Cities

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Cover photograph courtesy of Judy Rodriguez

**Items of Note**

Raising chickens in urban environments is a growing phenomenon in the United States. Urban chicken 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. Urban chickens represent an avian population for which very little information is available. An understanding of the level of urban chicken ownership could be important in the event of a disease outbreak such as avian influenza or exotic Newcastle disease (END). For example, the 2003 END outbreak in southern California involved many urban chicken flocks. This study was conducted to determine the percentage of households in four U.S. metro areas (Denver, Los Angeles, Miami, and New York City) that owned chickens and to describe the residents' opinions about raising chickens in urban settings.

Throughout metro areas, chicken ownership laws and regulations vary by city, county, and neighborhood. Some cities and homeowner's associations have specific rules about chicken ownership, and some cities, such as Los Angeles, permit chicken ownership with no limitations on the number or type of chickens.

Here are a few highlights from the study:

- Overall, 0.8 percent of all households (0.6 percent of all households excluding single-family homes on 1 acre or more) owned chickens. Chickens were owned on 4.3 percent of single-family homes on 1 acre or more. Excluding single-family homes on 1 acre or more, the percentage of households with chickens ranged from 0.1 percent in New York City to 1.3 percent in Miami.

- While less than 1 percent of households had chickens, nearly 4 percent of households without chickens planned to have chickens within the next 5 years, illustrating the growing acceptance of urban farming (range: 2.0 percent of households in New York City to 7.4 percent in Denver).

- Overall, about 4 of 10 respondents were in favor of allowing chickens in their communities and would not mind if their neighbors owned chickens (44.4 and 39.3 percent, respectively). These percentages were inversely related to the age of the respondent. Denver had the highest percentage of respondents in favor of allowing chickens in the community (62.5 percent).

- Although over half of respondents (55.6 percent) believed that chickens in urban areas will lead to more illnesses in humans, about two-thirds of respondents in Los Angeles, Miami, and New York City and three-fourths of respondents in Denver believed that eggs from home-raised chickens are better for you than eggs purchased at a grocery store. Denver respondents were the least likely to believe that chickens in urban areas will lead to more illnesses in humans.

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**Acknowledgments**

The Poultry 2010 study was a cooperative effort among animal health officials, university researchers, extension personnel, and poultry producers. We want to thank the industry members who helped determine the direction and objectives of this study. Recognition also goes to the personnel at the Centers for Epidemiology and Animal Health for their efforts in generating reports from Poultry 2010 data, and to our reviewers, who provided valuable expertise and guidance through their comments.

All participants are to be commended, particularly the study participants whose voluntary efforts made this component of the Poultry 2010 study possible.

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# Introduction

The National Animal Health Monitoring System (NAHMS) is a nonregulatory program of the United States Department of Agriculture (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 the U.S. poultry industry 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 U.S. 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 exclusion of disease (such as *Mycoplasma*).
2. Estimate the prevalence and investigate the 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—Denver, Los Angeles, Miami, and New York City. Determine the percentage of households that own chickens and attitudes about chickens in urban settings.

The urban chicken component of Poultry 2010 was conducted in two phases. In Phase I, urban chicken owners purchasing chicken feed in feed stores completed a questionnaire addressing bird health, movement, and biosecurity practices for their flocks.

"Poultry 2010: Urban Chicken Ownership in Four U.S. Cities" reports information from Phase II of the urban chicken study. Due to funding limitations, only one city (Los Angeles) was initially selected for Phase II during 2010. The additional three cities (Denver, Miami, and New York City) were surveyed in 2012. A questionnaire was

administered to determine the percentage of households that owned chickens and to ascertain the residents' opinions about raising chickens in urban settings.

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

Further information on NAHMS studies and reports is available at:
http://www.aphis.usda.gov/nahms

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## Terms Used in This Report

**Precision of population estimates:** Population 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. 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). Alternatively, the 90-percent confidence interval would be created by multiplying the standard error by 1.65 instead of 2.0. 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 (—). References to estimates being higher or lower than other estimates are based on the 95-percent confidence intervals not overlapping.

**Urban (metro) area:** To ensure that truly urban areas were selected for the study—as opposed to the outskirts of urban areas—boundaries surrounding the four cities were defined by State and/or Federal personnel familiar with the cities (see maps, appendix I).

# Section I: Population Estimates

## A. Urban Chicken Ownership

### 1. Percentage of households that owned chickens

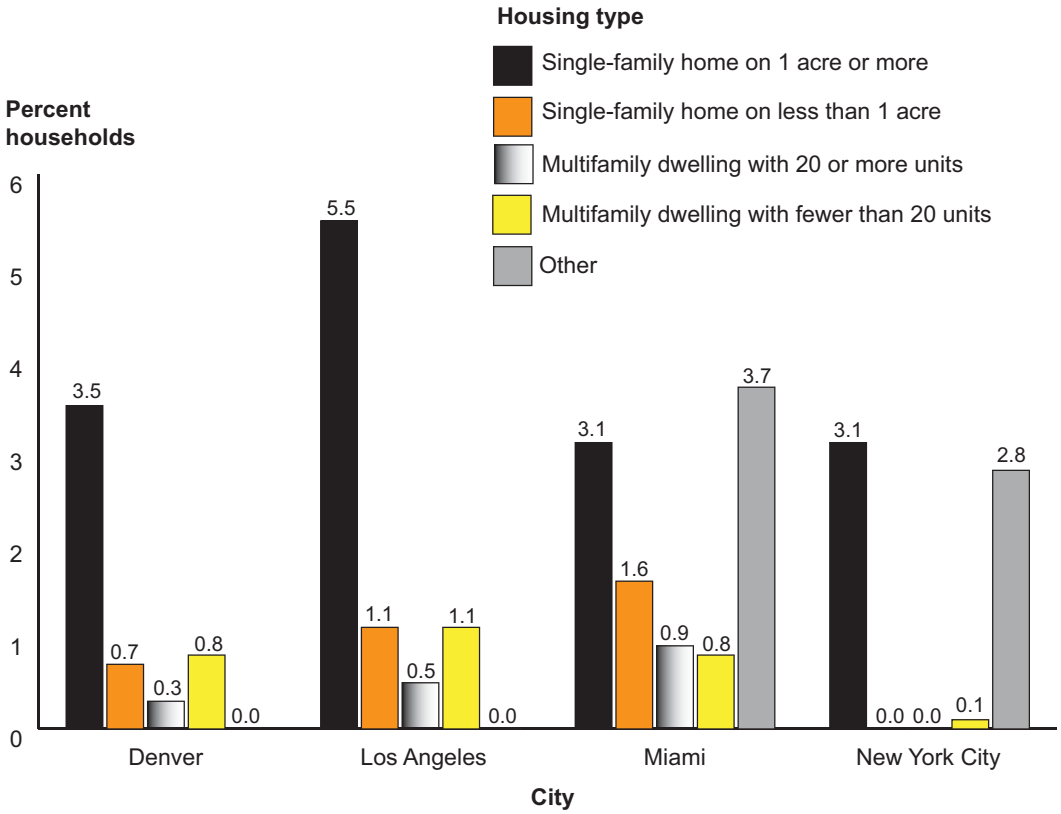
Overall, 0.8 percent of all households owned chickens. When single-family homes with 1 acre or more were excluded from this estimate, 0.6 percent of households owned chickens. Overall, 4.3 percent of single-family homes on 1 acre or more owned chickens. Single-family homes on 1 acre or more are frequently found on the outskirts of cities rather than the urban areas. Nevertheless, some single-family homes on 1 acre or more fell within the boundaries of this study's defined metro areas. Excluding single family homes on 1 acre or more, the percentage of households with chickens ranged from 0.1 percent in New York City to 1.3 percent in Miami.

A.1.a. Percentage of households that owned chickens, by housing type and by city:

| | Percent Households | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Housing type | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Single-family home on 1 acre or more | 3.5 | (1.8) | 5.5 | (1.9) | 3.1 | (1.5) | 3.1 | (3.0) | 4.3 | (1.2) |
| Single-family home on less than 1 acre | 0.7 | (0.2) | 1.1 | (0.2) | 1.6 | (0.5) | 0.0 | (—) | 0.8 | (0.1) |
| Multifamily dwelling with 20 or more units | 0.3 | (0.3) | 0.5 | (0.5) | 0.9 | (0.4) | 0.0 | (—) | 0.2 | (0.1) |
| Multifamily dwelling with fewer than 20 units | 0.8 | (0.5) | 1.1 | (0.7) | 0.8 | (0.6) | 0.1 | (0.1) | 0.5 | (0.2) |
| Other | 0.0 | (—) | 0.0 | (—) | 3.7 | (2.6) | 2.8 | (1.9) | 1.9 | (1.1) |
| All households excluding single-family homes on 1 acre or more* | 0.6 | (0.2) | 1.0 | (0.2) | 1.3 | (0.3) | 0.1 | (0.1) | 0.6 | (0.1) |
| All households* | 0.7 | (0.2) | 1.2 | (0.2) | 1.7 | (0.4) | 0.2 | (0.1) | 0.8 | (0.1) |

*Includes respondents who did not report housing type.

**Percentage of households that owned chickens, by housing type and by city**



Only 0.1 percent of households in which respondents were of Black/African American ethnicity owned chickens compared with 1.4 percent of households in which respondents were Hispanic/Latino. By race/ethnicity, the percentage of households that owned chickens was similar across cities.

