THE CASE

You are attending an American Academy of Pediatrics Annual Leadership Forum meeting. At lunch you and several of your colleagues from around the country are discussing federal funding of the State Children’s Health Insurance Program (SCHIP). One person at the table from New Mexico says that the monies allocated for funding SCHIP in his state never seem to come close to covering all the perceived needs. Another person from Iowa says the SCHIP program appears to be working well in her state. Similar disparities in those two states seem to exist with the funding of the Title I Grants to local education agencies.

As the discussion continues, it becomes apparent that there is indeed a disparity in the amount of federal funds available between many parts of the country, despite roughly equivalent per-child needs. Someone suggests that part of the disparity could be explained by erroneous population numbers taken in the 2010 United States Census, as the data from the census are used for the allocation of federal funds for children’s programs such as SCHIP and Title I Grants.

Just how accurate are U.S. Census numbers for children? How are these numbers used in the allocation of the federal funding of children’s programs? What are the factors that are known to cause under-reporting of children in the decennial U.S. Census? Which states get short-changed in their federal funds because of the undercounting of children? What can be done to improve the accuracy of the census? How is the next census even more at risk than the last one for producing inaccurate population numbers for children?

The questions raised are important to the health and well-being of children. What can you do to help ensure all children are properly accounted for in the 2020 census?

THE ABSTRACT


Background:
The self-response rate is a key driver of the cost and quality of a census.

Hypothesis:
The addition of a citizenship question to the 2020 Census could affect the self-response rate of respondents. We predict the effect of the addition of a citizenship question on self-response by comparing mail response rates in the 2010 Census, which did not have a citizenship question, and the 2010 American Community Survey (ACS), which included a citizenship question for the same housing units.

Methods:
To distinguish a citizenship question effect from other factors, we compare the actual ACS-Census difference in response rates for households that may contain noncitizens to the ACS-Census difference for all-U.S. citizen households.
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Findings/Conclusions:
We estimate the addition of a citizenship question will have a 5.8 percentage point (ppt) larger effect on self-response rates in households that may have noncitizens relative to all-U.S. citizen households. Noncitizens are also 36.2 ppts less likely to report citizenship status that is consistent with administrative records compared to citizens. Only 6.2 ppts of this difference is explained by observed characteristics.

COMMENTARY
The U.S. Constitution requires an accurate count of the nation's population every 10 years. Census results are used to allocate seats and draw district lines for the U.S. House of Representatives, state legislatures, and local governing boards. The results are also used to allocate more than $800 billion annually in federal assistance to states, localities, and families. They are a guide to communities when making decisions for new schools, housing, health care services, business investments, and much more. Importantly, decennial census data determine the allocation of funds from federal programs that support the needs of children. For these and other reasons, it is imperative that the census be performed in a fair and accurate manner. Unfortunately, the upcoming 2020 U.S. Census is proving to be one of the most controversial of any census in history. Its outcomes will be of dramatic significance to the well-being of children.

Census taking goes way back. It was on March 1st, 1790, that President George Washington signed the 1790 Census Act to authorize the nation's first census. The census was managed under the direction of Thomas Jefferson, secretary of state, and was undertaken in the original 13 states plus the districts of Kentucky, Maine, and Vermont, and the Southwest Territory (Tennessee). Marshals of the U.S. district courts carried out the door-to-door census. It consisted of just five questions dealing with gender, race, relationship to household, name of the head of the household, and the number of slaves. The population was determined to be 3,929,214 non-Indian Americans, including 700,000 slaves. Even the first census was controversial, with Jefferson calling the final number an undercount, putting the blame on negligent census counters, the refusal of some to participate, and those who feared the census information would be used to form the basis of a new tax system.

The last U.S. Census was one in a line of recent censuses in which undercounting again occurred. Unfortunately, certain population groups, referred to as “hard-to-count,” have been found to be at a higher risk of not being fully counted. Figure 1 shows how undercounting varied by race, gender, and age, for example, in the 2000 decennial census. The greatest amount of undercounting occurred in young adult black males and children 5 years of age and younger.
Young children, defined as younger than 5 years of age, have been undercounted in the decennial census for decades. In the 2010 Census, the net undercount rate for young children was 4.6% (net undercount = true population - census count). Some 2.2 million in this age group were undercounted (Figure 2). Contrarily, 1.2 million children were counted more than once.
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Figure 2: Comparison of 2010 Decennial Census Counts and Demographic Analysis Estimates for Children by Year of Age

Source: U.S. Census Bureau

Certain groups of young children, depending on their race, ethnicity, or where they live, have higher-than-average undercounts. In the 2010 census, the net undercount rate for Latino children under 5 years of age was 7.5%. The rate for black children was 6.3%. In contrast, the rate for white children was 2.7%.

