

# Investigating the 2010 Undercount of Young Children – Analysis of Coverage Followup Results Using the Esri Tapestry Segmentation and the Planning Database

FINAL REPORT

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## Table of Contents

1. INTRODUCTION.....	1
2. BACKGROUND.....	2
2.1 Data Collection Methodology – 2010 Census.....	2
2.2 Coverage Followup Methodology.....	4
2.3 Coverage Followup Results.....	4
2.4 Esri Tapestry Segmentation.....	5
2.5 Planning Database.....	6
3. RESEARCH QUESTIONS.....	7
4. METHODOLOGY.....	7
4.1 Sources of Data.....	7
4.2 Segmentation and Categorization.....	8
4.3 Definitions.....	9
4.4 Estimation and Analysis.....	10
4.5 Limitations.....	10
5. RESULTS.....	11
5.1 Positive Responses to Child-Specific Undercount Probes.....	11
5.2 Coverage Followup Adds.....	19
6. DISCUSSION.....	25
7. CONCLUSIONS.....	27
8. NEXT STEPS.....	27
9. REFERENCES.....	27
Appendix 1.....	29
Appendix 2.....	30
Appendix 3.....	32
Appendix 4.....	34

## List of Tables and Figures

Table 1. Esri Tapestry LifeMode Groups.....	6
Table 2. Esri Tapestry Urbanization Groups.....	6
Table 3. Positive-Response Results by Esri Urbanization Group .....	12
Table 4. Positive-Response Results by Esri LifeMode Group.....	13
Table 5. Esri Market Groups with Positive-Response Rates of 10 Per 1,000 or Greater .....	13
Table 6. Positive-Response Results by Planning Database Stratification - Social Characteristics.....	17
Table 7. Positive-Response Results by Planning Database Stratification - Economic Characteristics .....	18
Table 8. Positive-Response Results by Planning Database Stratification - Housing Characteristics..	18
Table 9. Positive-Response Results by Planning Database Stratification – Operational Characteristics .....	19
Table 10. Coverage Followup Add Results by Esri Urbanization Groups .....	20
Table 11. Coverage Followup Add Results by Esri LifeMode Group .....	20
Table 12. Esri Market Groups with Coverage Followup Add Rates of 4.0 per 1,000 or Greater .....	21
Table 13. Coverage Followup Add Results by Planning Database Stratification - Social Characteristics .....	23
Table 14. Coverage Followup Add Results by Planning Database Stratification - Economic Characteristics .....	24
Table 15. Coverage Followup Add Results by Planning Database Stratification - Housing Characteristics .....	24
Table 16. Coverage Followup Add Results by Planning Database Stratification – Operational Characteristics .....	25
Table 17. Summary of Strata with High Positive-Response Rates.....	26
Table 18. Positive-Response Results by Esri Market Group (Part 1).....	30
Table 19. Positive-Response Results by Esri Market Group (Part 2).....	31
Table 20. Coverage Followup Add Results by Esri Market Group (Part 1) .....	32
Table 21. Coverage Followup Add Results by Esri Market Group (Part 2) .....	33
Table 22. Demographic Characteristics of Selected Esri Market Groups.....	34
Table 23. Social and Economic Characteristics of Selected Esri Market Groups.....	34
Figure 1. Facsimile of Population Count Question on Self-Response Questionnaires - 2010 Census..	2
Figure 2. Facsimile of Self-Response Questionnaire's Undercount Question - 2010 Census.....	3
Figure 3. Facsimile of the Enumerator Questionnaire's Undercount Question - 2010 Census.....	3

## 1. INTRODUCTION

Hogan et al. (2013) used Demographic Analysis to estimate that young children (children under the age of 5) in the 2010 Census had a net undercount of 4.6 percent. An interdivisional team at the Census Bureau is currently analyzing existing data sets from the 2010 Census to try to understand the reasons for this high level of coverage error. This report is part of a series of reports that examine the undercount of young children in the 2010 Census. It summarizes findings about households that may have erroneously excluded a young child when they completed their 2010 Census questionnaires.

The 2010 Census included a coverage improvement program to review the list of household members and identify potential coverage errors for follow-up. Three recently released reports summarized data from this Coverage Followup (CFU) operation. The first report (U.S. Census Bureau 2017a) looked at households that responded positively to one of the probes on the 2010 Census questionnaires about potentially omitted children. The report summarized the characteristics of households where the respondent was uncertain about including a child. The second report (U.S. Census Bureau 2017b) analyzed the characteristics of the young children added as a result of CFU and the characteristics of the households where they lived. Data from these two evaluations identified instances of potential coverage error involving young children. The third report (U.S. Census Bureau 2017c) analyzed the geographic distribution of each of these events—households with positive responses to a child-specific undercount probe and young children added during CFU. In that report, the authors recommended additional research to study the social and economic characteristics of the geographic areas with high positive-response rates and high CFU add rates. Segmentation group analysis was also proposed to understand if errors involving young children were largely concentrated in areas associated with hard-to-count characteristics.

In this report, we expand our analysis of the geographic distribution of the CFU results using two segmentation methods. These methods group neighborhoods with similar characteristics. The first method uses a marketing segmentation structure developed by Esri, a geographic information system company ([www.esri.com](http://www.esri.com)). Esri created the Tapestry demographic and lifestyle segmentation for use in analyzing markets and consumers. The second method uses tract-level data from the Census Bureau's Planning Database (PDB) to stratify the country based on specific social, economic, housing, and operational variables.

We use these two methods to identify areas with the greatest numbers and highest rates of positive responses to the child undercount probes—an indicator of the types of neighborhoods where respondents experienced some level of confusion about including young children on their census forms. In addition, we identify areas with the greatest numbers and proportions of their young children added as a result of the CFU operation. These results point us to neighborhoods where the CFU operation successfully added young children that the household respondent initially omitted in error. As we plan for the 2020 Census, it is useful to identify where respondents experienced challenges completing their 2010 Census forms. The Census Bureau could target these areas for special outreach and education efforts in 2020. The Esri Tapestry segmentation and the PDB

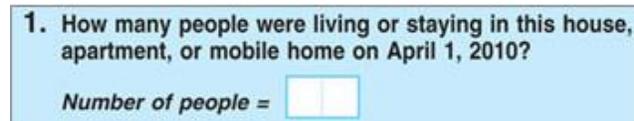
provide us with a rich set of operational, demographic, housing, and socioeconomic data about the neighborhoods that experienced these enumeration challenges in 2010.

## 2. BACKGROUND

### 2.1 Data Collection Methodology – 2010 Census

The 2010 Census relied largely on self-response to enumerate the country. The U.S. Postal Service and census enumerators (in Update Leave areas) delivered census questionnaires asking households to complete and return paper forms by mail. The Census Bureau mailed or delivered bilingual (English/Spanish) questionnaires in some parts of the country with forms and guides in additional languages available upon request. The Census Bureau conducted personal visit Nonresponse Followup (NRFU) interviews to enumerate the households that failed to respond by mail. In some more rural and remote areas, self-response was not an option. Enumerators visited all households in these areas to collect the required information in an operation called Update Enumerate (UE).

In the 2010 Census, a “household” included all people who occupied a housing unit. One person was designated as the householder (a person who owns or rents the housing unit). The householder is frequently, but not always, the person who either completes the census form or is interviewed during NRFU. The 2010 Census asked for the sex, age, date of birth, race, and Hispanic origin of each person and their relationship to the householder. Self-response and NRFU questionnaires included coverage questions to identify households that might have omitted or included someone in error. The 2010 Census self-response questionnaire asked households to determine the total number of people living at an address. Figure 1 is a facsimile of the population count question.



1. How many people were living or staying in this house, apartment, or mobile home on April 1, 2010?

Number of people =

Figure 1. Facsimile of Population Count Question on Self-Response Questionnaires - 2010 Census

Immediately following this question was an undercount detection question in a “mark-all-that-apply” format. The question was designed to identify possible census omissions. The undercount question asked about people staying at the housing unit that the respondent did not include in the population count (Figure 2). Note that the first response category explicitly asks about “children, such as newborn babies or foster children.”

**2. Were there any additional people staying here April 1, 2010 that you did not include in Question 1?**  
 Mark *X* all that apply.

- Children, such as newborn babies or foster children
- Relatives, such as adult children, cousins, or in-laws
- Nonrelatives, such as roommates or live-in baby sitters
- People staying here temporarily
- No additional people

Figure 2. Facsimile of Self-Response Questionnaire's Undercount Question - 2010 Census

Self-response questionnaires with a positive response to the coverage question (i.e., questionnaires with any of the first four response boxes marked) were eligible for Coverage Followup (CFU). A positive response was interpreted as an indication that the person completing the form may have failed to include someone on their questionnaire who stayed with the household on April 1, 2010. We are interested in the households marking the “*children, such as newborn babies or foster children*” response because we believe that these households may have been uncertain about including a young child on their questionnaire. The 2010 self-response questionnaire also included a series of overcount probes, but, given our interest in omissions, those results are outside the scope of this report.

The questionnaire used in NRFU and in UE included a similar undercount question in a forced-choice question format that was asked after the roster had been completed (Figure 3). The slight difference in presentation was needed to make the question easy for the enumerator to read to a respondent. In this report, we use the term “NRFU” to refer to households enumerated in both NRFU and UE. The first two response categories involve babies and foster children. The NRFU questionnaire allowed the collection of the names of two people when the response to one or more of the undercount categories was “Yes.”

**H1. We do not want to miss any people who might have been staying here on April 1. Were there any additional people that you didn't mention, for example:**

Babies?  Yes  No

Foster children?  Yes  No

Any other relatives?  Yes  No

Roommates?  Yes  No

Any other nonrelatives?  Yes  No

How about anyone else staying here on April 1 who had no permanent place to live?  Yes  No

*If yes to any category, ask: What is that person's name?*

First Name  Last Name

Anyone else?

First Name  Last Name

*Do not list any people recorded for this question on the inside pages or on a continuation form.*

Figure 3. Facsimile of the Enumerator Questionnaire's Undercount Question - 2010 Census

CFU included cases with a positive response to any of the NRFU undercount questions. For the NRFU universe, we are interested in the households responding “Yes” to the “*babies*” or “*foster children*” probes. Data processing added any listed names from this question to the census roster before sending the case to CFU, but these listed individuals were not included in the 2010 Census unless CFU was able to recontact the household and validate that they were household members based on the census residence rules. Like self-response questionnaires, NRFU questionnaires also probed for possible overcount errors, but those probes are not in scope for this analysis.