A.1.b. Percentage of households that owned chickens, by race/ethnicity of respondents and by city:

| | Percent Households | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| **Race/ethnicity** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** |
| Asian | 0.8 | (0.8) | 0.8 | (0.5) | * | | 0.0 | (—) | 0.7 | (0.4) |
| Black/African-American | 2.3 | (1.7) | 0.0 | (—) | 0.0 | (—) | 0.0 | (—) | 0.1 | (0.1) |
| Hispanic/Latino (any race) | 0.4 | (0.4) | 1.9 | (0.6) | 2.3 | (0.6) | 0.3 | (0.3) | 1.4 | (0.3) |
| White | 0.7 | (0.2) | 1.2 | (0.3) | 0.8 | (0.3) | 0.1 | (0.1) | 0.7 | (0.1) |
| Multiracial/other | 1.1 | (0.8) | 1.0 | (0.8) | 2.2 | (1.4) | 1.0 | (1.0) | 1.1 | (0.5) |

*Too few respondents to report.

Photograph courtesy of Judy Rodriguez

### 2. New chicken owners in the next 5 years

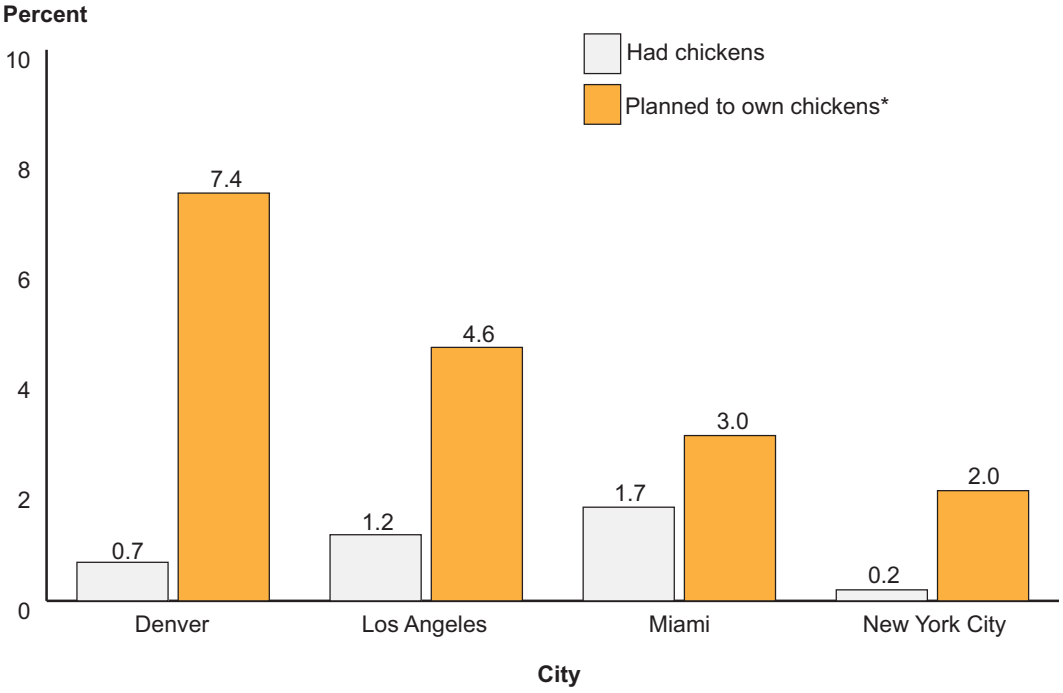
While less than 1 percent of households had chickens (table A.1.a.), nearly 4 percent of all households without chickens planned to have chickens within the next 5 years, illustrating the growing acceptance of urban farming (range: 2 percent of households in New York City to 7.4 percent in Denver).

A.2.a. For households that did not currently own chickens, percentage of households that planned to own chickens in the next 5 years, by housing type and by city:

| | Percent Households | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Housing type | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Single-family home on 1 acre or more | 10.5 | (3.2) | 5.6 | (1.9) | 3.0 | (1.5) | 4.0 | (2.0) | 5.3 | (1.1) |
| Single-family home on less than 1 acre | 9.2 | (0.7) | 6.0 | (0.7) | 4.0 | (0.7) | 2.8 | (0.7) | 5.7 | (0.4) |
| Multifamily dwelling with 20 or more units | 2.0 | (1.3) | 1.3 | (0.6) | 2.3 | (0.9) | 1.1 | (0.5) | 1.4 | (0.3) |
| Multifamily dwelling with fewer than 20 units | 5.7 | (1.4) | 3.0 | (1.0) | 1.9 | (0.9) | 2.3 | (0.6) | 2.7 | (0.5) |
| Other | 10.6 | (5.9) | 0.0 | (—) | 2.1 | (2.0) | 2.9 | (2.1) | 2.7 | (1.3) |
| All households excluding single-family homes on 1 acre or more* | 7.4 | (0.6) | 4.6 | (0.5) | 3.1 | (0.5) | 2.0 | (0.3) | 3.8 | (0.2) |
| All households* | 7.4 | (0.6) | 4.6 | (0.5) | 3.0 | (0.5) | 2.0 | (0.3) | 3.8 | (0.2) |

*Includes respondents who did not report housing type.

**Percentage of households with chickens, and percentage of households that planned to own chickens in the next 5 years, by city**




*For households that did not currently own chickens.

The percentage of households that planned to own chickens in the next 5 years ranged from 1.4 percent for Black/African American respondents to 5.2 percent for multiracial respondents.

A.2.b. For households that did not currently own chickens, percentage of households that planned to own chickens in the next 5 years, by race/ethnicity of respondents and by city:

| | Percent Households | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Race/ethnicity | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Asian | 2.7 | (1.9) | 4.9 | (1.6) | * | | 1.1 | (0.7) | 3.3 | (1.0) |
| Black/African-American | 1.2 | (1.2) | 0.5 | (0.5) | 1.0 | (0.7) | 2.0 | (0.8) | 1.4 | (0.5) |
| Hispanic/Latino (any race) | 6.4 | (1.5) | 4.4 | (1.0) | 4.0 | (0.7) | 2.7 | (1.1) | 4.0 | (0.6) |
| White | 7.5 | (0.6) | 5.3 | (0.7) | 1.5 | (0.5) | 1.8 | (0.4) | 4.1 | (0.3) |
| Multiracial/other | 14.4 | (3.6) | 5.6 | (1.7) | 2.9 | (1.3) | 3.1 | (1.2) | 5.2 | (0.9) |

*Too few respondents to report.

## B. Respondents' Opinions about Raising Chickens in Urban Settings

Note: Opinions reported in this section are those of respondents, not APHIS.

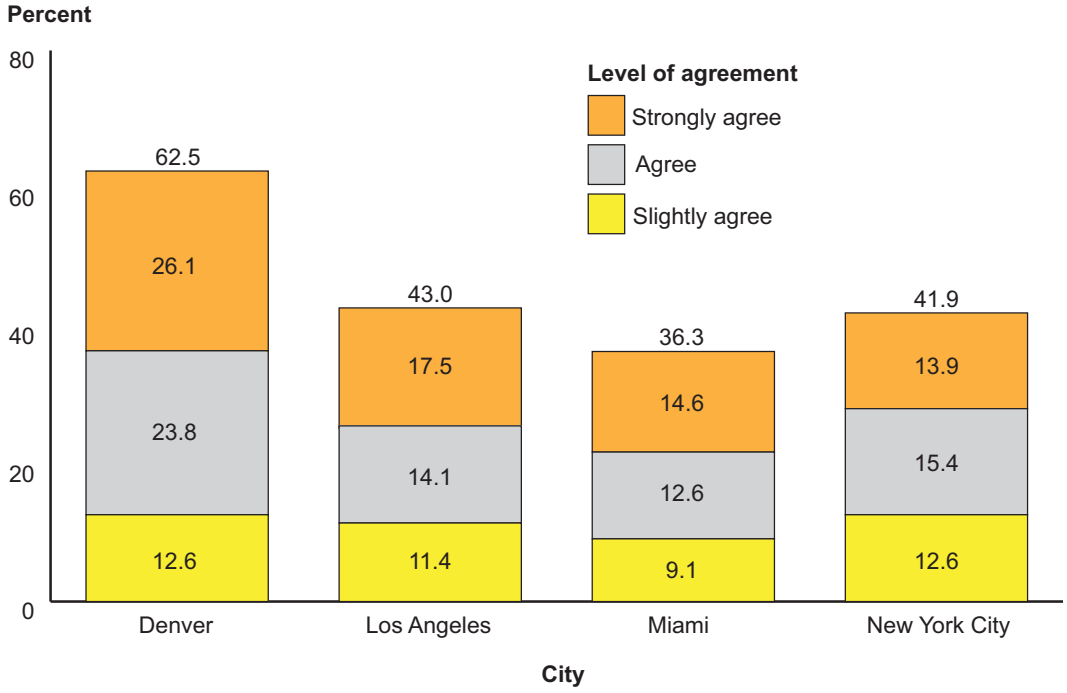
### 1. Allowing chicken ownership

Overall, about 4 of 10 respondents (44.4 percent) were in favor of allowing chicken ownership in their neighborhoods. Nearly two-thirds of respondents in Denver (62.5 percent) were in favor of allowing chicken ownership, but over one-third of respondents in Los Angeles, Miami, and New York City strongly opposed chicken ownership in their neighborhoods.

B.1.a. Percentage of respondents by level of agreement with the statement, "I would be in favor of a law in my community that allows for the ownership of chickens," and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Level of agreement | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Strongly agree | 26.1 | (0.9) | 17.5 | (0.8) | 14.6 | (0.9) | 13.9 | (0.9) | 16.9 | (0.5) |
| Agree | 23.8 | (0.9) | 14.1 | (0.7) | 12.6 | (0.9) | 15.4 | (0.9) | 15.7 | (0.5) |
| Slightly agree | 12.6 | (0.7) | 11.4 | (0.7) | 9.1 | (0.8) | 12.6 | (0.9) | 11.8 | (0.5) |
| Slightly disagree | 5.7 | (0.5) | 8.4 | (0.6) | 5.5 | (0.6) | 7.9 | (0.7) | 7.6 | (0.4) |
| Disagree | 10.6 | (0.6) | 12.4 | (0.7) | 14.2 | (0.9) | 15.9 | (0.9) | 13.6 | (0.4) |
| Strongly disagree | 21.2 | (0.8) | 36.2 | (1.0) | 44.0 | (1.2) | 34.3 | (1.1) | 34.4 | (0.6) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of respondents by level of agreement with the statement, "I would be in favor of a law in my community that allows for the ownership of chickens," and by city**



Respondents from the "other" housing type were the least receptive to allowing chickens in their communities."Other" housing types were primarily mobile homes.