Young children living in certain hard-to-count geographic census areas continue to be at particular risk of being undercounted. For instance, the 2010 Census undercounted children under 5 years of age in Arizona by 10%, while overcounting the same population in North Dakota by 2.1%. The consequence is that a young child in Arizona may not be afforded the same federal resources as a child in North Dakota. This wide variation would be expected to have a significant impact on the federal funding of children’s programs in states with census undercounting. The Annie E. Casey Foundation 2018 Kids Count Data Book shows that nearly one in four children under 5 years of age lives in a hard-to-count census tract. The likelihood of a young child living in a hard-to-count tract varies dramatically by state, from a high of 52% of children in New Mexico (the highest percentage in the U.S.) to a low of 3% in Idaho, Iowa, and Minnesota (Figure 3). To see where your state compares with other states in this regard, check out the listing in the 2018 Kids Count Data Book.
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Figure 3: Where Young Children are More likely to Be Undercounted in the 2020 Census

Source: U.S. Census Bureau

As noted, the census under-reporting of children has profound implications for the federal funding of children’s programs. Table 1 lists the top 10 federally funded children’s programs most affected by the undercounting of the pediatric population. It has been estimated that the states most affected by census undercounting lose about $2,913 per year in federal funding for every undercounted child.
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Table 1: Federal Spending ($160 Billion) on 10 Large Children’s Programs – 2015 Fiscal Year* Program Funding Allocated Based on U.S. Census Data

Source: Annie E. Casey Foundation

<table>
<thead>
<tr>
<th>Program</th>
<th>Amount (billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESTIMATED AMOUNT OF FEDERAL MEDICAID SPENDING GOING TO CHILDREN</td>
<td>$60.382</td>
</tr>
<tr>
<td>ESTIMATED AMOUNT OF SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM GOING TO CHILDREN</td>
<td>$29.187</td>
</tr>
<tr>
<td>TITLE I GRANTS TO LOCAL EDUCATION AGENCIES</td>
<td>$13.359</td>
</tr>
<tr>
<td>NATIONAL SCHOOL LUNCH PROGRAM</td>
<td>$11.561</td>
</tr>
<tr>
<td>SPECIAL EDUCATION GRANTS</td>
<td>$11.233</td>
</tr>
<tr>
<td>STATE CHILDREN’S HEALTH INSURANCE PROGRAM</td>
<td>$11.089</td>
</tr>
<tr>
<td>HEAD START</td>
<td>$8.2591</td>
</tr>
<tr>
<td>SPECIAL SUPPLEMENTAL NUTRITION PROGRAM FOR WOMEN, INFANTS AND CHILDREN</td>
<td>$6.3477</td>
</tr>
<tr>
<td>FOSTER CARE</td>
<td>$4.6357</td>
</tr>
<tr>
<td>CHILD CARE</td>
<td>$2.8587</td>
</tr>
</tbody>
</table>

* Estimates do not include federal Medicaid expenditures for disabled children.

The U.S. Census Bureau formed a task force in 2013 to identify possible causes of the undercounting of children in the 2010 decennial census. The first report of the task force was released in February 2014. The task force concluded that there was no one cause of the undercounting and that there would not likely be a single solution to improving the accuracy of the upcoming 2020 U.S. Census. The potential causes of the undercounting of children spanned a wide array of possibilities (more than 50 were listed). Key among these were inadequate census funding, survey design errors, inadequately trained interviewers, difficulties in accessing hard-to-count populations, and the hesitancy (for a variety of reasons) of many who are unwilling to respond to census questions. Table 2 summarizes a few of the specific problems encountered in the last U.S. Census that must be addressed by the time of the 2020 Census.
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Table 2: Factors Known to Affect the Ability to Collect Accurate Census Data

Source: Leadership Conference Education Fund

- Almost 4.5 million children under 5 years of age live in hard-to-count neighborhoods.
- Poor households are difficult to enumerate, and young children have a higher poverty rate than any age group.
- Young children in large families may go uncounted because they live in large and complex households. In 2010, nearly a quarter of young children lived in households of six or more people.
- Some young children have complicated living arrangements, moving among various relatives or caregivers. Foster children, children living with grandparents or other relatives, and children whose parents are cohabiting but not married are also more likely to be missed. Forty percent of all children under 5 years of age live in a household with complex living arrangements. These figures are higher for black children (50%) and Latino children (55%). Young children in complex households may be left off the questionnaires because respondents are uncertain of whether to include a young child as a household resident.
- Language barriers also contribute to the undercount of young children in households where individuals speak a language other than English. In 2010, one-quarter of young Latino children lived in a linguistically isolated household where adults had difficulty speaking English. It has been shown that language limitations cause respondents to report in error on the census questionnaire.

