

A More Meaningful Comparison of the 2010 and 2020 Census Estimates of Net Undercoverage of Young Children

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Introduction

The Census Bureau recently released 2020 Census Demographic Analysis (DA) estimates of the net undercount of young children (ages 0 to 4). Jensen (2022) reported a net undercount of -5.4 percent for this age group. Comparisons with DA estimates from 2010 indicate an increase in net undercoverage of 0.8 percentage points (4.6 percent compared with 5.4 percent). Jensen (2022) also identified children age 0 as the group with the greatest level of net undercoverage at -7.0 percent, a noteworthy increase over the -3.4 percent net undercoverage estimated for children age 0 in 2010. However, Jensen (2022) notes that the count of children age 0 in the 2010 Census included some babies born after April 1, 2010 which decreased the net coverage error rate for this age group. In addition to masking the true enumeration errors of the youngest children, the low estimate of undercoverage of 0 year-olds contributes to a lower overall estimate of enumeration shortcomings in 2010 for all young children.

The purpose of this paper is to adjust the 2010 Census net undercount rate for children age 0 to allow for a more accurate comparison of the success of enumerating young children in 2020 and 2010.

Background

DA estimated a net undercount of -3.4 percent for children age 0 in the 2010 Census (U.S. Census Bureau 2012). While this is a high net undercount it was surprisingly lower than the estimated net undercount of -5.5 percent for children age 1 and -5.6 percent for children age 2 (U.S. Census Bureau 2012). A closer look at the 2010 data files found a very high proportion of children age 0 with an imputed date of birth. U.S. Census Bureau (2019) found that in the 2010 Census some children born after Census Day were edited to have an age of 0 and a date of birth in January, February or March of 2010. The Census Bureau should have excluded most of these children from the 2010 Census. The impact of this age editing was the inflation of the number of children enumerated in the 2010 Census with an age of 0 and therefore the masking of the true extent of undercoverage for these youngest children.

The Census Bureau revised the 2020 Census edits to reduce these errors. The children enumerated with a date of birth after April 1, 2020 were largely excluded from the 2020 Census.

Methodology

U.S. Census Bureau (2012) included 2010 Census population counts and DA middle series estimates (both rounded to 000s) by single year of age. These two estimates were used to produce the 2010 Census net undercount rates for young children (ages 0 to 4) and for children by single year of age. Table 1 displays the 2010 Census population counts, DA estimates, net undercounts and percent net undercounts for young children.

Table 1. Demographic Analysis Estimates for 2010 by Single Year of Age for Young Children

Age	2010 Census Population (000s)	Revised Demographic Analysis Estimate (000s)	Net Undercount (000s)	Percent Net Undercount
0	3,944	4,083	-139	-3.4
1	3,978	4,210	-232	-5.5
2	4,097	4,338	-241	-5.6
3	4,119	4,326	-207	-4.8
4	4,063	4,214	-151	-3.6
Total 0 to 4	20,201	21,171	-970	-4.6

Source: U.S. Census Bureau 2012

Notes: Middle series DA Estimate. A negative estimate denotes a net undercount.

Howden (2013) summarized how children enumerated with a birthdate after April 1, 2010 were edited in the 2010 Census, specifically citing that 125,216 children born after April 1, 2010 were included in the final census count and edited to reflect a date of birth prior to Census Day. Many (but not all) of these edited children were assigned an age of 0 and a date of birth in January, February or March of 2010. I reduced the 2010 Census count of children age 0 by 125,000 and replicated Table 1 using this adjusted 2010 Census count of children age 0. Reducing the 2010 Census count of children age 0 by the entire 125,000 children may overcompensate for the number of age 0 children created in the 2010 edits. The Census Bureau has the detailed files that would allow for a more precise measurement.

Results

Table 2 summarizes the result of subtracting these children from the 2010 Census count. The new approximations are bolded. The net undercount for children age 0 rises from 3.4 percent to 6.5 percent and the young child estimated net undercount is 5.2 percent rather than 4.6 percent.