B.1.b. Percentage of respondents who agreed[1] with the statement, "I would be in favor of a law in my community that allows for the ownership of chickens," by housing type and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Housing type | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Single-family home on 1 acre or more | 62.5 | (4.4) | 58.7 | (4.4) | 43.8 | (4.8) | 43.6 | (5.9) | 52.9 | (2.7) |
| Single-family home on less than 1 acre | 61.6 | (1.2) | 40.9 | (1.3) | 36.8 | (1.8) | 36.0 | (2.0) | 43.0 | (0.9) |
| Multifamily dwelling with 20 or more units | 65.9 | (2.3) | 43.2 | (2.8) | 35.5 | (2.5) | 40.8 | (2.4) | 43.0 | (1.6) |
| Multifamily dwelling with fewer than 20 units | 67.7 | (2.8) | 47.0 | (2.6) | 34.7 | (3.3) | 50.7 | (1.9) | 49.8 | (1.4) |
| Other | 49.7 | (10.1) | 26.0 | (7.6) | 33.4 | (9.1) | 31.4 | (7.1) | 31.7 | (4.6) |
| All respondents[2] | 62.5 | (1.0) | 43.0 | (1.0) | 36.3 | (1.3) | 41.9 | (1.2) | 44.4 | (0.6) |

[1]Slightly agreed, agreed, or strongly agreed.
[2]Includes respondents who did not report housing type.

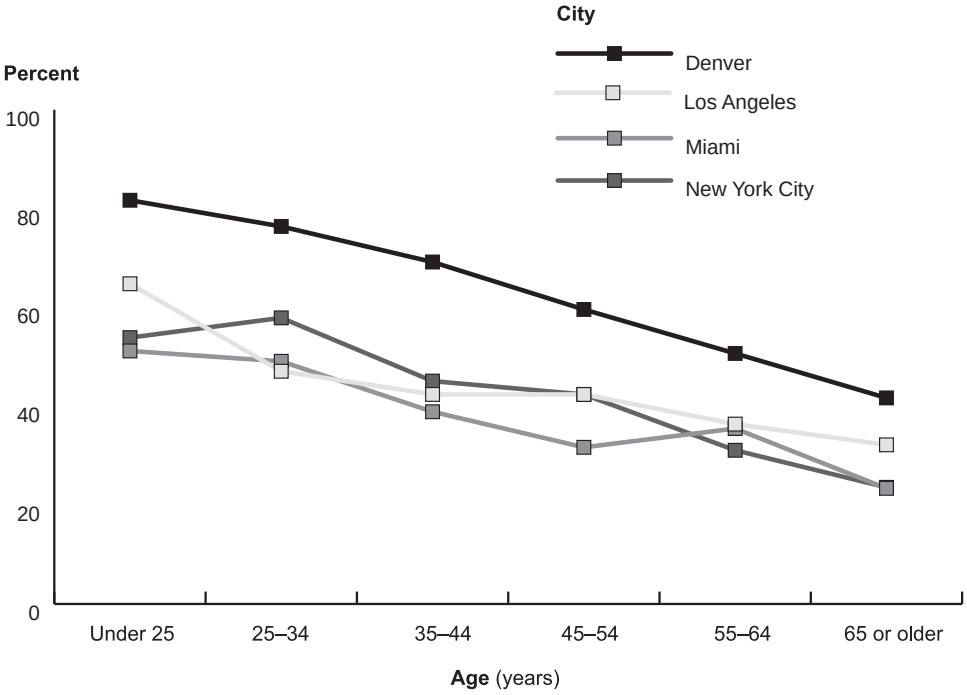
The percentage of respondents in favor of allowing chickens in their communities decreased as the respondents' age increased; overall, the percentage of respondents who favored chicken ownership ranged from 28.7 percent of respondents 65 years or older to 61.0 percent of respondents under 25 years old. In Denver, over 80 percent of respondents under 25 years old were in favor of allowing chickens.

B.1.c. Percentage of respondents who agreed* with the statement, "I would be in favor of a law in my community that allows for the ownership of chickens," by age of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| **Age** (years) | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** |
| Under 25 | 81.7 | (4.7) | 64.8 | (4.5) | 51.2 | (7.5) | 53.9 | (6.3) | 61.0 | (3.3) |
| 25 to 34 | 76.4 | (2.1) | 47.1 | (2.0) | 49.1 | (3.7) | 57.9 | (2.8) | 55.0 | (1.4) |
| 35 to 44 | 69.2 | (2.1) | 42.4 | (2.6) | 38.9 | (2.8) | 45.1 | (2.6) | 46.4 | (1.5) |
| 45 to 54 | 59.6 | (1.9) | 42.4 | (2.2) | 31.7 | (2.3) | 42.4 | (2.5) | 43.6 | (1.3) |
| 55 to 64 | 50.7 | (2.0) | 36.4 | (2.2) | 35.5 | (2.4) | 31.1 | (2.2) | 36.2 | (1.2) |
| 65 or older | 41.7 | (1.9) | 32.2 | (2.2) | 23.4 | (1.7) | 23.6 | (2.1) | 28.7 | (1.2) |

*Slightly agreed, agreed, or strongly agreed.

**Percentage of respondents that agreed* with the statement, "I would be in favor of a law in my community that allows for the ownership of chickens," by age of respondent and by city**




*Slightly agreed, agreed, or strongly agreed.

The percentage of respondents in favor of allowing chickens in their community was similar regardless of respondents' gender.

B.1.d. Percentage of respondents who agreed* with the statement, "I would be in favor of a law in my community that allows for the ownership of chickens," by gender of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Gender | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Female | 63.2 | (1.3) | 45.4 | (1.4) | 33.8 | (1.7) | 39.7 | (1.6) | 44.1 | (0.9) |
| Male | 63.3 | (1.6) | 41.6 | (1.6) | 38.4 | (2.0) | 46.2 | (2.0) | 45.6 | (1.0) |

*Slightly agreed, agreed, or strongly agreed.

Overall, nearly half of white and multiracial/other respondents were in favor of allowing chickens in their communities (48.4 and 49.4 percent, respectively) compared with about one-third of Black/African American respondents (32.3 percent).

B.1.e. Percentage of respondents who agreed* with the statement, "I would be in favor of a law in my community that allows for the ownership of chickens," by race/ethnicity of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Race/ethnicity | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Asian | 50.9 | (7.5) | 37.9 | (3.1) | 32.7 | (10.7) | 42.1 | (4.8) | 40.0 | (2.6) |
| Black/African-American | 41.2 | (5.5) | 24.5 | (3.5) | 32.1 | (3.8) | 35.4 | (2.9) | 32.3 | (2.0) |
| Hispanic/Latino (any race) | 62.4 | (3.1) | 43.9 | (2.3) | 36.2 | (1.8) | 40.1 | (3.3) | 42.4 | (1.5) |
| White | 64.5 | (1.1) | 45.7 | (1.5) | 39.3 | (2.3) | 44.8 | (1.7) | 48.4 | (0.9) |
| Multiracial/other | 68.3 | (3.6) | 50.1 | (3.5) | 31.6 | (4.5) | 47.8 | (4.2) | 49.4 | (2.3) |

*Slightly agreed, agreed, or strongly agreed.

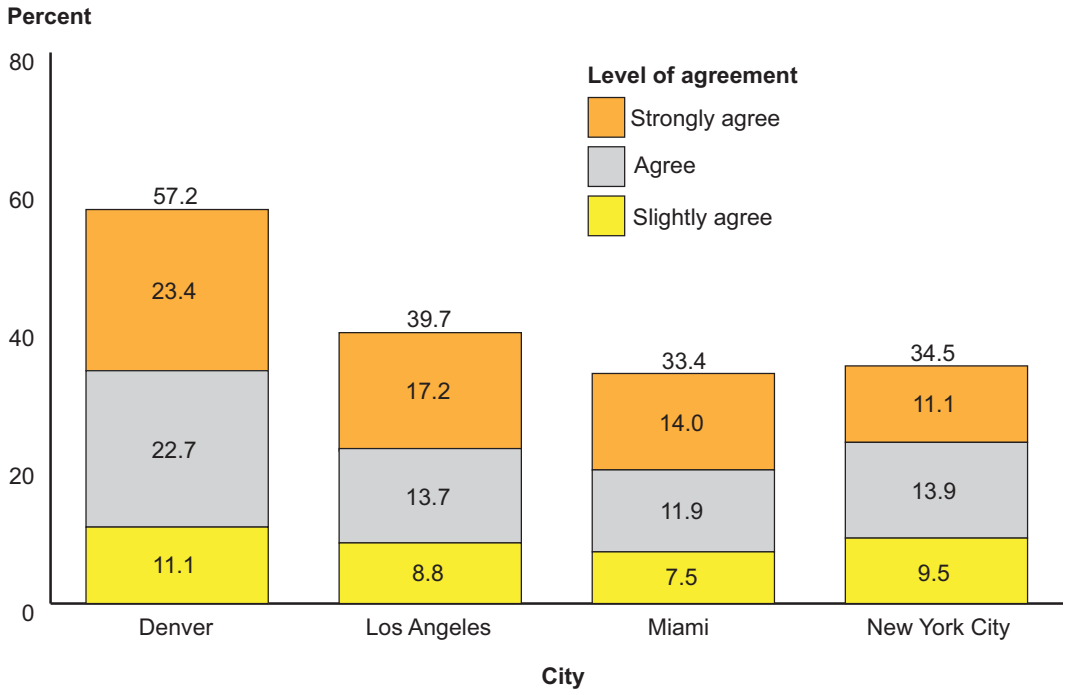
### 2. Neighbors with chickens

In Los Angeles, Miami, and New York City, over 40 percent of respondents were strongly opposed to their neighbors having chickens (40.5, 46.6, and 41.4 percent, respectively). Conversely, 57.2 percent of Denver respondents indicated that they would not mind if their neighbors owned chickens.