In addition to the above, there are two new challenges the 2020 U.S. Census faces that increase the potential for serious undercounting, particularly among minorities, those with low-incomes, children, and other marginalized individuals. The first is that the 2020 census will be the first census conducted primarily online. This raises concerns about whether there has been adequate time for the testing of new software, the potential for cyber-attacks, and the variable internet access that exists related to economic disparities. The second challenge is that the census may include a question on the citizenship status of respondents. The addition of this question is likely to discourage immigrant families from responding to the census for fear of how the information will be used. The last time a citizenship question appeared in the decennial census was in 1950. The current secretary of commerce, Wilbur Ross, requested the addition of this question. His office oversees the census and technically has the authority to add such questions without seeking permission of Congress. Critics strongly worry that this change will prompt immigrant residents—even those in the country legally—to avoid participating in the 2020 census, out of fear that it could expose them or their loved ones to deportation. The potential undercounting could result in underfunding of children’s programs in areas of the country with large immigrant populations.

When questions are added to the census, they are typically subject to rigorous testing, evaluation, and validation. The U.S. Census Bureau has expressed concern that these steps were skipped in the attenuated decision-making process that was used by the secretary of commerce’s office. The study summarized in the Abstract was an attempt by the Census Bureau to model the impact of the addition of the citizenship question to the 2020 U.S. Census, given the fact that the lengthy traditional methods of testing the impact of such a question on outcomes of the census could not be done prior to 2020. The study examined the likely 2020 Census response rates by comparing response rates in the 2010 Census, which did not have a citizenship question, and the 2010 American Community Survey, which included a citizenship question for the same housing units. The addition of a citizenship question was estimated to cause a 5.8% decline in response rates in households that may have noncitizens relative to all-U.S. citizen households. Noncitizens were predicted to be 36% less likely to report citizenship status. These findings portend badly for the accuracy of the 2020 census should the citizenship question be retained.
Several states have sued to halt the inclusion of the citizenship question. A federal judge has temporarily blocked the U.S. Census Bureau from including the question. Normally the appeals process to a lower court decision would be lengthy. Given the urgency of the issues, the U.S. Supreme Court has stepped in and indicated that it will hear relevant issues shortly. As of this writing, a final decision on the citizenship question is expected in the late spring or summer of 2019.

In January of this year, in an open letter, Dr. Kyle Yasuda, president of the American Academy of Pediatrics, asked the question: Is the 2020 U.S. Census a pediatric issue? The answer was: “Absolutely!” In that letter, the Academy announced it had begun efforts to ensure that all children are represented in the next census. It will be working with other member organizations of the Federation of Pediatric Organizations that are spearheading similar efforts to make sure all of pediatrics are united in this effort.

Every pediatrician can take up this cause by gaining familiarity with the relevant issues. A good start is by downloading and circulating the “Factsheet: Will Your Kids Count? Young Children and their Families in the 2020 Census,” produced by the Georgetown Law Center on Poverty and Inequality. Also, the U.S. Census Bureau has provided a concise two-page document that outlines a series of steps that providers and families can take to ensure all children are counted once, only once, and in the right place (even the hard-to-find ones).

The 2020 Census Day is April 1, 2020, less than a year away. It’s time to get going.

Author:
J. A. Stockman III, MD, Editor, Question of the Week Series

Question Text:
With respect to children younger than 5 years of age, which state has the highest percentage of “hard-to-count” census areas?

Responses:
__ A. Iowa
__ B. Nebraska
__ C. New Mexico
__ D. North Dakota
__ E. Idaho
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MEDICAL PEARL

Have you ever heard of John Shaw Billings? He is long gone, and probably little known, but had his fingers in many pies, including the U.S. Census. Billings was an army medical doctor during the Civil War. He established an army medical library, created the first modern bibliographical system for medical knowledge, helped establish Johns Hopkins Medical School and recruited its first faculty members, was the first director of the New York Public Library System funded by Andrew Carnegie, and played a major role in legitimizing the accuracy of the U.S. Census.

Here’s a bit more about Dr. Billings. He was born on April 12, 1838, in Allensville, IN. His mother, Abby Shaw, was a direct Mayflower descendant, whom Billings remembered for her love of words and reading. John took after his mother in this respect and began to read widely as a child, including finishing Plutarch’s works, John Bunyan’s Pilgrim’s Progress, and the works of James Fenimore Cooper, all before the age of 10. He was almost entirely self-educated.

In 1854, Billings gained admission to Miami University in Oxford, OH, where he continued to be a voracious reader. Three years later, he graduated second in his class and went on to the Medical College of Ohio in Cincinnati. While there, Billings rarely attended lectures, saying that “by reading textbooks I could get more in the same time and with very much less trouble.” When preparing a dissertation on surgical procedures for the treatment of epilepsy, he realized that it took a great deal of time and effort to search through the various medical books and journals for information on this subject. He visited medical libraries in Cincinnati and corresponded with others in Philadelphia, New York, and Boston, requesting additional information. He learned that there was no library system in the U.S. from which a student could obtain specific information on a single subject.