## **2.2 Coverage Followup Methodology**

The 2010 CFU operation included self-response and NRFU census questionnaires with suspected coverage errors. Some questionnaires were eligible for CFU based on their responses to the undercount probes described above. Additional questionnaires entered CFU based on responses to the overcount probes, because of discrepancies on the questionnaires that indicated possible response errors (e.g., differences between the total count of household members and the number of listed individuals), or if the household included more people than space available on the form to enumerate them. All form types (including forms in languages other than English) were eligible for CFU. See U.S. Census Bureau (2012) and U.S. Census Bureau (2017b) for more detail about the full set of eligibility reasons for CFU.

CFU relied on a centralized telephone follow-up to recontact households with suspected coverage errors to review the roster and determine the need for changes (additions or deletions). The 2010 CFU interview methodology had several shortcomings. It required a successful recontact with the census household to resolve the potential coverage issue. CFU was only able to recontact 56 percent of the eligible cases (U.S. Census Bureau 2012). Households that CFU could not recontact may not have responded to a census-initiated phone call or may have lacked a phone number on the census questionnaire to facilitate recontact. The households that were unresolved may have included young children that remained unlisted on self-response or NRFU forms. In addition, the CFU interview was an independent review of the household roster. This design standardized the CFU interview and simplified CFU data collection. However, households responding positively to one of the child-specific probes were not asked directly about potentially omitted children. It is possible that a successful CFU contact may not have addressed the initial child-related coverage concern.

## **2.3 Coverage Followup Results**

The 2010 CFU operation identified more than 8 million households as eligible for followup (U.S. Census Bureau 2012). About 4.5 million households completed a CFU interview resulting in 69,383 added or validated young children (U.S. Census Bureau 2012, U.S. Census Bureau 2017b).

U.S. Census Bureau (2017a) analyzed the characteristics of households with uncertainties about including children on their census questionnaires. This research used the 2010 Census data associated with positive responses to assess if households with certain characteristics (e.g., renters, large households) were more likely to mark one of the undercount probes indicating that they might have excluded a child when they completed their questionnaires. There were 611,606 households that marked a child-specific undercount probe in the 2010 Census. The research found high positive-response rates for renter-occupied households, households living in multiunit structures, large households, and complex households. Young householders and female

householders also had relatively high positive-response rates. The research found important differences by race and Hispanic origin of the householder (highest rates for Black, Native Hawaiian and Other Pacific Islander, and Hispanic householders).

U.S. Census Bureau (2017b) studied the characteristics of the young children that the CFU operation added. This research identified young children who are not related to the householder and relatives of the householder other than biological, adopted, and stepchildren (including grandchildren) as having some of the highest CFU add rates. Differences in CFU add rates were found by race and Hispanic origin of the child. Children living in complex households, large households, and households with an older householder also had high CFU add rates. The characteristics studied in both of these projects were limited to the data collected in the 2010 Census. This project extends that analysis using characteristics from other sources that were not available in the 2010 Census data.

## **2.4 Esri Tapestry Segmentation**

Esri's Tapestry segmentation divides the United States into 67 distinctive segments or markets using social, demographic, housing, and economic data from the 2010 Census, 2010-2014 American Community Survey data, and third-party sources. Each census tract is assigned to one of the segments, and these segments are not necessarily geographically contiguous. These 67 segments detail the diversity of the population, providing descriptions of neighborhoods across the nation. As an example, one segment is labeled "Boomburbs" and it includes 1.7 million households. Esri describes this segment as a new growth market of young professionals with families that have opted to trade up to the newest housing in the suburbs. The segment includes well-educated young professionals (52 percent college graduates) and is characterized by low unemployment and high labor force participation. A list of these 67 segments is provided in Appendix 1. Also included in Appendix 1 are the 2010 Census counts of the total number of young children (under age 5) in each Esri segment. The count of young children across segments varies from a low of about 40,000 in *The Elders* segment to a high of nearly 800,000 in the *Up and Coming Families* segment. Detailed descriptions of each of the 67 segments are found at <https://doc.arcgis.com/en/esri-demographics/data/tapestry-segmentation.htm#>.

In addition to the 67 segments, Esri created 14 LifeMode groups by combining segments with common traits. These 14 LifeMode groups are segments sharing either a significant demographic, social, or economic trait (e.g., poverty or education level) or a common experience (e.g., born in the same generation or immigration from another country). Table 1 lists each of the 14 LifeMode groups with the associated 2010 Census counts of young children and occupied housing units. The table is ordered by decreasing total young children, ranging from a high of 2.3 million young children in the *Ethnic Enclaves* group to a low of under 300,000 young children in the *Scholars and Patriots* group. With respect to occupied housing units, these LifeMode groups range in size from nearly 14 million occupied housing units to under 2 million occupied housing units. Note that we were unable to allocate 119 young children and 1,095 occupied housing units to one of the Esri segments.

Table 1. Esri Tapestry LifeMode Groups

LifeMode Group Name	Total Young Children	Total Occupied Housing Units
Ethnic Enclaves	2,301,532	7,944,832
Middle Ground	2,249,061	13,092,184
Cozy Country Living	2,035,636	13,969,912
GenXurban	1,819,811	12,694,692
Family Landscapes	1,755,990	8,783,562
Affluent Estates	1,754,745	10,646,281
Rustic Outposts	1,642,760	9,632,222
Midtown Singles	1,473,509	7,339,513
Next Wave	1,344,518	4,530,687
Hometown	1,327,572	7,306,542
Upscale Avenues	1,100,938	6,697,462
Senior Styles	659,784	6,672,700
Uptown Individuals	411,648	4,334,789
Scholars and Patriots	285,423	1,959,718
Unknown	119	1,095
<b>TOTAL</b>	<b>20,163,046</b>	<b>115,606,191</b>

Source: Special Tabulation of 2010 Census Summary File 1

Esri also collapsed the 67 segments into six urbanization groups. These groups share common locations, including urban, suburban, and rural distinctions. These groups also combine segments located in the same geographic regions. Table 2 displays the six urbanization groups along with their 2010 Census counts of young children and occupied housing units. The table is sorted by total young children. Young children are distributed across all urbanization groups with the greatest number found in the *Suburban Periphery* group, the group that also has the greatest number of occupied housing units.

Table 2. Esri Tapestry Urbanization Groups

Urbanization Group Name	Total Young Children	Total Occupied Housing Units
Suburban Periphery	5,962,024	35,613,009
Urban Periphery	4,374,799	19,569,097
Metro Cities	3,416,673	21,515,630
Rural	3,021,865	19,811,678
Semirural	1,986,988	10,876,835
Principal Urban Centers	1,400,578	8,218,847
Unknown	119	1,095
<b>TOTAL</b>	<b>20,163,046</b>	<b>115,606,191</b>

Source: Special Tabulation of 2010 Census Summary File 1

## 2.5 Planning Database

Like the Esri Tapestry segments, the PDB uses data from the ACS and the 2010 Census. The ACS collects demographic, social, economic, and housing data for the nation continuously throughout the year. The Census Bureau releases ACS estimates in the form of single-year and 5-year aggregations. The 5-year products summarize results at low-level geographic areas such as census tracts and block groups. We can use the PDB to create a series of tract-level categorizations based on a single characteristic such as poverty or language spoken at home. For this report, we used the tract-level version of the PDB based on the 2008-2012 ACS 5-year estimates because this range is centered on the census year, 2010.

### 3. RESEARCH QUESTIONS

This report answers the following research questions:

1. Which Esri segments and groups had the greatest number of positive responses to one of the child-specific undercount probes and the highest proportion of total households with a positive response to one of the child-specific undercount probes?
2. Which PDB categories had the greatest number of positive responses to one of the child-specific undercount probes and the highest proportion of total households with a positive response to one of the child-specific undercount probes?
3. Which Esri segments and groups had the greatest number of CFU-added young children and the highest proportion of their total young children added in the CFU operation?
4. Which PDB categories had the greatest number of CFU-added young children and the highest proportion of their total young children added in the CFU operation?

### 4. METHODOLOGY

#### 4.1 Sources of Data

This report uses response data from the Census Unedited File to identify housing units with specific responses to the undercount questions. We chose to focus on the 611,606 households with a positive response to one of the child-specific undercount probes. This includes households marking the “*children, such as newborn babies or foster children*” probe on self-response forms and households responding “Yes” to either the “*babies*” or “*foster children*” probes on NRFU forms. To calculate the proportion of households that responded positively to one of the undercount probes, we used final edited 2010 Census data on occupied housing units (households) as denominators. We excluded any questionnaires that did not include the coverage question, leaving us with 115.6 million households as our national denominator<sup>1</sup>.

We identified added young children from the CFU operation using data assembled in the CFU analysis file. This file was the basis for the 2010 CFU evaluations. We also identified young children that CFU validated after an enumerator listed their names in response to the NRFU undercount question. Combining these two universes provided us with a total of 69,383 young children added to the 2010 Census by CFU or added in NRFU and validated in CFU. These are children who were included in the 2010 Census because of this CFU operation. We believe these children may have similar characteristics to those children who were omitted from the 2010 Census. We used the final 2010 Census count of young children as denominators. The 2010 Census included 20,163,046 children under the age of 5 living in housing units in the 50 states and the District of Columbia.

The Tract Level Planning Database (PDB) with 2010 Census and 2008–2012 ACS data is a database that assembles a range of housing, demographic, socioeconomic, and census operational data. The PDB variables have been extracted from the 2010 Census and ACS databases and summarized for

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<sup>1</sup> Questionnaires that did not include the coverage question were experimental versions of the questionnaire and households where the census count was imputed.

all tracts in the country, including Puerto Rico. U.S. Census Bureau (2014) contains descriptions of all variables in the PDB. More details for these variables are available. For decennial data, Appendices A and B of the 2010 Census Summary File 2 Technical Documentation (<http://www.census.gov/prod/cen2010/doc/sf2.pdf>) are useful, and for ACS data, the American Community Survey and Puerto Rico Community Survey 2012 Subject Definitions ([https://www.census.gov/acs/www/Downloads/data\\_documentation/SubjectDefinitions/2012\\_ACSSubjectDefinitions.pdf](https://www.census.gov/acs/www/Downloads/data_documentation/SubjectDefinitions/2012_ACSSubjectDefinitions.pdf)) are useful.

## **4.2 Segmentation and Categorization**

### **4.2.1 Esri Segmentation**

As noted in section 2.4, the Esri Tapestry segmentation includes 67 market groups. We used the Esri identification of the specific tracts making up each of these 67 market groups to allocate CFU results at the tract-level to each of the 67 groups. We used the Esri definitions of aggregations of these 67 market groups to create the results for the 14 LifeMode groups and six urbanization groups.