B.2.a. Percentage of respondents by level of agreement with the statement, "I would not mind if my neighbor owned chickens," and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Level of agreement | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Strongly agree | 23.4 | (0.9) | 17.2 | (0.8) | 14.0 | (0.9) | 11.1 | (0.7) | 15.4 | (0.5) |
| Agree | 22.7 | (0.9) | 13.7 | (0.7) | 11.9 | (0.8) | 13.9 | (0.9) | 14.7 | (0.5) |
| Slightly agree | 11.1 | (0.7) | 8.8 | (0.6) | 7.5 | (0.7) | 9.5 | (0.7) | 9.2 | (0.4) |
| Slightly disagree | 7.9 | (0.6) | 6.0 | (0.5) | 6.1 | (0.6) | 9.0 | (0.9) | 7.4 | (0.4) |
| Disagree | 11.4 | (0.6) | 13.8 | (0.7) | 13.9 | (0.8) | 15.1 | (0.8) | 14.0 | (0.4) |
| Strongly disagree | 23.5 | (0.8) | 40.5 | (1.0) | 46.6 | (1.3) | 41.4 | (1.2) | 39.3 | (0.6) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of respondents by level of agreement with the statement, "I would not mind if my neighbor owned chickens," and by city**



Over half of respondents living in single-family homes on 1 acre or more would not mind if their neighbors owned chickens compared with about one-third of respondents living in multifamily dwellings with 20 or more units (51.8 and 34.0 percent, respectively).

B.2.b. Percentage of respondents that agreed[1] with the statement, "I would not mind if my neighbor owned chickens," by housing type and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Housing type | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Single-family home on 1 acre or more | 60.9 | (4.4) | 60.6 | (4.3) | 39.5 | (4.6) | 39.5 | (5.9) | 51.8 | (2.7) |
| Single-family home on less than 1 acre | 57.6 | (1.2) | 38.5 | (1.3) | 34.8 | (1.8) | 32.5 | (2.0) | 40.2 | (0.8) |
| Multifamily dwelling with 20 or more units | 56.1 | (2.6) | 35.9 | (2.7) | 31.8 | (2.4) | 30.3 | (2.3) | 34.0 | (1.5) |
| Multifamily dwelling with fewer than 20 units | 59.6 | (3.1) | 41.5 | (2.6) | 30.9 | (3.2) | 43.1 | (1.9) | 43.1 | (1.4) |
| Other | 47.3 | (10.2) | 21.4 | (7.2) | 28.4 | (8.9) | 30.3 | (7.1) | 29.1 | (4.5) |
| All respondents[2] | 57.2 | (1.0) | 39.7 | (1.0) | 33.4 | (1.2) | 34.5 | (1.2) | 39.3 | (0.6) |

[1]Slightly agreed, agreed, or strongly agreed.
[2]Includes respondents who did not report housing type.

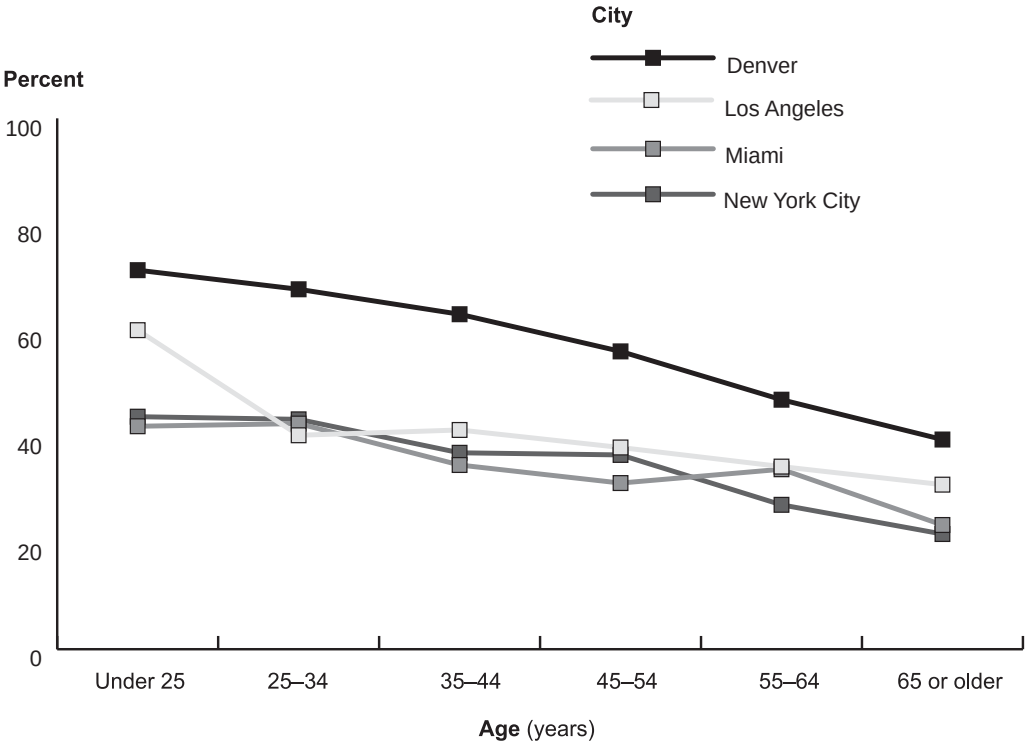
The percentage of respondents who would not mind if their neighbors owned chickens decreased as the respondents' age increased, ranging from 53.1 percent of respondents under 25 years old to 27.3 percent of respondents 65 years or older.

B.2.c. Percentage of respondents who agreed* with the statement, "I would not mind if my neighbor owned chickens," by age of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| **Age** (years) | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** |
| Under 25 | 71.4 | (5.8) | 60.1 | (4.6) | 42.0 | (7.5) | 43.8 | (6.2) | 53.1 | (3.3) |
| 25 to 34 | 67.8 | (2.3) | 40.3 | (2.0) | 42.5 | (3.6) | 43.3 | (2.9) | 45.1 | (1.4) |
| 35 to 44 | 63.1 | (2.2) | 41.3 | (2.6) | 34.7 | (2.8) | 37.0 | (2.5) | 42.0 | (1.5) |
| 45 to 54 | 56.1 | (2.0) | 38.0 | (2.1) | 31.3 | (2.3) | 36.6 | (2.4) | 39.3 | (1.3) |
| 55 to 64 | 47.0 | (2.0) | 34.4 | (2.1) | 33.9 | (2.4) | 27.2 | (2.1) | 33.3 | (1.2) |
| 65 or older | 39.5 | (1.9) | 31.0 | (2.2) | 23.4 | (1.7) | 21.7 | (2.0) | 27.3 | (1.2) |

*Slightly agreed, agreed, or strongly agreed.

**Percentage of respondents that agreed* with the statement, "I would not mind if my neighbor owned chickens," by age of respondent and by city**




*Slightly agreed, agreed, or strongly agreed.

The percentage of respondents who would not mind if their neighbors owned chickens was similar for female and male respondents.

B.2.d. Percentage of respondents who agreed* with the statement, "I would not mind if my neighbor owned chickens," by gender of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Gender | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Female | 58.3 | (1.3) | 39.8 | (1.4) | 31.7 | (1.6) | 33.4 | (1.5) | 38.7 | (0.9) |
| Male | 57.3 | (1.7) | 39.7 | (1.6) | 34.4 | (2.0) | 37.0 | (2.0) | 40.5 | (1.0) |

*Slightly agreed, agreed, or strongly agreed.

When examined by race/ethnicity, the percentage of respondents who would not mind if their neighbors owned chickens ranged from 26.6 percent of Black/African Americans respondents to 43.4 percent of multiracial/other respondents.

B.2.e. Percentage of respondents who agreed* with the statement, "I would not mind if my neighbor owned chickens," by race/ethnicity of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Race/ethnicity | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Asian | 58.0 | (7.1) | 32.6 | (3.0) | 20.8 | (9.0) | 35.3 | (4.3) | 34.5 | (2.4) |
| Black/African-American | 38.3 | (5.5) | 23.0 | (3.4) | 25.1 | (3.4) | 27.7 | (2.6) | 26.6 | (1.8) |
| Hispanic/Latino (any race) | 57.6 | (3.4) | 41.3 | (2.3) | 35.4 | (1.8) | 36.5 | (3.3) | 39.8 | (1.4) |
| White | 58.4 | (1.2) | 42.2 | (1.5) | 33.8 | (2.3) | 36.3 | (1.6) | 42.4 | (0.9) |
| Multiracial/other | 62.0 | (4.1) | 46.4 | (3.5) | 34.4 | (4.5) | 38.0 | (4.3) | 43.4 | (2.3) |

*Slightly agreed, agreed, or strongly agreed.