Shortly after his 1860 graduation, Shaw enlisted in the U.S. Army (Figure 1). He was put in charge of Cliffburne Barracks in Georgetown, Washington, D.C., and was ordered to turn it into a military hospital as the Civil War was underway. After this task and a short assignment in Philadelphia, he was reassigned to lead a field medical unit in combat duty with the Army of the Potomac and saw action at the battles of Chancellorsville and Gettysburg. In 1862, he married Katherine Mary Stevens, the daughter of a U.S. Congressman.
In 1864, Billings was transferred to the U.S. Surgeon General’s Office in Washington, D.C., where he was subsequently placed in charge of the Surgeon General’s Library (Figure 2). He was dismayed to find that books and other publications were listed by author name and not by subject. He published a catalog of the Surgeon General’s Library and then created the still in use Index Medicus in 1879, allowing students, researchers, and physicians to review the current literature on any medical subject on a timely basis.
In 1876, the Johns Hopkins Board of Trustees requested plans from five authorities on hospital construction. One was Dr. Billings. He toured several hospitals in Europe and responded with a 46-page proposal in which he emphasized that the hospital and medical school should be inseparable. The trustees adopted Billings plan in 1877 (see Billings in academic garb, Figure 3). Billings also argued that full-time clinical positions were necessary for a teaching hospital, and he played a major role in the recruitment of two of the first physicians at Hopkins: William Welch and William Osler. Billings visited Osler in his office at the University of Pennsylvania and, without sitting down, is said to have abruptly asked Osler, “Will you take charge of the Medical Department of Johns Hopkins Hospital?” Osler immediately answered, “Yes.” Osler later stated that Billings had spent only a couple of minutes in his office.
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Figure 3: Portrait Drawn by Cecilia Beaux in Recognition of Dr. Billings Efforts at Johns Hopkins University

Source: National Library of Medicine

Because of his innovative approaches to improving public health and hospitals, Billings was asked to head the U.S. Census Bureau's Vital Statistics division. He oversaw the compilation of statistics from the U.S. Census in 1880 and again in 1890. He was the one who brought in inventor Herman Hollerith to assist with the 1890 census. The U.S. Census Bureau had taken 8 years to complete the 1880 census, and it was feared that the 1890 census would take even longer. At the urging of Dr. Billings, Hollerith developed a punched card device to help analyze the 1890 U.S. census data. His great breakthrough was his use of electricity to read, count, and sort punched cards whose holes represented data gathered by the census-takers. His machines (Figure 4) were used for the 1890 census and accomplished in 1 year what would have taken nearly 10 years of hand tabulating.
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As an aside, in 1896, Hollerith founded the Tabulating Machine Company to sell his invention. His company would merge with the Computing-Tabulating-Recording Company to become the International Business Machines (IBM) Corporation in 1924. Hollerith’s punched card was a mainstay of data processing and computing from 1928 through the 1980s and was still in use in voting machines through the 2000 U.S. presidential election, in which the use of punched cards was vilified when questionably punched cards in Florida became the focus of the nation’s attention for several weeks. Who could forget that episode in U.S. history (Figure 5)?

Figure 4: Hollerith Electromechanical Punched Card Tabulator

Source: IBM
Billings retired from the Surgeon General’s Office in 1895 and became a professor of hygiene at the University of Pennsylvania. He quickly realized that he was not qualified in the developing fields of bacteriology and immunology. His tenure in Philadelphia was short. Billings had inspired Andrew Carnegie to construct branch libraries throughout New York City and more than 2500 libraries in cities and towns throughout North America. The New York Public Library was formed in 1895 by cataloging works from several public libraries formed by private foundations, including Lenox, Tilden, and Astor Foundations. In 1896, Billings was asked to become the first director of the New York Public Library. He made major contributions to the design of the new library building on Fifth Avenue and 42nd Street (including the addition of the two prominent lions (Figure 6) to the structure’s exterior, later memorialized on a stamp [U.S. Scott # 3447]). Dr. Billings remained in charge of the library until he died of pneumonia on March 11, 1913.
Billings was buried with full military honors in the Arlington National Cemetery. One of those eulogizing him at his memorial service stated that in response to the question of how he had accomplished so much, Billings had replied:

“I’ll let you into the secret ... there’s nothing really difficult if you only begin. Some people contemplate a task until it looms so big, it seems impossible; but I just begin, and it gets done somehow.”

When it comes to the 2020 U.S. Census, Billings’ words are well worth pondering by the census organizers.

J. A. Stockman, III, MD