Table 2. Adjusted Estimates of 2010 Net Undercount by Single Year of Age for Young Children

Age	ADJUSTED 2010 Census Population (000s)	Revised Demographic Analysis Estimate (000s)	ADJUSTED Net Undercount (000s)	ADJUSTED Percent Net Undercount
0	3,819	4,083	-264	-6.5
1	3,978	4,210	-232	-5.5
2	4,097	4,338	-241	-5.6
3	4,119	4,326	-207	-4.8
4	4,063	4,214	-151	-3.6
Total 0 to 4	20,076	21,171	-1,095	-5.2

Source: U.S. Census Bureau 2012; Howden (2013)

Notes: Middle series DA Estimate. A negative estimate denotes a net undercount.

Discussion

The 125,000 young children included the 2010 Census because of the 2010 Census editing methodology were included in the final 2010 Census counts and in all data tabulations. It is therefore appropriate for the Census Bureau's estimate of undercoverage to include these children. I adjusted the 2010 Census estimates of net undercoverage to exclude these children to provide a better comparison against the 2020 Census and to highlight the problem of enumerating children age 0. The 2020 Census counts, and therefore the 2020 Census estimates of coverage for young children did not include children born after April 1, 2020.

As the Census Bureau looks at the effectiveness of efforts to improve the enumeration of young children in the 2020 Census I feel that it is better to compare the 2020 DA results to these adjusted 2010 Census estimates as they speak more directly to the completeness of the 2010 Census enumeration.

DA estimated the percent net undercount for young children in the 2020 Census as -5.4 percent (Jensen 2022). Comparing this 2020 Census estimate with the adjusted 2010 Census estimate suggests that the loss in coverage in 2020 over 2010 was about 0.2 percentage points, a drop but not as severe as suggested when comparing against the official 2010 Census percent net undercount of 4.6 percent. The net undercount for children age 0 was estimated to be -7.0 percent in 2020. The adjusted estimate for these youngest children in 2010 is -6.5 percent. Rather than searching for an explanation for the doubling of net undercoverage of age 0 children, this comparison acknowledges that age 0 children were also a major problem in 2010.

Conclusion and Recommendation

Using the adjusted 2010 Census net undercount estimates identifies the youngest children (age 0) as the children with the greatest enumeration shortcomings in both the 2010 and the 2020 Census. The Census Bureau could refine my adjusted 2010 estimate using detailed edited data files from 2010 and 2020 for a more precise measurement. Acknowledging that this youngest population was critically undercounted in 2010 and continued to be severely undercounted in 2020 should lead to special efforts focused on babies and newborns in the development of 2030 Census methods.

The inclusion of these edited children in the 2010 Census counts also makes the 2010 Census appear to have significantly fewer enumeration shortcomings when compared with the 2020 Census. Adjusting the 2010 Census net coverage estimate for all young children allows for a more meaningful comparison with 2020 and the recognition that the quality of the 2020 Census enumeration effort was more similar to that found in 2010 than the official numbers suggest.

References

- Howden, L. M. (2013). "Research Note: Babies Born After Census Day: How the Census Bureau Addressed Dates of Birth After Census Day in the 2010 Census," *Population Research and Policy Review* (2013). 32:791–801.
- Jensen, E. (2022). Despite Efforts, Census Undercount of Young Children Persists. *America Counts: Behind the Numbers*. March 10, Available at <https://www.census.gov/library/stories/2022/03/despite-efforts-census-undercount-of-young-children-persists.html>
- U.S. Census Bureau. (2012). U.S. Census Bureau (2012). 2010 Demographic Analysis. http://www.census.gov/popest/research/daestimates/Table_3.pdf.
- U.S. Census Bureau. (2019). Investigating the 2010 Undercount of Young Children – Net Census Coverage of Very Young Children. January 15, Available at <https://www2.census.gov/programs-surveys/decennial/2020/program-management/final-analysis-reports/2020-report-2010-undercount-children-net-census-coverage.pdf>.