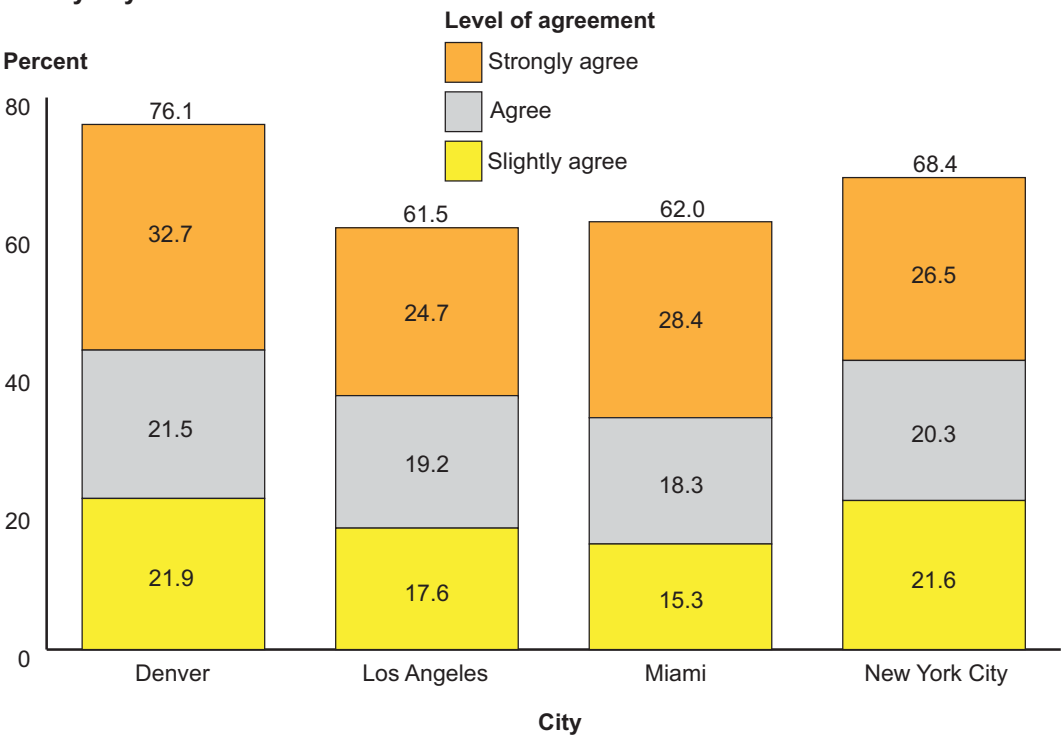
### 3. Eggs from home-raised chickens

About two-thirds of respondents in Los Angeles, Miami, and New York City and three-fourths of respondents in Denver believed that eggs from home-raised chickens are better for you than eggs purchased at a grocery store.

B.3.a. Percentage of respondents by level of agreement with the statement, "Eggs from home-raised chickens are better for you than eggs purchased at a grocery store," and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Level of agreement | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Strongly agree | 32.7 | (1.0) | 24.7 | (0.9) | 28.4 | (1.2) | 26.5 | (1.1) | 26.7 | (0.6) |
| Agree | 21.5 | (0.8) | 19.2 | (0.8) | 18.3 | (0.9) | 20.3 | (1.0) | 19.8 | (0.5) |
| Slightly agree | 21.9 | (0.9) | 17.6 | (0.8) | 15.3 | (0.9) | 21.6 | (1.1) | 19.4 | (0.5) |
| Slightly disagree | 7.6 | (0.6) | 14.7 | (0.8) | 9.0 | (0.8) | 7.9 | (0.6) | 10.7 | (0.4) |
| Disagree | 9.1 | (0.6) | 10.3 | (0.6) | 13.1 | (0.9) | 11.6 | (0.7) | 10.9 | (0.4) |
| Strongly disagree | 7.2 | (0.5) | 13.5 | (0.7) | 15.9 | (0.9) | 12.1 | (0.8) | 12.5 | (0.4) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of respondents by level of agreement with the statement, "Eggs from home-raised chickens are better for you than eggs purchased at a grocery store," and by city**



The percentage of respondents who believed that eggs from home-raised chickens are better for you than eggs purchased at a grocery store was similar across housing types.

B.3.b. Percentage of respondents who agreed[1] with the statement, "Eggs from home-raised chickens are better for you than eggs purchased at a grocery store," by housing type and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Housing type | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Single-family home on 1 acre or more | 76.6 | (3.8) | 54.9 | (4.5) | 65.0 | (4.7) | 77.5 | (4.6) | 64.8 | (2.7) |
| Single-family home on less than 1 acre | 76.3 | (1.1) | 60.2 | (1.3) | 63.7 | (1.8) | 64.1 | (1.9) | 64.0 | (0.8) |
| Multifamily dwelling with 20 or more units | 77.5 | (2.3) | 66.5 | (2.7) | 63.7 | (2.5) | 67.5 | (2.2) | 67.7 | (1.4) |
| Multifamily dwelling with fewer than 20 units | 77.6 | (2.6) | 65.0 | (2.4) | 54.3 | (3.4) | 73.7 | (1.7) | 70.0 | (1.2) |
| Other | 72.3 | (8.9) | 47.4 | (8.3) | 60.8 | (9.2) | 61.1 | (7.2) | 58.3 | (4.7) |
| All respondents[2] | 76.1 | (0.9) | 61.5 | (1.0) | 62.0 | (1.2) | 68.4 | (1.1) | 65.9 | (0.6) |

[1]Slightly agreed, agreed, or strongly agreed.
[2]Includes respondents who did not report housing type.

Except for the under 25 age group, the percentage of respondents who believed that eggs from home-raised chickens are better for you than eggs purchased at a grocery store decreased with age.

B.3.c. Percentage of respondents who agreed* with the statement, "Eggs from home-raised chickens are better for you than eggs purchased at a grocery store," by age of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| **Age** (years) | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** |
| Under 25 | 75.1 | (6.0) | 60.1 | (4.6) | 57.3 | (7.6) | 82.7 | (4.9) | 70.6 | (3.0) |
| 25 to 34 | 83.8 | (1.9) | 66.3 | (1.9) | 73.7 | (3.3) | 80.6 | (2.3) | 74.5 | (1.3) |
| 35 to 44 | 84.3 | (1.7) | 67.0 | (2.5) | 66.1 | (2.8) | 72.3 | (2.4) | 70.9 | (1.4) |
| 45 to 54 | 77.7 | (1.6) | 60.1 | (2.2) | 64.2 | (2.4) | 66.3 | (2.4) | 65.2 | (1.3) |
| 55 to 64 | 71.8 | (1.8) | 57.0 | (2.3) | 60.6 | (2.4) | 59.7 | (2.4) | 60.5 | (1.3) |
| 65 or older | 58.4 | (1.9) | 55.8 | (2.3) | 51.0 | (2.1) | 51.3 | (2.5) | 53.7 | (1.3) |

*Slightly agreed, agreed, or strongly agreed.

A slightly higher percentage of female respondents than male respondents believed that eggs from home-raised chickens are better for you than eggs purchased at a grocery store.

B.3.d. Percentage of respondents who agreed* with the statement, "Eggs from home-raised chickens are better for you than eggs purchased at a grocery store," by gender of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| **Gender** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** |
| Female | 78.6 | (1.1) | 64.4 | (1.4) | 63.9 | (1.7) | 69.7 | (1.4) | 68.2 | (0.8) |
| Male | 74.6 | (1.5) | 59.0 | (1.5) | 59.4 | (2.0) | 68.5 | (1.8) | 64.3 | (1.0) |

*Slightly agreed, agreed, or strongly agreed.

The percentage of respondents who believed that eggs from home-raised chickens are better for you than eggs purchased at a grocery store was similar for all races/ethnicities.

B.3.e. Percentage of respondents who agreed* with the statement, "Eggs from home-raised chickens are better for you than eggs purchased at a grocery store," by race/ethnicity of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| **Race/ethnicity** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** | **Pct.** | **Std. error** |
| Asian | 78.8 | (5.5) | 59.0 | (3.1) | 74.1 | (10.2) | 71.9 | (3.9) | 65.1 | (2.4) |
| Black/African-American | 61.7 | (5.5) | 56.0 | (3.8) | 52.6 | (3.9) | 67.6 | (2.8) | 62.4 | (2.0) |
| Hispanic/Latino (any race) | 79.9 | (2.7) | 56.8 | (2.3) | 64.8 | (1.8) | 69.0 | (2.9) | 63.4 | (1.4) |
| White | 77.8 | (0.9) | 64.6 | (1.4) | 62.7 | (2.2) | 68.2 | (1.5) | 68.3 | (0.8) |
| Multiracial/other | 69.0 | (4.4) | 65.1 | (3.3) | 59.4 | (4.5) | 71.5 | (3.7) | 67.7 | (2.1) |

*Slightly agreed, agreed, or strongly agreed.

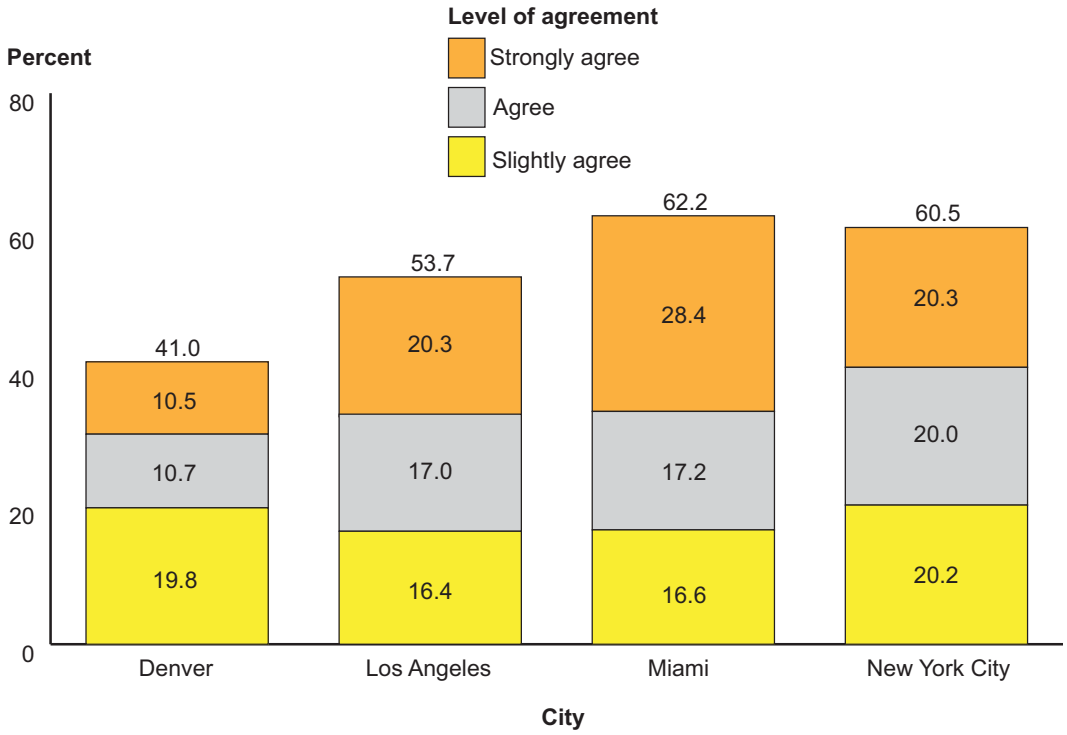
### 4. Urban chickens and illnesses in humans

Although about two-thirds of respondents believed that eggs from home-raised chickens are better for you than eggs purchased at a grocery store (65.9 percent, table B.3.b.), over half of respondents (55.6 percent) believed that chickens in urban areas will lead to more illnesses in humans. Denver had the lowest percentage of respondents who believed that chickens in urban areas will lead to more illnesses in humans.