### **4.2.2 PDB Categorization**

The PDB includes tract-level estimates from the ACS for many characteristics. We selected several characteristics that previous research identified as likely to be associated with enumeration challenges and possible coverage error. In this report, we focused on variables from the PDB for characteristics that were not available from the 2010 Census. Race, Hispanic origin, tenure (owner or renter), household structure, and household size were available at the person or household level from the 2010 Census and included in earlier research reports (U.S. Census Bureau 2017 – a & b). However, socioeconomic characteristics such as poverty status and education are not measured by the decennial census. We can only analyze these characteristics at aggregated levels using the ACS estimates provided by the PDB. This report analyzes PDB results for the following characteristics:

- **Language spoken at home:** Percent of the population age 5 and over that speak a language other than English at home.
- **Language spoken at home by ability to speak English:** Percent of the population age 5 and over that speak Spanish or Spanish Creole at home and speak English less than “very well.”
- **Educational attainment (not high school graduate):** Percent of the population age 25 and over who are not high school graduates and have not received a diploma or the equivalent.
- **Educational attainment (college degree):** Percent of the population age 25 and over with a college degree or higher.
- **Poverty status in the past 12 months:** Percent of the population classified as living below the poverty level given their total family or household income in the past 12 months, family size, and family composition.
- **Unemployment status:** Percent of the civilian population age 16 and over that are unemployed.
- **Geographic mobility:** Percent of the population age 1 and over that moved from another residence in the U.S. or Puerto Rico within the past year.
- **Occupants per room:** Percent of occupied housing units with more than 1.01 people per room.

- **Low response score:** A score predicting that a tract will have a low mail return rate.

For each of these nine characteristics, we created five categories based on the distribution of the tract-level values (e.g., percent of the civilian population age 16 and over that is unemployed). We defined each of the five categories to account for approximately 20 percent of the total occupied housing units. We can think of the middle categories as representing the tracts with median values while two categories identify the tracts with the lowest and second lowest set of values and two categories identify the tracts with the highest and second highest values. We created the categories separately for each of the nine variables resulting in nine different categorizations. We used the same nine occupied housing unit-based categorizations to analyze the positive-response data and the CFU add data. Therefore, while each category accounts for about 20 percent of the occupied housing units, the categories may differ in the percentage of the young children population that they contain.

### 4.3 Definitions

#### 4.3.1 Positive-Response Metrics

We calculated two measures related to positive responses to the undercount probes. We identified all households that marked the box for the “*children, such as newborn babies or foster children*” probe in the undercount question on self-response questionnaires or responded “Yes” to either the “*babies*” or “*foster children*” probes in the undercount question on NRFU questionnaires. While other undercount probes resulted in the identification of young children that respondents initially omitted and CFU added, we chose to focus on the probes specifically designed to identify rostering errors involving children.

The first metric was the total number of positive responses to one of the child-specific undercount probes. Nationally, 611,606 households responded positively to one of these probes. We tabulated the total number of positive responses in each of the 67 Esri segments, combining those to produce the metrics for the urbanization and LifeMode groups. We similarly calculated the total number of positive responses in each of the PDB categories.

The second metric was the positive-response rate. We defined the positive-response rate as the ratio of the number of households with a positive response to one of the child undercount probes to the total number of occupied housing units in the 2010 Census<sup>2</sup> (nationally, 115.6 million total households). Multiplying those results by 1,000 converted the ratios to an estimate of positive responses per 1,000 occupied housing units. The positive-response rate takes the size of each segment, category, and group into account and describes the proportion of occupied housing units with some possible confusion about rostering children. U.S. Census Bureau (2017a) found that about five out of every 1,000 occupied housing units (or about 0.5 percent of all occupied housing units) responded positively to one of the undercount probes about children.

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<sup>2</sup> We defined total occupied housing units as the subset of occupied housing units where the questionnaire included the coverage question.

### **4.3.2 CFU Add Metrics**

We calculated two measures of young children added during CFU. The first metric is the total number of CFU-added young children. A total of 69,383 young children were added to the 2010 Census because of CFU. In addition to the young children identified and added during the CFU interview, this count includes young children added to the NRFU questionnaire as possible omissions and validated in CFU.

The second metric was the CFU add rate, used to assess the proportion of young children added as a result of the CFU operation. We defined the CFU add rate as the ratio of the number of young children added or validated during CFU to the total number of young children in the 2010 Census (nationally, 20.1 million total young children). Multiplying those results by 1,000 converted the ratios to a statistic of CFU-added young children per 1,000 enumerated young children. U.S. Census Bureau (2017b) found that CFU accounted for about three out of every 1,000 young children in the 2010 Census.

### **4.4 Estimation and Analysis**

We produced counts of occupied housing units with positive responses, counts of CFU-added young children, CFU add rates, and positive-response rates for the 67 Esri segments, the six Esri urbanization groups, and the 14 Esri LifeMode groups. We used the PDB to define five categories for each characteristic. We then produced the same counts and rates for each of these categories. We did not account for sampling error in the PDB estimates.

### **4.5 Limitations**

The number of CFU-added young children and the CFU add rates accurately reflect the households where we successfully added young children in the 2010 CFU operation. Those CFU-added young children may not, however, depict the true distribution of omissions of young children because the CFU operation had a fairly low completion rate of 56 percent (U.S. Census Bureau 2012). We expect that areas with lower levels of cooperation would have been less likely to respond to a census phone call. In addition, some households may not have had a telephone. This would result in lower contact rates and potentially fewer CFU added young children. U.S. Census Bureau (2012) found that CFU completed interviews with about 60 percent of self-response households and only about 34 percent of NRFU households.

We interpret the positive responses as a measure of uncertainty among respondents, but the number of positive responses and the positive-response rates can also include response errors on the part of the respondent. Some households may have marked one of the child undercount probe boxes in error, having included all household members correctly. We believe that these response errors are minimal. Some households that marked one of the child undercount probe boxes might have gone back and correctly revised their form to correctly include a young child in the household count. Responses on enumerator-completed forms may understate confusion about young children because of guidance from the enumerator.

The 2014 PDB is based on the 2010 Census geographical boundaries. Data contained in the PDB are subject to sampling and nonsampling errors. We chose to include all tracts, regardless of size, in our

categorization. Sampling error may result in the misallocation of a tract into the wrong category, but we do not expect this error to be noteworthy for our analysis.

## 5. RESULTS

### 5.1 Positive Responses to Child-Specific Undercount Probes

#### 5.1.1 Esri Results

*Which Esri segments and groups had the greatest number of positive responses to one of the child-specific undercount probes and the highest proportion of total households with a positive response to one of the child-specific undercount probes?*

Tables 3, 4, and 5 summarize the number of positive responses and the positive-response rates for each Esri Tapestry urbanization group, LifeMode group, and for selected segments (market groups). The tables include a row for the 1,095 occupied housing units that we could not allocate into the Esri Tapestry structure.

Table 3 looks at the six Esri urbanization groups, ordered by the positive-response rate. Each of the urbanization groups had a positive-response rate of about four per 1,000 or greater, suggesting that households in all types of urbanization areas have some level of confusion about listing children. Two groups—*Urban Periphery* and *Principal Urban Centers*—have relatively high positive-response rates of about eight per 1,000. This rate is about twice the proportion of positive responses to a coverage question about children when compared with households living in the *Suburban Periphery* and *Rural* urbanization groups. *Urban Periphery* and *Principal Urban Centers* account for more than 37 percent of all positive responses. The Esri documentation describes *Urban Periphery* as city living for starting families in neighborhoods that fringe major cities. The housing is primarily single-family with some apartments. The households are described as being young families with children. *Principal Urban Centers* is characterized as including young, mobile, diverse populations living in the most densely populated neighborhoods of the largest cities (those with 2.5 million populations or greater). They are the youngest and most diverse among the six urbanization groups and tend to be renters living in crowded units.

The *Urban Periphery*, *Metro Cities*, and *Suburban Periphery* groups had the greatest numbers of total positive responses—each with more than 100,000 households expressing some uncertainty about including a child on their questionnaire.

Table 3. Positive-Response Results by Esri Urbanization Group

Urbanization Group Name	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
Urban Periphery	163,131	19,569,097	8.3	16.9	26.7
Principal Urban Centers	64,045	8,218,847	7.8	7.1	10.5
Metro Cities	111,437	21,515,630	5.2	18.6	18.2
Semirural	53,988	10,876,835	5.0	9.4	8.8
Rural	79,708	19,811,678	4.0	17.1	13.0
Suburban Periphery	139,295	35,613,009	3.9	30.8	22.8
Unknown	2	1,095	1.8	0.0	0.0
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>

Source: Special Tabulation of Census Edited and Unedited files; Esri Tapestry Database

Table 4 summarizes results for the 14 Esri LifeMode groups, ordered by the positive-response rate for the LifeMode group. We see a broad spectrum of positive-response rates by LifeMode group with rates ranging from three to 13 positive responses per 1,000 occupied housing units. Four groups stand out as having the highest positive-response rates—*Next Wave* (13 per 1,000 occupied units), *Ethnic Enclaves* (nine per 1,000 occupied units), *Midtown Singles* (eight per 1,000 occupied units), and *Hometown* (seven per 1,000 occupied units). These four groups account for nearly 40 percent of all positive responses. The Esri descriptions for these four groups are shown below.

- **Next Wave:** Young, diverse, hard-working families. Hispanic majority. Large share are foreign-born and speak only their native language. Young or multigenerational families with children.
- **Ethnic Enclaves:** Established diversity—young, Hispanic homeowners with families. Multilingual and multigenerational households feature children.
- **Midtown Singles:** Millennials on the move—single, diverse and urban. Single parents with very young children.
- **Hometown:** Close knit urban communities of young singles, many with children.

The *Middle Ground*, *Ethnic Enclave*, *Next Wave*, *Midtown Singles*, *Hometown*, and *Rustic Outposts* groups each had more than 50,000 positive responses to one of the child-specific undercount probes, the greatest totals of the 14 LifeMode groups.

Table 4. Positive-Response Results by Esri LifeMode Group

LifeMode Group Name	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
Next Wave	59,759	4,530,687	13.2	3.9	9.8
Ethnic Enclaves	71,329	7,944,832	9.0	6.9	11.7
Midtown Singles	57,034	7,339,513	7.8	6.3	9.3
Hometown	53,536	7,306,542	7.3	6.3	8.8
Middle Ground	71,862	13,092,184	5.5	11.3	11.7
Rustic Outposts	50,385	9,632,222	5.2	8.3	8.2
Upscale Avenues	30,507	6,697,462	4.6	5.8	5.0
Family Landscapes	39,180	8,783,562	4.5	7.6	6.4
Senior Styles	26,486	6,672,700	4.0	5.8	4.3
GenXurban	47,964	12,694,692	3.8	11.0	7.8
Cozy Country Living	47,168	13,969,912	3.4	12.1	7.7
Uptown Individuals	14,852	4,334,789	3.4	3.7	2.4
Affluent Estates	35,206	10,646,281	3.3	9.2	5.8
Scholars and Patriots	6,336	1,959,718	3.2	1.7	1.0
Unknown	2	1,095	1.8	0.0	0.0
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>

Source: Special Tabulation of Census Edited and Unedited files; Esri Tapestry Database

Appendix 2 displays results by market group. The positive-response rates across these market groups range from a low of about two per 1,000 to nearly 16 per 1,000 with many groups having positive-response rates well below the national rate of about five per 1,000. Of the 67 market groups, 11 had positive-response rates exceeding 10 out of every 1,000 or about 1 percent of all occupied housing units. Table 5 lists these 11 market groups ordered by the positive-response rate. Some of these market groups also had a high number of total positive responses. Specifically, *Barrios Urbanos*, *Modest Income Homes*, and *International Marketplace* had both high rates of positive responses and at least 15,000 total positive responses. Three other market groups—*Up and Coming Families*, *Southern Satellites*, and *Middleburg*—also had more than 15,000 total positive responses but had only moderate positive-response rates (see Appendix 2). Appendix 4 includes two tables with additional demographic, social, and economic characteristics about these 11 market groups.