B.4.a. Percentage of respondents by level of agreement with the statement, "Chickens in urban areas will lead to more illnesses in humans," and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Level of agreement | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Strongly agree | 10.5 | (0.7) | 20.3 | (0.8) | 28.4 | (1.1) | 20.3 | (1.0) | 19.9 | (0.5) |
| Agree | 10.7 | (0.6) | 17.0 | (0.8) | 17.2 | (1.0) | 20.0 | (1.0) | 17.4 | (0.5) |
| Slightly agree | 19.8 | (0.9) | 16.4 | (0.8) | 16.6 | (1.0) | 20.2 | (1.0) | 18.3 | (0.5) |
| Slightly disagree | 16.0 | (0.8) | 14.6 | (0.7) | 9.6 | (0.8) | 12.5 | (0.8) | 13.4 | (0.4) |
| Disagree | 26.1 | (0.9) | 16.7 | (0.8) | 13.9 | (0.9) | 15.1 | (0.9) | 17.0 | (0.5) |
| Strongly disagree | 16.9 | (0.8) | 15.0 | (0.7) | 14.3 | (0.9) | 11.9 | (0.7) | 14.0 | (0.4) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of respondents by level of agreement with the statement, "Chickens in urban areas will lead to more illnesses in humans," and by city**



Over 60 percent of respondents living in multifamily dwellings with 20 units or more and "other" housing types (primarily mobile homes) believed that chickens in urban areas will lead to more illnesses in humans.

B.4.b. Percentage of respondents who agreed[1] with the statement, "Chickens in urban areas will lead to more illnesses in humans," by housing type and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Housing type | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Single-family home on 1 acre or more | 42.0 | (4.6) | 48.1 | (4.5) | 57.6 | (4.7) | 59.3 | (5.8) | 51.8 | (2.8) |
| Single-family home on less than 1 acre | 39.9 | (1.3) | 53.3 | (1.3) | 61.4 | (1.8) | 64.3 | (2.0) | 54.0 | (0.9) |
| Multifamily dwelling with 20 or more units | 42.8 | (2.7) | 55.3 | (2.8) | 65.4 | (2.4) | 63.7 | (2.3) | 60.2 | (1.5) |
| Multifamily dwelling with fewer than 20 units | 40.6 | (3.3) | 54.8 | (2.6) | 60.3 | (3.4) | 52.5 | (1.9) | 52.8 | (1.4) |
| Other | 57.8 | (10.1) | 68.0 | (7.8) | 69.5 | (7.5) | 65.3 | (6.8) | 65.9 | (4.4) |
| All respondents[2] | 41.0 | (1.1) | 53.7 | (1.0) | 62.2 | (1.2) | 60.5 | (1.2) | 55.6 | (0.6) |

[1]Slightly agreed, agreed, or strongly agreed.
[2]Includes respondents who did not report housing type.

The percentage of respondents who believed that chickens in urban areas will lead to more illnesses in humans was similar for all age groups.

B.4.c. Percentage of respondents who agreed* with the statement, "Chickens in urban areas will lead to more illnesses in humans," by age of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| **Age** (years) | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Under 25 | 49.7 | (6.6) | 46.9 | (4.7) | 67.6 | (7.2) | 63.8 | (5.8) | 55.8 | (3.3) |
| 25 to 34 | 37.9 | (2.5) | 51.8 | (2.0) | 59.1 | (3.6) | 52.5 | (2.9) | 51.0 | (1.5) |
| 35 to 44 | 36.6 | (2.2) | 57.3 | (2.6) | 63.3 | (2.8) | 58.2 | (2.6) | 55.6 | (1.5) |
| 45 to 54 | 40.7 | (1.9) | 56.6 | (2.2) | 62.9 | (2.4) | 63.5 | (2.4) | 57.6 | (1.3) |
| 55 to 64 | 42.7 | (2.0) | 53.1 | (2.3) | 60.9 | (2.4) | 63.1 | (2.3) | 56.4 | (1.3) |
| 65 or older | 44.4 | (1.9) | 51.7 | (2.3) | 61.1 | (2.0) | 65.0 | (2.3) | 57.4 | (1.3) |

*Slightly agreed, agreed, or strongly agreed.

Photograph courtesy of Judy Rodriguez

A slightly higher percentage of male respondents than female respondents believed that chickens in urban areas will lead to more illnesses in humans.

B.4.d. Percentage of respondents who agreed* with the statement, "Chickens in urban areas will lead to more illnesses in humans," by gender of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Gender | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Female | 39.2 | (1.3) | 52.1 | (1.4) | 61.9 | (1.7) | 56.2 | (1.6) | 53.1 | (0.9) |
| Male | 42.4 | (1.7) | 55.2 | (1.6) | 63.9 | (2.0) | 64.1 | (1.9) | 57.5 | (1.0) |

*Slightly agreed, agreed, or strongly agreed.

When examined by race/ethnicity, the percentage of respondents who believed that chickens in urban areas will lead to more illnesses in humans ranged from 49.1 percent of white respondents to 70.6 percent of Asian respondents.

B.4.e. Percentage of respondents who agreed* with the statement, "Chickens in urban areas will lead to more illnesses in humans," by race/ethnicity of respondent and by city:

| | Percent Respondents | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | City | | | | | | | | | |
| | Denver | | Los Angeles | | Miami | | New York City | | Four cities | |
| Race/ethnicity | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error | Pct. | Std. error |
| Asian | 63.6 | (6.6) | 68.1 | (3.0) | 53.2 | (12.2) | 75.5 | (3.6) | 70.6 | (2.2) |
| Black/African-American | 51.6 | (5.3) | 62.6 | (3.8) | 60.0 | (3.9) | 56.3 | (3.0) | 58.2 | (2.0) |
| Hispanic/Latino (any race) | 53.8 | (3.5) | 61.7 | (2.3) | 65.1 | (1.8) | 64.5 | (3.2) | 62.7 | (1.4) |
| White | 37.8 | (1.2) | 45.1 | (1.5) | 57.3 | (2.3) | 57.2 | (1.7) | 49.1 | (0.9) |
| Multiracial/other | 37.6 | (4.2) | 52.4 | (3.5) | 64.4 | (4.3) | 58.7 | (4.0) | 54.5 | (2.3) |

*Slightly agreed, agreed, or strongly agreed.

# Section II: Methodology

## A. Sampling and Estimation

### 1. Background

Four 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 Los Angeles and Miami had a long history of chicken ownership, and Denver and New York had a comparatively short history of chicken ownership. The urban chicken component of Poultry 2010 was conducted in two phases. Results from Phase I are reported in "Poultry 2010: Reference of the Health and Management of Chicken Flocks in Urban Settings in Four U.S. Cities, 2010." This report includes results from Phase II.

All four cities were included in Phase I of the urban chicken study. Phase I involved administering a questionnaire to feed store customers in Los Angeles, Denver, and Miami. The questionnaire focused on bird health, movement, and biosecurity practices in urban chicken flocks. Due to the lack of feed stores in New York City, the questionnaire was administered to members of a Web-based chicken club.

Phase II determined the percentage of households that owned chickens and ascertained the residents' opinions about chickens in urban settings. Due to resource limitations, only one metro area (Los Angeles County) was selected for Phase II of the urban chicken study during 2010. The remaining three cities were surveyed during 2012.

### 2. Household selection

The study was designed to allow for expansion of the results to estimate and report the percentage of households that owned chickens. A simple random sample of households was selected from a commercially available address list. See maps in appendix I for boundaries of the four metro areas.

### 3. Population inferences

Inferences cover all households located in the four metro areas defined in this study. Survey responses were weighted to reflect the population from which they were selected. The population size (number of households) divided by the number of respondents in each city was adjusted for differences in demographics between respondents and nonrespondents by comparing respondent demographics with the 2005–09 U.S. Census Bureau American Community Survey (Los Angeles) and the 2010 U.S. Census estimates (Denver, Miami, and New York City).

## B. Data Collection

In Los Angeles, data collection occurred in three stages from July 2010 to January 2011. During each stage, households selected for participation received a postcard introducing the study and providing a Web address and an access password for completing the questionnaire online. Nonrespondents received a second mailing 2 weeks later that included a paper questionnaire, a postage-paid return envelope, and the information for completing the questionnaire online. Telephone numbers were obtained for households that were nonrespondents to both mailings. Approximately 52 percent of addresses could be matched to telephone numbers. Nonrespondents were contacted by telephone 2 weeks after the second mailing and asked to complete the survey over the phone. All printed study materials were provided in English and Spanish, while telephone surveys were conducted in English.

In Denver, Miami, and New York City, data collection occurred from February through August 2012. An introductory letter was mailed to selected households, followed by a second mailing containing a paper questionnaire, a postage-paid return envelope, and information for completing the questionnaire online. A $1 bill was included as an incentive to participate. Nonrespondents were contacted by telephone 2 weeks after the second mailing and asked to complete the survey over the phone. All printed study materials were provided in English and Spanish, while telephone surveys were conducted in English.

## C. Data Analysis

### 1. Validation and estimation

Data were entered into a SAS dataset. Validation checks were performed by NAHMS staff. Weighted point estimates were generated using SUDAAN software.

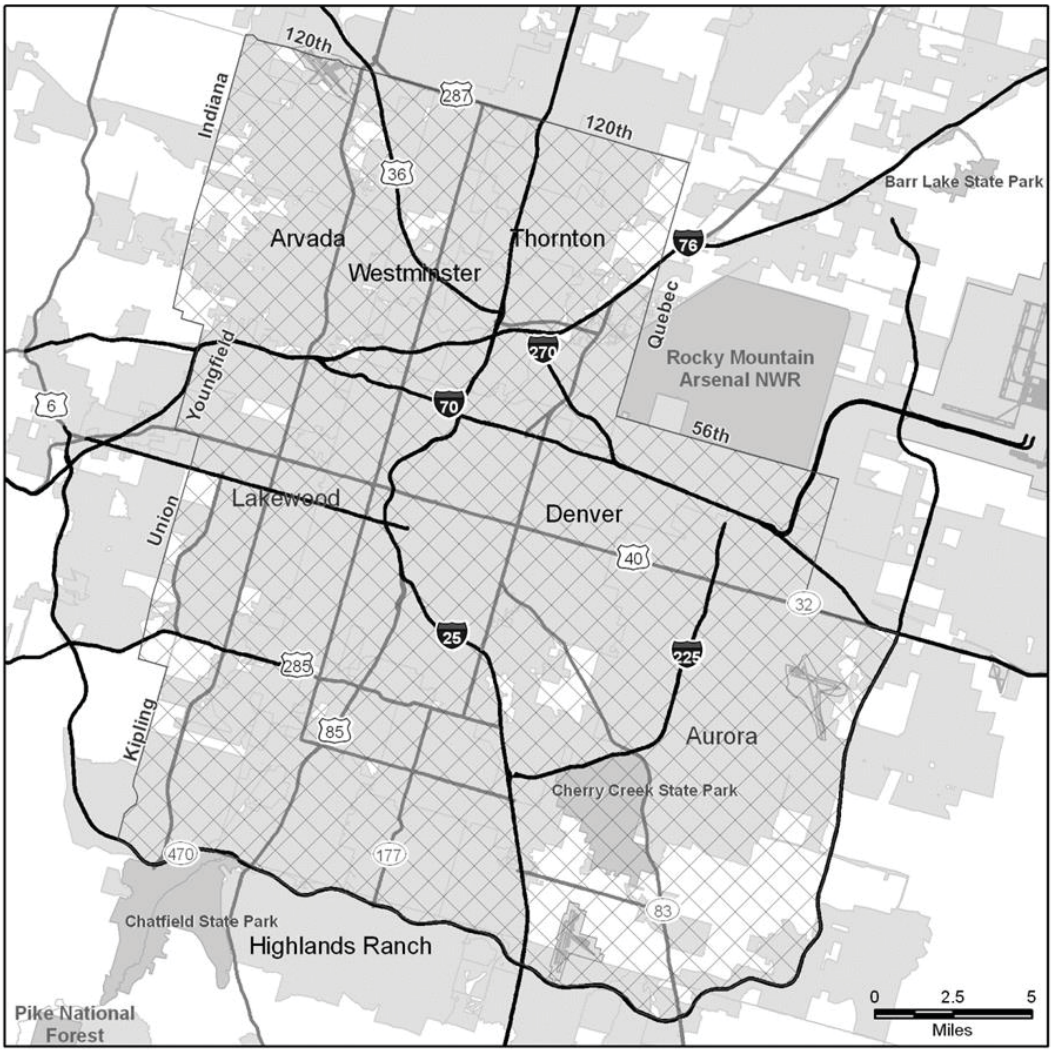
### 2. Response rate

Response rates were 39.1 percent in Denver, 17.0 percent in Los Angeles, 23.5 percent in Miami, and 23.4 percent in New York City.

| | City | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Denver | | Los Angeles | | Miami | | New York City | |
| **Response category** | **Freq.** | **Pct.** | **Freq.** | **Pct.** | **Freq.** | **Pct.** | **Freq.** | **Pct.** |
| Completed—mail or online | 2,793 | 36.5 | 2,013 | 12.8 | 1,889 | 22.2 | 2,071 | 20.7 |
| Completed—telephone | 201 | 2.6 | 673 | 4.2 | 108 | 1.3 | 265 | 2.7 |
| Undeliverable | 619 | 8.1 | 803 | 5.1 | 853 | 10.0 | 571 | 5.7 |
| Refusal/ no response | 4,037 | 52.8 | 12,311 | 77.9 | 5,650 | 66.5 | 7,093 | 70.9 |
| Total | 7,650 | 100.0 | 15,800 | 100.0 | 8,500 | 100.0 | 10,000 | 100.0 |