Table 5. Esri Market Groups with Positive-Response Rates of 10 Per 1,000 or Greater

Market Group Name	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
NeWest Residents	13,343	846,867	15.8	0.7	2.2
Valley Growers	4,501	289,711	15.5	0.3	0.7
Las Casas	12,981	849,653	15.3	0.7	2.1
High Rise Renters	8,241	577,481	14.3	0.5	1.3
Barrios Urbanos	15,229	1,194,820	12.7	1.0	2.5
Fresh Ambitions	9,710	776,149	12.5	0.7	1.6
City Strivers	10,632	901,462	11.8	0.8	1.7
City Commons	10,837	925,758	11.7	0.8	1.8
Modest Income Homes	18,376	1,642,235	11.2	1.4	3.0
International Marketplace	15,484	1,480,537	10.5	1.3	2.5
Urban Villages	11,720	1,147,140	10.2	1.0	1.9

Source: Special Tabulation of Census Edited and Unedited files; Esri Tapestry Database

Selected characteristics from the Esri descriptions for the 11 groups with the highest rates are shown below. Additional details can be found at <https://doc.arcgis.com/en/esri-demographics/data/tapestry-segmentation.htm#>.

- **NeWest Residents:** This is a young Hispanic market. The population is new to America, new to their careers, with new, young families. More than one-third of the households are linguistically isolated. The population is concentrated in larger metropolitan areas in the South and West. More than half of the households have children and the presence of young children is high compared with the U.S. average. Dependent children represent one-third of the total population.
- **Valley Growers:** This is a small but distinctive market located almost entirely in the West (primarily in California and Washington). These neighborhoods are home to young, Hispanic families with children and, frequently, multiple generations living in single-family homes. Most residents are Hispanic, a third are foreign-born, and about 30 percent are linguistically isolated. Young families dominate this market with high average household size and average family size.
- **Las Casas:** This is a family-oriented market distinguished by multigenerational households. Young and predominantly renters, this market is stable, affected more by immigration from abroad than local moves. This market is located in older neighborhoods, primarily on the West Coast. The households are primarily married couples with children. More than 40 percent of the population was born abroad and about 30 percent of the households speak only Spanish.
- **High Rise Renters:** This market is located primarily in the Northeast, especially in New York City. This market tops the charts for diversity, density, presence of adult children, linguistic isolation, and foreign-born population. Residents are young and struggling to make ends meet as a large portion of their income goes toward rent. Single-parent and single-person households dominate the market with multigenerational households found at twice the U.S. average.
- **Barrios Urbanos:** Family is central within these diverse communities. Hispanics make up more than 70 percent of the residents and one-in-four are foreign-born. Dominating this market are younger families with children or single-parent households with multiple generations living under the same roof. Over a third of all households are married couples with children. Most homes are owner-occupied.
- **Fresh Ambitions:** These young families, many of whom are recent immigrants, focus their life and work around their children. Residents are not highly educated, but many have overcome the language barrier and earned a high school diploma. Multigenerational families and close ties to their culture support many families living in poverty. Half of all households have children of all ages. One-in-four is foreign-born, supporting a large family on little income.
- **City Strivers:** These high density city neighborhoods are characterized by a relatively young foreign-born population, who has embraced the American lifestyle, yet retained their cultural integrity. Single parents are often the recipients of public assistance. These neighborhoods are

found in densely populated neighborhoods primarily in New York, Boston, Washington, or Chicago. The population is primarily renters living in older multiunit structures. This group includes a blend of family households, married couples, and single parents with younger or adult children.

- **City Commons:** This market is primarily composed of single-parent and single-person households living within large, metro cities. Single parents, primarily female, head these young households.
- **Modest Income Homes:** In this market group, many residents are caregivers to their elderly family members. Social Security and public assistance income are required to support single-parent and multigenerational families. About one-in-three households in this segment are living in poverty.
- **International Marketplace:** These neighborhoods are a rich blend of cultures found in densely populated urban and suburban areas, almost entirely in the Middle Atlantic area or in California. Almost 40 percent are foreign-born and one-in-four is linguistically isolated. Young, Hispanic families renting apartments in older buildings dominate this market. About two-fifths of households have children. This is a young, diverse family market with notable proportion of multigenerational households.
- **Urban Villages:** The residents in these neighborhoods are multicultural, multigenerational, and multilingual. They live in older homes in the urban periphery of large metropolitan areas. Many are married couples with children and grandparents.

### **5.1.2 Planning Database Results**

*Which PDB categories had the greatest number of positive responses to one of the child-specific undercount probes and the highest proportion of total households with a positive response to one of the child-specific undercount probes?*

Tables 6 through 8 present positive-response results for PDB categorizations of selected social, economic, and housing characteristics. For each characteristic, we created five equal-sized categories. Each category contains about 20 percent of the total occupied housing units. The tables display the specific thresholds for each of the categories, the total positive responses, the positive-response rates, and the percent of the total positive responses found in each category. Note that many of the characteristics we analyzed may be highly correlated with each other. For example, high poverty areas may also be areas with low educational attainment or low employment. Therefore, these results cannot identify any one particular characteristic as the reason why respondents may have had confusion about including a child on their census questionnaire.

Table 6 includes results for two language characteristics, two education characteristics, and mobility. The tracts with the highest proportion of the population speaking a language other than English at home (more than 31 percent) had the highest positive-response rate of almost nine per

1,000. We observe similar results for tracts with a high proportion of the population speaking Spanish at home and speaking English less than “very well.” More than a third of all positive responses to a child-specific undercount probe (more than 200,000) were found in the category with the highest proportion of the population speaking a language other than English. More than 200,000 positive responses were found in tracts with the greatest proportion of Spanish-speakers with limited English proficiency. These two categorizations may be identifying many of the same households. These results suggest that language barriers may contribute to confusion about whether children should be listed by a respondent when completing the census questionnaire.

Level of education results indicate that tracts with the highest proportion of the population age 25 and over without a high school diploma (more than 21 percent) and tracts with the lowest proportion of the population age 25 and over with a college degree or higher (less than 13 percent) had the highest positive-response rates. The most educated tracts had almost one-third the positive-response rates of the less educated tracts. More than 220,000 households in the category with the highest proportion of adults without a high school education marked one of the child-specific undercount probes—36 percent of all positive responses. Literacy may also be an important factor when a household respondent is faced with interpreting and applying the census residence rules.

We see modest differences in the positive-response rates associated with low versus high mobility. Tracts with the greatest proportion of the population age 1 and over that moved within the past 12 months had a positive-response rate of about six per 1,000 compared with a positive-response rate of about five per 1,000 for the tracts with the lowest levels of mobility. These results do not indicate that mobility is necessarily a factor in confusion about including a child on a questionnaire.

Table 6. Positive-Response Results by Planning Database Categorization - Social Characteristics

Characteristic and Category	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
<b>Language other than English spoken at home</b> - Percent of population age 5 and over that speak a language other than English at home (regardless of ability to Speak English)					
0.0 to 3.8	102,238	23,119,607	4.4	20.0	16.7
3.8 to 8.1	93,470	23,122,809	4.0	20.0	15.3
8.1 to 15.6	96,420	23,120,832	4.2	20.0	15.8
15.6 to 31.4	114,619	23,121,642	5.0	20.0	18.7
31.4 to 100.0	204,859	23,121,301	8.9	20.0	33.5
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>
<b>Spanish spoken at home by ability to speak English</b> - Percent of population age 5 and over that speak English less than "very well" and speak Spanish or Spanish Creole at home					
0.0 to 0.2	94,449	23,120,434	4.1	20.0	15.4
0.2 to 0.7	89,172	23,121,449	3.9	20.0	14.6
0.7 to 2.2	98,886	23,121,373	4.3	20.0	16.2
2.2 to 6.9	119,937	23,121,141	5.2	20.0	19.6
6.9 to 91.7	209,162	23,121,794	9.0	20.0	34.2
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>
<b>Educational attainment (not high school graduate)</b> - Percent of population age 25 and over who are not high school graduates and have not received a diploma or the equivalent					
0.0 to 5.1	72,695	23,120,799	3.1	20.0	11.9
5.1 to 8.9	85,582	23,119,421	3.7	20.0	14.0
8.9 to 13.6	101,315	23,122,757	4.4	20.0	16.6
13.6 to 21.2	131,841	23,120,376	5.7	20.0	21.6
21.2 to 100.0	220,173	23,122,838	9.5	20.0	36.0
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>
<b>Educational attainment (college degree)</b> - Percent of population age 25 and over with a college degree or higher					
0.0 to 13.1	191,298	23,120,115	8.3	20.0	31.3
13.1 to 19.9	132,281	23,121,095	5.7	20.0	21.6
19.9 to 29.3	114,550	23,122,356	5.0	20.0	18.7
29.3 to 44.3	96,982	23,119,121	4.2	20.0	15.9
44.3 to 100.0	76,495	23,123,504	3.3	20.0	12.5
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>
<b>Geographic mobility</b> - Percent of population age 1 and over that moved from another residence in the U.S. or Puerto Rico within the past year					
0.0 to 8.1	105,717	23,121,237	4.6	20.0	17.3
8.1 to 11.5	113,526	23,120,406	4.9	20.0	18.6
11.5 to 15.4	123,215	23,121,070	5.3	20.0	20.1
15.4 to 21.1	133,086	23,121,055	5.8	20.0	21.8
21.1 to 100.0	136,062	23,122,423	5.9	20.0	22.2
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>

Source: Special Tabulation of Census Edited and Unedited files; Planning Database

In Table 7, we find that the tracts with the highest levels of unemployment (more than 13 percent) and the greatest proportion of the population living in poverty (more than 23 percent) had the highest positive-response rates. Tracts with the lowest levels of unemployment (less than 5 percent) and tracts with the lowest proportion of the population classified as below the poverty level (less than 5 percent) had less than one-half the positive-response rates of these tracts. Close to 200,000 positive responses were found in the category with the greatest proportion of the population classified as below the poverty level. Similarly, more than 180,000 positive responses (30 percent) were found in the category with the highest unemployment rates. Tracts with high levels of unemployment and poverty had more evidence of confusion about including children on their census questionnaire.

Table 7. Positive-Response Results by Planning Database Categorization - Economic Characteristics

Characteristic and Category	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
<b>Unemployment status</b> - Percent of civilian population age 16 and over that are unemployed					
0.0 to 5.2	86,856	23,119,497	3.8	20.0	14.2
5.2 to 7.2	95,798	23,121,129	4.1	20.0	15.7
7.2 to 9.5	111,233	23,122,774	4.8	20.0	18.2
9.5 to 12.9	133,946	23,119,616	5.8	20.0	21.9
12.9 to 100.0	183,773	23,123,175	7.9	20.0	30.0
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>
<b>Poverty status in past 12 months</b> - Percent of population classified as below the poverty level given their total family or household income within the past 12 months					
0.0 to 5.4	80,627	23,120,737	3.5	20.0	13.2
5.4 to 9.5	90,884	23,120,160	3.9	20.0	14.9
9.5 to 14.5	106,474	23,122,210	4.6	20.0	17.4
14.5 to 22.6	133,818	23,121,563	5.8	20.0	21.9
22.6 to 100.0	199,803	23,121,521	8.6	20.0	32.7
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>

Source: Special Tabulation of Census Edited and Unedited files; Planning Database

Table 8 looks at the housing characteristic of crowding. We defined crowded housing as occupied housing units with 1.01 or more occupants per room. We see a strong relationship between crowding and positive-response rates. Tracts with the highest proportion of crowded housing (5 percent or more) had positive-response rates of nine per 1,000. Tracts with the lowest levels of crowded housing (zero crowded housing units) had positive-response rates of fewer than four per 1,000. This suggests that crowded housing units (i.e., large households) are more likely to have some questions about including a child on their census questionnaire.

Table 8. Positive-Response Results by Planning Database Categorization - Housing Characteristics

Characteristic and Category	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
<b>Occupants per room</b> - Percent of occupied housing units with more than 1.01 people per room					
0.0 to 0.0	83,619	23,121,670	3.6	20.0	13.7
0.0 to 1.1	89,958	23,120,716	3.9	20.0	14.7
1.1 to 2.3	103,109	23,120,809	4.5	20.0	16.9
2.3 to 4.6	124,822	23,121,707	5.4	20.0	20.4
4.6 to 100.0	210,098	23,121,289	9.1	20.0	34.4
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>

Source: Special Tabulation of Census Edited and Unedited files; Planning Database

Table 9 presents operational results from the PBD on mail return rates (i.e., rate of self-response). The PBD includes a score predicting that the tract will have a low mail return rate. This score is therefore negatively associated with the 2010 mail return rate. We observe that the tracts with the lowest scores had the lowest positive-response rate at three per 1,000 while the tracts with the highest scores had a positive-response rate of almost 10 per 1,000. We conclude that tracts that we expect to have low levels of response are also the tracts with the greatest proportion of housing units with uncertainties about rostering children. In the category with the lowest expected mail

return rate, we find more than 36 percent of all positive responses. This indicates that the hardest-to-count populations are also the populations with rostering questions about young children.

Table 9. Positive-Response Results by Planning Database Categorization – Operational Characteristics

Characteristic and Category	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
<b>Low response score - Score predicting low mail return rate</b>					
0.0 to 15.9	68,367	23,120,357	3.0	20.0	11.2
15.9 to 18.4	83,705	23,120,469	3.6	20.0	13.7
18.4 to 21.2	102,785	23,121,715	4.4	20.0	16.8
21.2 to 25.2	135,028	23,121,240	5.8	20.0	22.1
25.2 to 57.8	221,721	23,122,410	9.6	20.0	36.3
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>

Source: Special Tabulation of Census Edited and Unedited files; Planning Database

## 5.2 Coverage Followup Adds

### 5.2.1 Esri Results

*Which Esri segments and groups had the greatest number of CFU-added young children and the highest proportion of their total young children added in the CFU operation?*

Tables 10, 11, and 12 summarize the CFU add results by Esri Tapestry segmentation groups. The results are ordered by the CFU add rate. Nationally, we found that about three out of every 1,000 young children included in the 2010 Census were included because of the CFU operation.

Table 10 looks at the six urbanization groups. Two groups—*Urban Periphery* and *Principal Urban Centers*—have CFU add rates of four per 1,000 or greater. These two groups account for more than 35 percent of all CFU-added young children. These are the same two urbanization groups with high positive-response rates. Like the positive-response rates, all urbanization groups have fairly similar CFU add rates. The lowest rate of about three per 1,000 is not that much lower than the highest rate of just more than four per 1,000.

As noted earlier, the Esri documentation describes the population living in *Urban Periphery* as city living for starting families in neighborhoods that fringe major cities. The housing is primarily single family with some apartments. The households are described as being young families with children. The population living in *Principal Urban Centers* is young, mobile, and diverse. They live in the most densely populated neighborhoods of the largest cities (those with 2.5 million populations or greater). They are the youngest and most diverse among the six urbanization groups and tend to be renters living in crowded units.

Table 10. Coverage Followup Add Results by Esri Urbanization Groups

Urbanization Group Name	Total Young Children Added in CFU	Total Young Children	CFU Adds per 1,000 Young Children	Percent of Total CFU-Added Young Children	Percent of Total Young Children
Urban Periphery	18,823	4,374,799	4.3	27.1	21.7
Principal Urban Centers	5,670	1,400,578	4.0	8.2	6.9
Metro Cities	11,685	3,416,673	3.4	16.8	16.9
Rural	10,259	3,021,865	3.4	14.8	15.0
Semirural	6,666	1,986,988	3.4	9.6	9.9
Suburban Periphery	16,280	5,962,024	2.7	23.5	29.6
Unknown	0	119	0.0	0.0	0.0
<b>TOTAL</b>	<b>69,383</b>	<b>20,163,046</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Esri Tapestry Database

Table 11 looks at the 14 LifeMode groups. The CFU add rates by LifeMode group range from two to four added young children per 1,000 total young children, not a very wide range. This indicates that CFU successfully added young children across all of these groups. However, in the top two LifeMode groups (*Next Wave* and *Hometown*), the rates were almost twice the rate of the lowest group (*Affluent Estates*).

Table 11. Coverage Followup Add Results by Esri LifeMode Group

LifeMode Group Name	Total Young Children Added in CFU	Total Young Children	CFU Adds per 1,000 Young Children	Percent of Total CFU-Added Young Children	Percent of Total Young Children
Next Wave	5,940	1,344,518	4.4	8.6	6.7
Hometown	5,849	1,327,572	4.4	8.4	6.6
Midtown Singles	6,043	1,473,509	4.1	8.7	7.3
Ethnic Enclaves	9,005	2,301,532	3.9	13.0	11.4
Rustic Outposts	5,905	1,642,760	3.6	8.5	8.1
Senior Styles	2,288	659,784	3.5	3.3	3.3
Middle Ground	7,633	2,249,061	3.4	11.0	11.2
Upscale Avenues	3,561	1,100,938	3.2	5.1	5.5
Cozy Country Living	6,493	2,035,636	3.2	9.4	10.1
Scholars and Patriots	858	285,423	3.0	1.2	1.4
Family Landscapes	5,234	1,755,990	3.0	7.5	8.7
GenXurban	5,355	1,819,811	2.9	7.7	9.0
Uptown Individuals	1,206	411,648	2.9	1.7	2.0
Affluent Estates	4,013	1,754,745	2.3	5.8	8.7
Unknown	0	119	0.0	0.0	0.0
<b>TOTAL</b>	<b>69,383</b>	<b>20,163,046</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Esri Tapestry Database

Four groups stand out as having high CFU add rates of about four per 1,000—*Next Wave*, *Hometown*, *Midtown Singles*, and *Ethnic Enclaves*. These are the same four LifeMode groups with high positive-response rates and they account for about 39 percent of all CFU-added young children. See page 12 for descriptions of these four groups. LifeMode groups with the greatest number of CFU-added young children generally have the greatest number of total young children (*Ethnic Enclaves*, *Middle Ground*, and *Cozy Country Living*). However, *Midtown Singles*, *Next Wave*, and *Hometown* have some of the highest CFU add rates despite having lower proportions of total young children.

Table 12 displays selected results by market group. The results for all market groups are found in Appendix 3. Of the 67 market groups, eight had CFU add rates of at least five per 1,000 young children. That is, about 0.5 percent of all young children in these segments were enumerated in CFU. The CFU add rates range from a low of about two per 1,000 to a high of more than six per 1,000. Three market groups not shown in Table 12 (*Southern Satellites*, *Middleburg*, and *Up and Coming Families*) had the greatest number of CFU-added young children. These market groups had some of the greatest total numbers of young children (over 650,000). Selected characteristics from the Esri descriptions for the groups with some of the highest rates are shown on pages 13 through 15. The two new segments are described below.

- **Family Foundations:** The residents in these neighborhoods are a mix of married couples, single parents, grandparents, and children, young, and adult. The neighborhoods are found in principal cities of major metropolitan areas throughout the South and West.
- **Pacific Heights:** This is one of the smaller markets composed of upscale neighborhoods in the urban periphery of metropolitan areas along the Pacific coast in California, Hawaii, and the Northeast. This market includes the highest percentage of Asian and multiracial populations, many of them born outside the United States.

Table 12. Esri Market Groups with Coverage Followup Add Rates of 4.0 per 1,000 or Greater

Market Name	Total Young Children Added in CFU	Total Young Children	CFU Adds per 1,000 Young Children	Percent of Total CFU-Added Young Children	Percent of Total Young Children
Family Foundations	1,411	220,191	6.4	2.0	1.1
City Strivers	1,111	177,009	6.3	1.6	0.9
Modest Income Homes	1,873	329,553	5.7	2.7	1.6
Urban Villages	1,765	311,922	5.7	2.5	1.5
Pacific Heights	835	147,652	5.7	1.2	0.7
Las Casas	1,771	330,570	5.4	2.6	1.6
High Rise Renters	646	124,981	5.2	0.9	0.6
Valley Growers	621	123,010	5.0	0.9	0.6
Senior Escapes	532	117,596	4.5	0.8	0.6
City Commons	1,135	255,472	4.4	1.6	1.3
Rural Bypasses	1,193	274,076	4.4	1.7	1.4
Downtown Melting Pot	637	150,520	4.2	0.9	0.7
Fresh Ambitions	987	235,096	4.2	1.4	1.2
Southwestern Families	1,046	253,652	4.1	1.5	1.3
International Marketplace	1,453	352,547	4.1	2.1	1.7
American Dreamers	1,629	395,797	4.1	2.3	2.0
Barrios Urbanos	1,707	417,351	4.1	2.5	2.1
The Elders	159	40,066	4.0	0.2	0.2

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Esri Tapestry Database

The markets with some of the highest CFU add rates overlap with some of the markets with high positive response rates but there are notable differences. Two markets emerge with high CFU add rates that had moderate positive response rates—*Family Foundations* and *Pacific Heights*. These could be areas with high levels of cooperation in CFU or areas where a greater proportion of CFU cases were determined to correctly flag a coverage error involving a young child. These may also be markets with a greater proportion of total households that include young children. Appendix 4 includes demographic, social, and economic characteristics for many of these groups. Some of the markets with high positive-response rates have moderate to low CFU add rates (*NeWest Residents*,

*Barrios Urbanos, Fresh Ambitions, City Commons, and International Marketplace*). These could be areas where CFU was less successful in making contact or areas where CFU interviewing concluded that a child was not missing in error.