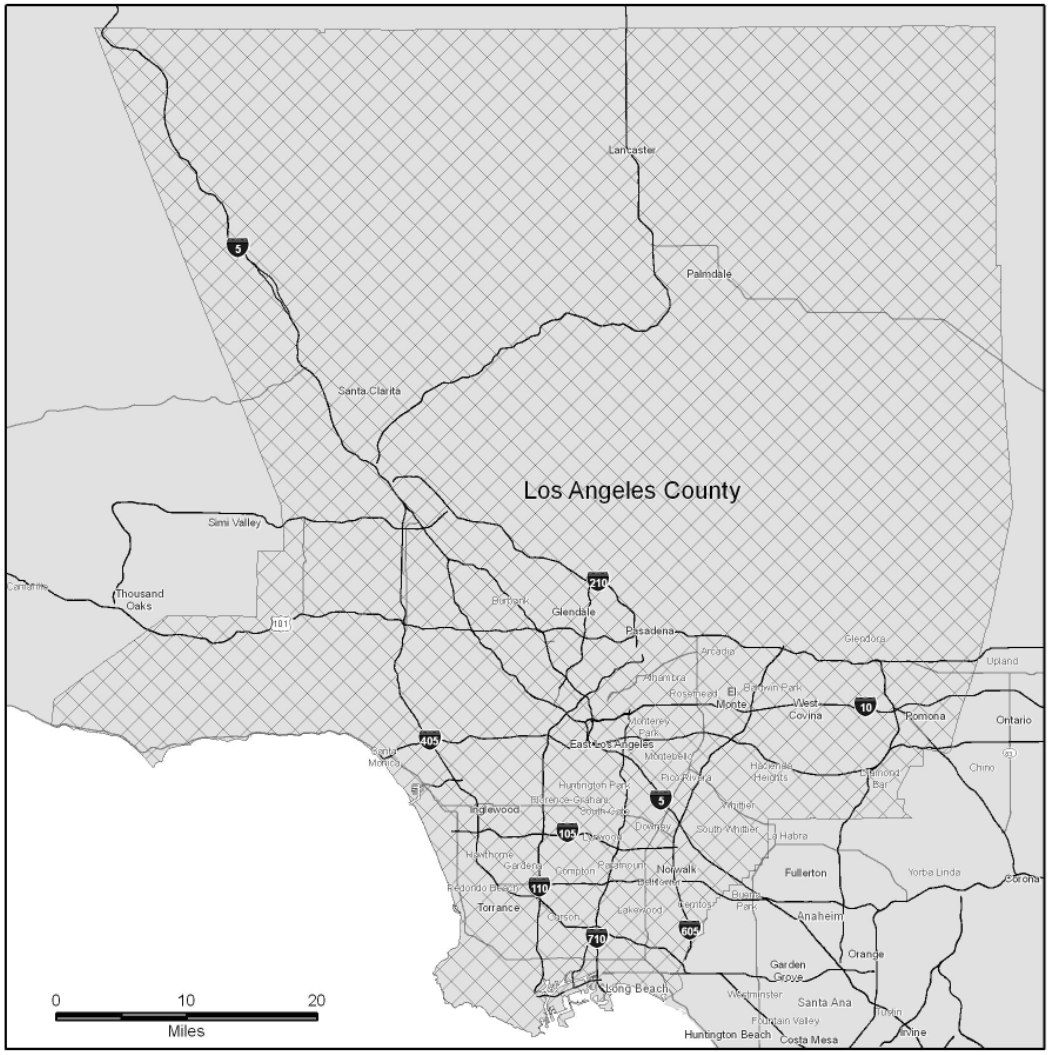
# Appendix I: Maps of Study Metro Areas

### Denver



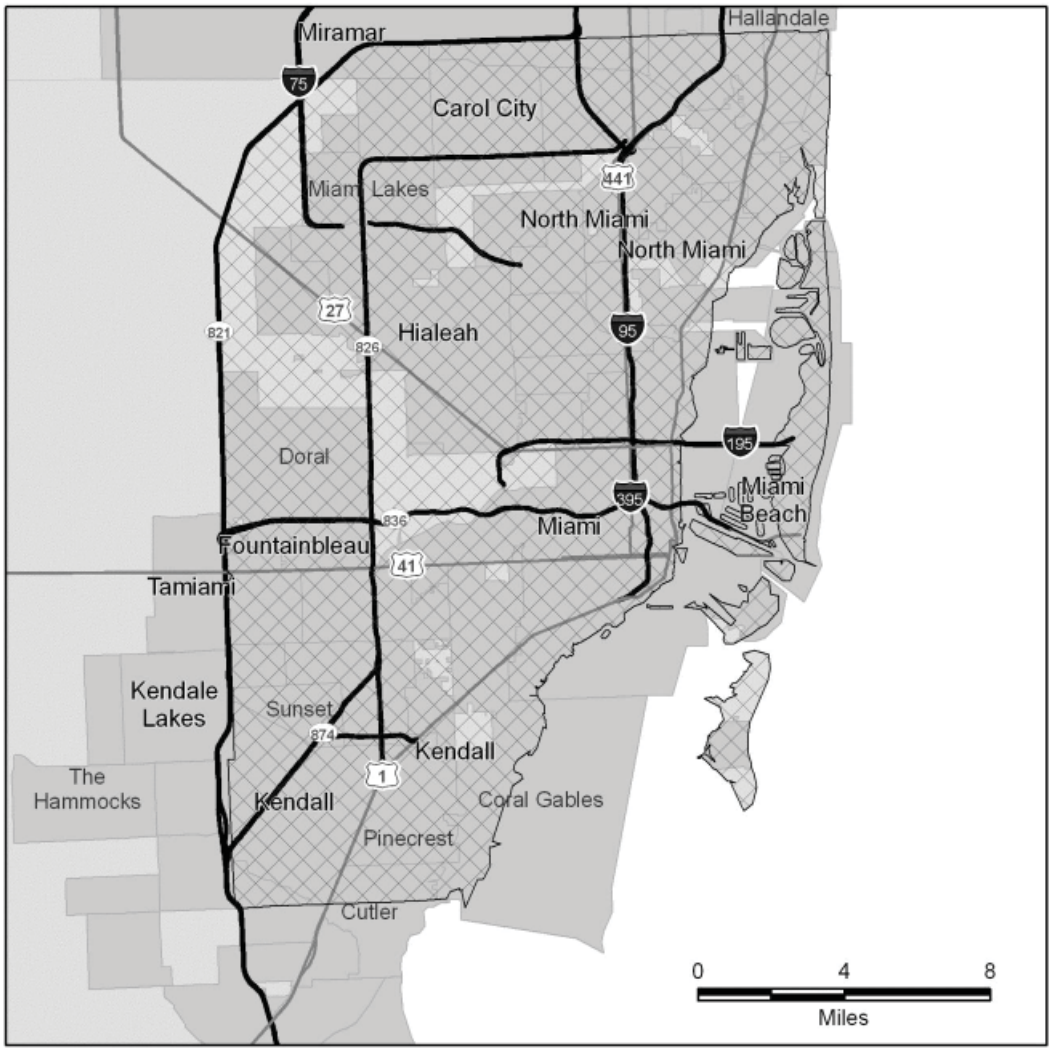

Hatch marks indicate study area.

## Los Angeles




Hatch marks indicate study area.

**Miami**




Hatch marks indicate study area.

**New York City**

Hatch marks indicate study area.

# Appendix II: Demographics of Four Metro areas[1]

| | City | | | |
|---|---|---|---|---|
| | Denver | Los Angeles | Miami | New York City |
| **Housing units** | | | | |
| Total housing units | 1,001,253 | 3,202,353 | 809,689 | 3,039,467 |
| | **Pct.** | **Pct.** | **Pct.** | **Pct.** |
| Single family (one unit) homes[2] | 67 | 59 | 55 | 13 |
| Multifamily dwelling with 20 or more units | 10 | 14 | 19 | 41 |
| Multifamily dwelling with fewer than 20 units | 22 | 27 | 26 | 47 |
| **Population** | | | | |
| Total adult population | 1,721,055 | 7,244,151 | 1,951,548 | 6,267,088 |
| | **Pct.** | **Pct.** | **Pct.** | **Pct.** |
| Age (years) | | | | |
| 18–25 | 9 | 10 | 8 | 10 |
| 25–34 | 21 | 22 | 17 | 23 |
| 35–44 | 20 | 21 | 19 | 19 |
| 45–54 | 20 | 19 | 20 | 18 |
| 55–64 | 16 | 13 | 15 | 15 |
| 65 or older | 14 | 14 | 21 | 16 |
| Gender | | | | |
| Female | 51 | 49 | 52 | 54 |
| Male | 49 | 51 | 48 | 46 |
| Race/ethnicity | | | | |
| White | 66 | 28 | 35 | 33 |
| Black/African-American | 5 | 8 | 20 | 23 |
| Asian | 4 | 14 | 2 | 13 |
| Hispanic or Latino (of any race)[3] | 22 | 48 | 42 | 29 |
| Multiracial/other race | 3 | 2 | 1 | 3 |

[1]2010 U.S. Census Bureau estimates.
[2]Includes mobile homes.
[3]The U.S. Census form asks about Hispanic/Latino ethnicity separate from race.
Note: Totals may not sum to 100 due to rounding.

# Appendix III: Sample Profile

**1. Number of respondents by housing type and by city**

| | City | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Denver | | Los Angeles | | Miami | | New York City | |
| **Housing type** | **No.** | **Pct.** | **No.** | **Pct.** | **No.** | **Pct.** | **No.** | **Pct.** |
| Single-family home on 1 acre or more | 138 | 4.6 | 147 | 5.5 | 150 | 7.5 | 94 | 4.0 |
| Single-family home on less than 1 acre | 1,931 | 64.5 | 1,661 | 61.8 | 936 | 46.9 | 737 | 31.6 |
| Multifamily dwelling with 20 or more units | 481 | 16.1 | 355 | 13.2 | 518 | 25.9 | 550 | 23.5 |
| Multifamily dwelling with fewer than 20 units | 356 | 11.9 | 448 | 16.7 | 260 | 13.0 | 822 | 35.2 |
| Other | 33 | 1.1 | 38 | 1.4 | 41 | 2.1 | 61 | 2.6 |
| Did not specify | 55 | 1.8 | 37 | 1.4 | 92 | 4.6 | 72 | 3.1 |
| Total | 2,994 | 100.0 | 2,686 | 100.0 | 1,997 | 100.0 | 2,336 | 100.0 |

**2. Number of respondents by age and by city**

| | City | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Denver | | Los Angeles | | Miami | | New York City | |
| **Age** (years) | **No.** | **Pct.** | **No.** | **Pct.** | **No.** | **Pct.** | **No.** | **Pct.** |
| Under 25 | 75 | 2.5 | 113 | 4.2 | 48 | 2.4 | 83 | 3.6 |
| 25 to 34 | 407 | 13.6 | 604 | 22.5 | 188 | 9.4 | 339 | 14.5 |
| 35 to 44 | 497 | 16.6 | 378 | 14.1 | 300 | 15.0 | 409 | 17.5 |
| 45 to 54 | 652 | 21.8 | 526 | 19.6 | 405 | 20.3 | 458 | 19.6 |
| 55 to 64 | 640 | 21.4 | 500 | 18.6 | 410 | 20.5 | 479 | 20.5 |
| 65 or older | 686 | 22.9 | 513 | 19.1 | 611 | 30.6 | 519 | 22.2 |
| Did not specify | 37 | 1.2 | 52 | 1.9 | 35 | 1.8 | 49 | 2.1 |
| Total | 2,994 | 100.0 | 2,686 | 100.0 | 1,997 | 100.0 | 2,336 | 100.0 |

**3. Number of respondents by gender and by city**

| | City | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Denver | | Los Angeles | | Miami | | New York City | |
| **Gender** | **No.** | **Pct.** | **No.** | **Pct.** | **No.** | **Pct.** | **No.** | **Pct.** |
| Female | 1,554 | 51.9 | 1,406 | 52.4 | 996 | 49.9 | 1,235 | 52.9 |
| Male | 1,266 | 42.3 | 1,158 | 43.1 | 841 | 42.1 | 939 | 40.2 |
| Did not specify | 174 | 5.8 | 122 | 4.5 | 160 | 8.0 | 162 | 6.9 |
| Total | 2,994 | 100.0 | 2,686 | 100.0 | 1,997 | 100.0 | 2,336 | 100.0 |

# Appendix IV: 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: Structure of the U.S. Poultry Industry, 2010, descriptive report, December 2011
- Poultry 2010: Reference of Health and Management Practices on Breeder-Chicken Farms in the United States, 2010, descriptive report, November 2011
- *E. coli* Peritonitis on Breeder-Chicken Farms in the United States, info sheet, October 2012
- Respiratory Disease on Breeder-Chicken Farms in the United States, info sheet, June 2012
- Highlights of Structure of the U.S. Poultry Industry, 2010, info sheet, November 2011
- Highlights of Health and Management Practices on Breeder-Chicken Farms in the United States, 2010, info sheet, November 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 U.S. Turkey Farms, interpretive report, June 2012
- Risk Factors Associated with Clostridial Dermatitis on U.S. Turkey-Grower Farms, info sheet, August 2012
- Role of Intestinal Pathology and Clostridial Species in Clostridial Dermatitis on U.S. Turkey-Grower Farms, info sheet, August 2012
- Clostridial Dermatitis in U.S. Commercial Turkeys and Broilers, info sheet, November 2011

3. Estimate the size of the urban chicken ownership population in four U.S. Cities. 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: Urban Chicken Ownership in Four U.S. Cities, descriptive report, December 2012
- Poultry 2010: Reference of the Health and Management of Chicken Flocks in Urban Settings in Four U.S. Cities, descriptive report, May 2011
- Characteristics of Chicken Flocks in Four U.S. Cities, info sheet, April 2011
- Biosecurity of Urban Chicken Flocks in Four U.S. Cities, info sheet, April 2011
- Poultry 2010: Urban Chicken Ownership in Los Angeles County, California, 2010, descriptive report, August 2011
- Urban Chicken Flocks in Four U.S. Cities: the Human/Chicken Interface, info sheet, April 2011