### **5.2.2 PDB Results**

*Which PDB categories had the greatest number of CFU-added young children and the highest proportion of their total young children added in the CFU operation?*

Tables 13 through 16 summarize CFU add rates and counts of CFU adds for the PDB categorizations. We created the categories using an equal distribution of occupied housing units. About 20 percent of all housing units fall into each of the five categories. This does not equate to an equal distribution of young children across categories as can be seen in these tables.

Table 13 includes results for language, educational attainment, and mobility. We see increases in the CFU add rates as the proportion of the population speaking a language other than English at home increases and when the proportion of Spanish speakers with limited English-speaking abilities increase. We also see higher CFU add rates in tracts with lower levels of educational attainment. Tracts with 21 percent or more of the adult population lacking a high school diploma had CFU add rates of about four per 1,000 while tracts with fewer than 5 percent of adults lacking a high school diploma had CFU add rates of about two per 1,000. Tracts with the highest proportions of adults with college degrees had the lowest CFU add rates of about two per 1,000 while those with the lowest proportions of college graduates had rates of more than four per 1,000. We see higher proportions of total young children living in the categories with the greatest proportion of the population speaking a language other than English at home (almost 27 percent). This may drive the higher CFU add rates and numbers of young children added in CFU. These results indicate that the CFU operation identified and corrected coverage errors involving young children in tracts with the lowest levels of educational attainment and in tracts with limited English proficiency. Nearly one third of all CFU-added young children were in the tracts with the lowest levels of educational attainment and the highest levels of potential language barriers. We do not see any noteworthy differences in CFU add rates by degree of mobility. The numbers of added young children were distributed fairly evenly across these five categories.

Table 13. Coverage Followup Add Results by Planning Database Categorization - Social Characteristics

Characteristic and Category	Total Young Children	Total Young Children Added in CFU	CFU Adds per 1,000 Young Children	Percent of Total Young Children	Percent of Total CFU-Added Young Children
<b>Language other than English spoken at home</b> - Percent of population age 5 and over that speak a language other than English at home (regardless of ability to Speak English)					
0.0 to 3.8	3,552,523	11,950	3.4	17.6	17.2
3.8 to 8.1	3,539,844	10,828	3.1	17.6	15.6
8.1 to 15.6	3,686,165	11,299	3.1	18.3	16.3
15.6 to 31.4	3,984,934	13,213	3.3	19.8	19.0
31.4 to 100.0	5,399,580	22,093	4.1	26.8	31.8
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>
<b>Spanish spoken at home by ability to speak English</b> - Percent of population age 5 and over that speak English less than "very well" and speak Spanish or Spanish Creole at home					
0.0 to 0.2	3,426,174	11,097	3.2	17.0	16.0
0.2 to 0.7	3,479,157	10,368	3.0	17.3	14.9
0.7 to 2.2	3,662,008	11,162	3.0	18.2	16.1
2.2 to 6.9	4,012,236	13,643	3.4	19.9	19.7
6.9 to 91.7	5,583,471	23,113	4.1	27.7	33.3
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>
<b>Educational attainment (not high school graduate)</b> - Percent of population age 25 and over who are not high school graduates and have not received a diploma or the equivalent					
0.0 to 5.1	3,408,034	7,951	2.3	16.9	11.5
5.1 to 8.9	3,493,402	10,161	2.9	17.3	14.6
8.9 to 13.6	3,672,813	12,082	3.3	18.2	17.4
13.6 to 21.2	4,055,250	15,043	3.7	20.1	21.7
21.2 to 100.0	5,533,547	24,146	4.4	27.4	34.8
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>
<b>Educational attainment (college degree)</b> - Percent of population age 25 and over with a college degree or higher					
0.0 to 13.1	5,216,558	22,048	4.2	25.9	31.8
13.1 to 19.9	4,235,476	15,678	3.7	21.0	22.6
19.9 to 29.3	3,914,620	13,591	3.5	19.4	19.6
29.3 to 44.3	3,615,960	10,802	3.0	17.9	15.6
44.3 to 100.0	3,180,432	7,264	2.3	15.8	10.5
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>
<b>Geographic mobility</b> - Percent of population age 1 and over that moved from another residence in the U.S. or Puerto Rico within the past year					
0.0 to 8.1	3,735,259	12,503	3.3	18.5	18.0
8.1 to 11.5	3,888,830	13,211	3.4	19.3	19.0
11.5 to 15.4	4,116,797	14,115	3.4	20.4	20.3
15.4 to 21.1	4,252,568	14,989	3.5	21.1	21.6
21.1 to 100.0	4,169,592	14,565	3.5	20.7	21.0
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Planning Database

Table 14 summarizes results for two economic characteristics. We find the highest CFU add rates in tracts with high unemployment and high levels of poverty. Tracts with unemployment rates of about 13 percent or greater and tracts with more than 23 percent of the population in poverty had CFU add rates of more than four per 1,000. While these rates exceed those of tracts with lower levels, the difference is not extreme. More than 30 percent of all CFU-added young children (more than 20,000) lived in tracts with the highest poverty rates and the highest unemployment rates.

Table 14. Coverage Followup Add Results by Planning Database Categorization - Economic Characteristics

Characteristic and Category	Total Young Children	Total Young Children Added in CFU	CFU Adds per 1,000 Young Children	Percent of Total Young Children	Percent of Total CFU-Added Young Children
<b>Unemployment status</b> - Percent of civilian population age 16 and over that are unemployed					
0.0 to 5.2	3,667,416	9,882	2.7	18.2	14.2
5.2 to 7.2	3,703,075	10,907	2.9	18.4	15.7
7.2 to 9.5	3,873,678	12,804	3.3	19.2	18.5
9.5 to 12.9	4,139,541	14,984	3.6	20.5	21.6
12.9 to 100.0	4,779,336	20,806	4.4	23.7	30.0
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>
<b>Poverty status in the past 12 months</b> - Percent of population classified as below the poverty level given their total family or household income within the past 12 months					
0.0 to 5.4	3,692,607	9,264	2.5	18.3	13.4
5.4 to 9.5	3,586,516	10,831	3.0	17.8	15.6
9.5 to 14.5	3,737,432	12,728	3.4	18.5	18.3
14.5 to 22.6	4,088,720	15,246	3.7	20.3	22.0
22.6 to 100.0	5,057,771	21,314	4.2	25.1	30.7
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Planning Database

The tracts with the highest proportion of crowded housing had the highest CFU add rates of more than four per 1,000. Tracts with less crowding had CFU add rates of fewer than three per 1,000—not a big difference.

Table 15. Coverage Followup Add Results by Planning Database Categorization - Housing Characteristics

Characteristic and Category	Total Young Children	Total Young Children Added in CFU	CFU Adds per 1,000 Young Children	Percent of Total Young Children	Percent of Total CFU-Added Young Children
<b>Occupants per room</b> - Percent of occupied housing units with more than 1.01 people per room					
0.0 to 0.0	3,274,856	8,878	2.7	16.2	12.8
0.0 to 1.1	3,485,947	10,004	2.9	17.3	14.4
1.1 to 2.3	3,720,201	11,785	3.2	18.5	17.0
2.3 to 4.6	4,097,340	14,404	3.5	20.3	20.8
4.6 to 100.0	5,584,702	24,312	4.4	27.7	35.0
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Planning Database

Table 16 presents operational results from the PBD on mail return rates. As noted earlier, the PDB includes a score predicting that the tract will have a low mail return rate. This score is therefore negatively associated with the 2010 mail return rate. The CFU add rates are highest in the tracts with a predicted low mail return rate (more than four per 1,000). Tracts where we do not expect low response (i.e., the most cooperative areas) had CFU add rates of about two per 1,000. About 35 percent of all CFU-added young children (about 24,000) lived in tracts with predicted low mail return rates. These same tracts included about 27 percent of all young children.

Table 16. Coverage Followup Add Results by Planning Database Categorization – Operational Characteristics

Characteristic and Category	Total Young Children	Total Young Children Added in CFU	CFU Adds per 1,000 Young Children	Percent of Total Young Children	Percent of Total CFU-Added Young Children
<b>Low response score</b> – A Score predicting low mail return rate					
0.0 to 15.9	3,145,147	7,543	2.4	15.6	10.9
15.9 to 18.4	3,530,774	10,086	2.9	17.5	14.5
18.4 to 21.2	3,877,355	12,174	3.1	19.2	17.5
21.2 to 25.2	4,202,494	15,556	3.7	20.8	22.4
25.2 to 57.8	5,407,276	24,024	4.4	26.8	34.6
<b>TOTAL</b>	<b>20,163,046</b>	<b>69,383</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Planning Database

## 6. DISCUSSION

Earlier CFU-based research summarized record-level data about the households that marked one of the undercount probes involving children and the young children added to the 2010 Census because of the CFU operation. Those analyses were limited to responses to the small number of questions on the 2010 Census questionnaire. To look at a broader set of variables, specifically economic and social characteristics, we turned to the Esri Tapestry segmentation and PDB categorizations. We used the existing Esri segmentations (that take into account a large number of characteristics) and studied the distribution of the CFU positive responses and the CFU-added young children within those aggregates. We created univariate PDB categorizations and assessed if geographic areas with high proportions of the population having certain characteristics were more likely than other areas to include CFU positive responses and CFU-added young children.

The Esri Tapestry segmentation is effective in identifying areas where households were especially likely to have questions about whether or not they should include a child on their census questionnaire. Neighborhoods in urban areas, specifically the *Urban Periphery* and *Principal Urban Centers* urbanization groups, had positive-response rates that were notably higher than the rates for other urbanization groups. These same groups had relatively higher CFU add rates, indicating that CFU was able to identify and correct errors of omission involving young children in these neighborhoods. The Esri Tapestry segmentation into LifeMode groups identifies neighborhoods with and without uncertainty about listing children. Several LifeMode groups had relatively high positive-response rates (e.g., *Next Wave*, *Ethnic Enclaves*, and *Midtown Singles*) while others had relatively low positive-response rates (e.g., *Scholars and Patriots*, *Affluent Estates* and *Uptown Individuals*). In many of these LifeMode groups we also found high CFU add rates.

The most detailed Esri Tapestry segmentation into the 67 markets is very useful in helping us understand the characteristics of households that may make errors involving children when asked to create a household roster. Both the positive-response rates and the CFU add rates point us to several common Esri Tapestry markets. The descriptions of these neighborhoods fit well with recent research findings about the characteristics of children added in CFU and the characteristics of households responding positively to one of the undercount probes. Neighborhoods characterized by multigenerational and large households, foreign-born and linguistically isolated households, and households in poverty fall into many of the markets with high positive-response and CFU add rates.

We also see that large segments of the population with other characteristics seem to have minimal coverage issues. This distinction is critical for 2020 Census planning.

When we look at the PDB results, these findings are confirmed. The greatest differences are found between the tracts in the top category and all other tracts. For the college degree characteristic, it is the tracts in the bottom category that differ dramatically from the tracts in the other categories.

Table 17 summarizes selected univariate results from the PDB, ordered by highest positive-response rate. These categories had some of the highest positive-response rates and CFU add rates. While both measures provide information about the characteristics of areas with potential coverage problems involving young children, we find that the positive-response rates better differentiate across categories. Table 17 also includes the Esri Tapestry markets with some of the highest positive-response rates and CFU add rates. The multivariate nature of the Esri markets may allow for a more precise targeting of areas with potential coverage problems.

Table 17. Summary of Categories with High Positive-Response Rates

<b>Characteristic and Category</b>	<b>Positive Responses Per 1,000 Occupied Housing Units</b>	<b>CFU Adds per 1,000 Young Children</b>
<b>Planning Data base Categorization</b>		
High scores predicting LOW mail return rate	9.6	4.4
21% or more of the population age 25 and over are NOT high school graduates or equivalent	9.5	4.4
5% or more of occupied housing units are "crowded"	9.1	4.4
7% or more of the population age 5 and over speak Spanish at home & speak English less than "very well"	9.0	4.1
31% or more of the population age 5 and over speak a language other than English at home	8.9	4.1
23% or more of the population classified as living below the poverty level	8.6	4.2
13% or fewer of the population age 25 and over have a college degree or higher	8.3	4.2
13% or more of the population age 16 and over are unemployed	7.9	4.4
<b>Esri Tapestry Markets</b>		
NeWest Residents	15.8	3.6
Valley Growers	15.5	5.0
Las Casas	15.3	5.4
High Rise Renters	14.3	5.2
Barrios Urbanos	12.7	4.1
Fresh Ambitions	12.5	4.2
City Strivers	11.8	6.3
City Commons	11.7	4.4
Modest Income Homes	11.2	5.7
International Marketplace	10.5	4.1
Urban Villages	10.2	5.7
Southwest Families	9.9	4.1
Family Foundations	9.6	6.4
Downtown Melting Pot	9.3	4.2
American Dreamers	8.8	4.1
Metro Fusion	8.7	3.9
Hardscrabble Road	8.4	3.9

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Planning Database

The PDB and the Esri Tapestry segmentation also identify geographic areas with high *numbers* of CFU-added young children and positive responses to a child-specific undercount probe. These are not always the areas with the highest CFU add rates or the highest positive-response rates. *Southern Satellites, Modest Income Homes, Up and Coming Families, and Middleburg* were the

markets with the greatest number of positive responses. These are also markets with high counts of total young children.

## **7. CONCLUSIONS**

We find that the Esri Tapestry segmentation and the PDB categorizations can help us to identify neighborhoods and types of areas with coverage problems involving young children in the 2010 Census. While neither provides explanations for why young children may be omitted from census questionnaires, they do identify a set of household characteristics that have a strong relationship with the potential for coverage error involving young children. We can use the CFU add rates and the positive-response rates to identify the types of households that seem to have the greatest problems with completing census forms correctly for young children. Neighborhoods that had problems rostering young children in the 2010 Census include households with language barriers, recent immigrants, and complex household compositions. We need to look for opportunities to develop better approaches for these types of groups in 2020. Messaging and outreach with households in these neighborhoods is crucial to reducing coverage error involving young children.

We can also use the Esri Tapestry segmentation and the PDB categories to identify areas where we may gain the greatest payoff through focused outreach and promotion by looking at the segments and categories with the greatest number of CFU-added young children and positive responses.

## **8. NEXT STEPS**

Further mining of Esri and PDB data may provide additional insight into reasons for the undercount of young children. We encourage the 2020 Census communications team to exploit these data in planning for specific projects as part of the 2020 Census communications campaign.

## **9. REFERENCES**

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## Appendix 1

### Esri Tapestry Segmentation Groups

Segment Name	2010 Census Count of Young Children	Segment Name	2010 Census Count of Young Children
Family Foundations	220,191	Prairie Living	196,311
City Strivers	177,009	Young and Restless	366,909
Modest Income Homes	329,553	Midlife Constants	387,176
Urban Villages	311,922	Parks and Rec	349,593
Pacific Heights	147,652	College Towns	135,995
Las Casas	330,570	Salt of the Earth	522,578
High Rise Renters	124,981	Silver & Gold	56,949
Valley Growers	123,010	Old and Newcomers	401,858
Senior Escapes	117,596	Middleburg	733,031
City Commons	255,472	Rustbelt Traditions	382,548
Rural Bypasses	274,076	Heartland Communities	405,564
Downtown Melting Pot	150,520	Bright Young Professionals	531,497
Fresh Ambitions	235,096	Metro Renters	141,153
Southwestern Families	253,652	Emerald City	208,865
International Marketplace	352,547	Up and Coming Families	799,800
American Dreamers	395,797	Enterprising Professionals	332,902
Barrios Urbanos	417,351	Comfortable Empty Nesters	323,852
The Elders	40,066	Soccer Moms	696,270
Social Security Set	115,137	In Style	376,642
Hardscrabble Road	317,068	Golden Years	167,213
Metro Fusion	422,523	Savvy Suburbanites	462,617
Front Porches	360,257	Exurbanites	238,281
Set to Impress	251,596	Military Proximity	106,385
Down the Road	250,967	Urban Chic	211,230
Dorms to Diplomas	43,043	Laptops and Lattes	119,800
The Great Outdoors	231,190	Boomburbs	486,859
Home Improvement	326,689	Professional Pride	298,763
NeWest Residents	301,324	Top Tier	268,225
City Lights	278,996	Unclassified	119
Trendsetters	150,695		
Rural Resort Dwellers	119,923		
Diners & Miners	129,889		
Rooted Rural	333,303		
Southern Satellites	654,525		
Small Town Simplicity	356,820		
Traditional Living	421,008		
Retirement Communities	162,823		
Pleasantville	409,154		
Green Acres	560,070		

Source: Special Tabulation of Census Edited and Unedited files; Esri Tapestry Database

## Appendix 2

Page 1 of 2

Table 18. Positive-Response Results by Esri Market Group (Part 1)

Market Group Name	Total Positive Responses to Child-Specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
NeWest Residents	13,343	846,867	15.8	0.7	2.2
Valley Growers	4,501	289,711	15.5	0.3	0.7
Las Casas	12,981	849,653	15.3	0.7	2.1
High Rise Renters	8,241	577,481	14.3	0.5	1.3
Barrios Urbanos	15,229	1,194,820	12.7	1.0	2.5
Fresh Ambitions	9,710	776,149	12.5	0.7	1.6
City Strivers	10,632	901,462	11.8	0.8	1.7
City Commons	10,837	925,758	11.7	0.8	1.8
Modest Income Homes	18,376	1,642,235	11.2	1.4	3.0
International Marketplace	15,484	1,480,537	10.5	1.3	2.5
Urban Villages	11,720	1,147,140	10.2	1.0	1.9
Southwestern Families	9,623	968,720	9.9	0.8	1.6
Family Foundations	11,959	1,242,714	9.6	1.1	2.0
Downtown Melting Pot	7,267	782,099	9.3	0.7	1.2
American Dreamers	13,711	1,563,484	8.8	1.4	2.2
Metro Fusion	14,767	1,694,908	8.7	1.5	2.4
Hardscrabble Road	11,302	1,350,265	8.4	1.2	1.8
Social Security Set	6,499	900,400	7.2	0.8	1.1
Rural Bypasses	10,674	1,595,740	6.7	1.4	1.7
Pacific Heights	5,666	870,617	6.5	0.8	0.9
Down the Road	7,412	1,145,521	6.5	1.0	1.2
Front Porches	11,629	1,837,010	6.3	1.6	1.9
Up and Coming Families	16,545	2,780,957	5.9	2.4	2.7
City Lights	9,579	1,733,554	5.5	1.5	1.6
Set to Impress	8,801	1,600,971	5.5	1.4	1.4
Young and Restless	11,997	2,216,414	5.4	1.9	2.0
Traditional Living	11,851	2,235,094	5.3	1.9	1.9
Military Proximity	870	167,216	5.2	0.1	0.1
Small Town Simplicity	11,350	2,186,499	5.2	1.9	1.9
Trendsetters	6,533	1,272,097	5.1	1.1	1.1
Home Improvement	8,866	1,741,420	5.1	1.5	1.4
Bright Young Professionals	13,994	2,840,841	4.9	2.5	2.3
Southern Satellites	18,704	3,797,564	4.9	3.3	3.1
Enterprising Professionals	8,656	1,783,039	4.9	1.5	1.4
Diners & Miners	3,722	771,238	4.8	0.7	0.6
Middleburg	16,453	3,585,695	4.6	3.1	2.7
Pleasantville	11,219	2,546,533	4.4	2.2	1.8
Parks and Rec	9,848	2,259,787	4.4	2.0	1.6
Boomburbs	7,597	1,764,279	4.3	1.5	1.2
Rustbelt Traditions	10,042	2,339,874	4.3	2.0	1.6
Rooted Rural	9,873	2,322,159	4.3	2.0	1.6
Old and Newcomers	11,970	2,863,218	4.2	2.5	2.0
Retirement Communities	5,825	1,414,286	4.1	1.2	1.0
Soccer Moms	13,861	3,456,447	4.0	3.0	2.3

Source: Special Tabulation of Census Edited and Unedited files; Esri Tapestry Database

Table 19. Positive-Response Results by Esri Market Group (Part 2)

Market Group Name	Total Positive Responses to Child-specific Probes	Total Occupied Housing Units	Positive Responses Per 1,000 Occupied Housing Units	Percent of Total Occupied Housing Units	Percent of Total Positive Responses
Heartland Communities	10,433	2,644,935	3.9	2.3	1.7
Midlife Constants	10,924	2,913,439	3.7	2.5	1.8
Senior Escapes	3,839	1,024,474	3.7	0.9	0.6
Emerald City	6,121	1,685,197	3.6	1.5	1.0
Golden Years	5,591	1,564,301	3.6	1.4	0.9
College Towns	4,154	1,187,477	3.5	1.0	0.7
In Style	9,139	2,694,515	3.4	2.3	1.5
Salt of the Earth	11,749	3,491,279	3.4	3.0	1.9
The Great Outdoors	5,944	1,785,985	3.3	1.5	1.0
Urban Chic	4,966	1,497,273	3.3	1.3	0.8
Professional Pride	5,617	1,701,358	3.3	1.5	0.9
Green Acres	12,031	3,660,101	3.3	3.2	2.0
Comfortable Empty Nesters	8,011	2,487,077	3.2	2.2	1.3
Top Tier	6,089	1,914,651	3.2	1.7	1.0
Prairie Living	3,798	1,221,564	3.1	1.1	0.6
Savvy Suburbanites	9,740	3,183,143	3.1	2.8	1.6
Exurbanites	6,163	2,082,850	3.0	1.8	1.0
Metro Renters	5,142	1,846,197	2.8	1.6	0.8
The Elders	2,549	918,433	2.8	0.8	0.4
Rural Resort Dwellers	3,213	1,166,048	2.8	1.0	0.5
Laptops and Lattes	3,177	1,216,495	2.6	1.1	0.5
Silver & Gold	2,183	850,806	2.6	0.7	0.4
Dorms to Diplomas	1,312	605,025	2.2	0.5	0.2
Unclassified	2	1,095	1.8	0.0	0.0
<b>TOTAL</b>	<b>611,606</b>	<b>115,606,191</b>	<b>5.3</b>	<b>100.0</b>	<b>100.0</b>

Source: Special Tabulation of Census Edited and Unedited files; Esri Tapestry Database

## Appendix 3

Page 1 of 2

Table 20. Coverage Followup Add Results by Esri Market Group (Part 1)

Market Group Name	Total Young Children Added in CFU	Total Young Children	CFU Adds per 1,000 Young Children	Percent of Total CFU Added Young Children	Percent of Total Young Children
Family Foundations	1,411	220,191	6.4	2.0	1.1
City Strivers	1,111	177,009	6.3	1.6	0.9
Modest Income Homes	1,873	329,553	5.7	2.7	1.6
Urban Villages	1,765	311,922	5.7	2.5	1.5
Pacific Heights	835	147,652	5.7	1.2	0.7
Las Casas	1,771	330,570	5.4	2.6	1.6
High Rise Renters	646	124,981	5.2	0.9	0.6
Valley Growers	621	123,010	5.0	0.9	0.6
Senior Escapes	532	117,596	4.5	0.8	0.6
City Commons	1,135	255,472	4.4	1.6	1.3
Rural Bypasses	1,193	274,076	4.4	1.7	1.4
Downtown Melting Pot	637	150,520	4.2	0.9	0.7
Fresh Ambitions	987	235,096	4.2	1.4	1.2
Southwestern Families	1,046	253,652	4.1	1.5	1.3
International Marketplace	1,453	352,547	4.1	2.1	1.7
American Dreamers	1,629	395,797	4.1	2.3	2.0
Barrios Urbanos	1,707	417,351	4.1	2.5	2.1
The Elders	159	40,066	4.0	0.2	0.2
Social Security Set	453	115,137	3.9	0.7	0.6
Hardscrabble Road	1,245	317,068	3.9	1.8	1.6
Metro Fusion	1,653	422,523	3.9	2.4	2.1
Front Porches	1,402	360,257	3.9	2.0	1.8
Set to Impress	977	251,596	3.9	1.4	1.2
Down the Road	941	250,967	3.7	1.4	1.2
Dorms to Diplomas	160	43,043	3.7	0.2	0.2
The Great Outdoors	848	231,190	3.7	1.2	1.1
Home Improvement	1,175	326,689	3.6	1.7	1.6
NeWest Residents	1,083	301,324	3.6	1.6	1.5
City Lights	989	278,996	3.5	1.4	1.4
Trendsetters	523	150,695	3.5	0.8	0.7
Rural Resort Dwellers	416	119,923	3.5	0.6	0.6
Diners & Miners	444	129,889	3.4	0.6	0.6
Rooted Rural	1,135	333,303	3.4	1.6	1.7
Southern Satellites	2,192	654,525	3.3	3.2	3.2
Small Town Simplicity	1,185	356,820	3.3	1.7	1.8
Traditional Living	1,380	421,008	3.3	2.0	2.1
Retirement Communities	527	162,823	3.2	0.8	0.8
Pleasantville	1,310	409,154	3.2	1.9	2.0
Green Acres	1,793	560,070	3.2	2.6	2.8
Prairie Living	626	196,311	3.2	0.9	1.0
Young and Restless	1,167	366,909	3.2	1.7	1.8
Midlife Constants	1,228	387,176	3.2	1.8	1.9
Parks and Rec	1,096	349,593	3.1	1.6	1.7
College Towns	424	135,995	3.1	0.6	0.7
Salt of the Earth	1,612	522,578	3.1	2.3	2.6
Silver & Gold	175	56,949	3.1	0.3	0.3
Old and Newcomers	1,203	401,858	3.0	1.7	2.0
Middleburg	2,189	733,031	3.0	3.2	3.6
Rustbelt Traditions	1,136	382,548	3.0	1.6	1.9
Heartland Communities	1,198	405,564	3.0	1.7	2.0

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Esri Tapestry Database

## Appendix 3

Page 2 of 2

Table 21. Coverage Followup Add Results by Esri Market Group (Part 2)

Market Group Name	Total Young Children Added in CFU	Total Young Children	CFU Adds per 1,000 Young Children	Percent of Total CFU Added Young Children	Percent of Total Young Children
Bright Young Professionals	1,555	531,497	2.9	2.2	2.6
Metro Renters	407	141,153	2.9	0.6	0.7
Emerald City	602	208,865	2.9	0.9	1.0
Up and Coming Families	2,237	799,800	2.8	3.2	4.0
Enterprising Professionals	915	332,902	2.7	1.3	1.7
Comfortable Empty Nesters	885	323,852	2.7	1.3	1.6
Soccer Moms	1,870	696,270	2.7	2.7	3.5
In Style	1,010	376,642	2.7	1.5	1.9
Golden Years	442	167,213	2.6	0.6	0.8
Savvy Suburbanites	1,222	462,617	2.6	1.8	2.3
Exurbanites	617	238,281	2.6	0.9	1.2
Military Proximity	274	106,385	2.6	0.4	0.5
Urban Chic	501	211,230	2.4	0.7	1.0
Laptops and Lattes	276	119,800	2.3	0.4	0.6
Boomburbs	1,079	486,859	2.2	1.6	2.4
Professional Pride	652	298,763	2.2	0.9	1.5
Top Tier	443	268,225	1.7	0.6	1.3
Unclassified	0	119	0.0	0.0	0.0
<b>TOTAL</b>	<b>69,383</b>	<b>20,163,046</b>	<b>3.4</b>	<b>100.0</b>	<b>100.0</b>

CFU: Coverage Followup

Source: Special Tabulation of Coverage Followup Analysis file and Esri Tapestry Database

## Appendix 4

Table 22. Demographic Characteristics of Selected Esri Market Groups

Market Group Name	Average Household Size	Population Density*	Diversity Index**	Black (%)	Asian, Pacific Islander (%)	Hispanic (%)	Median Age	Under Age 5 (%)
<b>U.S. Total</b>	<b>2.59</b>	<b>91.6</b>	<b>63.5</b>	<b>12.6</b>	<b>5.2</b>	<b>16.9</b>	<b>38.0</b>	<b>3.1</b>
NeWest Residents	3.35	2,486.1	87.3	10.9	4.1	72.3	27.3	5.5
Valley Growers	3.99	88.0	84.6	3.4	2.6	81.0	27.1	5.1
Las Casas	4.12	7,424.7	85.4	6.6	4.0	84.1	28.1	4.6
High Rise Renters	2.81	7,387.6	90.1	37.3	4.4	56.1	31.8	3.9
Barrios Urbanos	3.61	514.7	80.5	7.8	2.2	71.7	28.7	5.0
Fresh Ambitions	3.16	2,042.9	90.5	24.5	5.3	53.3	28.4	4.9
City Strivers	2.78	12,810.5	63.5	72.4	2.6	18.3	35.0	3.4
City Commons	2.67	933.9	50.0	75.9	1.1	8.6	28.1	5.3
Modest Income Homes	2.56	742.9	33.7	84.8	0.5	4.5	36.7	3.5
International Marketplace	3.07	8,783.7	88.7	12.0	10.4	56.4	32.7	3.9
Urban Villages	3.78	334.7	85.9	7.6	10.4	62.7	33.8	3.5
Family Foundations	2.71	1,349.2	43.4	79.9	1.0	7.1	39.4	3.1
Pacific Heights	3.16	3,177.2	75.1	3.3	46.5	15.5	42.4	2.5

\* Population per square mile

\*\*Diversity Index is defined as the likelihood that two random people belong to a different race/ethnicity

Source: Esri Tapestry Database

Table 23. Social and Economic Characteristics of Selected Esri Market Groups

Market Group Name	Median Household Income	Wealth Index*	Socio-economic Index**	Unemployment (%)	Home Ownership (%)
<b>U.S. Total</b>	<b>\$51,000</b>			<b>5.9</b>	<b>62.8</b>
NeWest Residents	\$28,000	32	65	7.9	16.6
Valley Growers	\$32,000	44	63	9.2	43.5
Las Casas	\$37,000	46	70	8.4	35.6
High Rise Renters	\$21,000	26	63	11.0	3.7
Barrios Urbanos	\$36,000	49	72	8.5	59.4
Fresh Ambitions	\$26,000	31	55	13.4	27.2
City Strivers	\$41,000	57	83	9.6	31.9
City Commons	\$17,000	24	48	17.2	23.1
Modest Income Homes	\$22,000	33	54	16.2	44.9
International Marketplace	\$41,000	53	87	7.0	27.6
Urban Villages	\$58,000	99	97	7.3	70.0
Family Foundations	\$40,000	68	80	11.3	65.8
Pacific Heights	\$84,000	162	136	4.9	72.3

\*Wealth index is defined relative to U.S. total level and is based on several indicators. Values below 100 indicate a below average wealth status.

\*\*Socioeconomic Index is defined relative to U.S. total level and is a composite of numerous social and economic metrics. Values below 100 indicate a below average socioeconomic status.

Source: Esri Tapestry Database