Herman Hollerith's electric tabulating machine, initially used in the 1890 count, was a dramatic step in processing census returns. National Museum of American History, Smithsonian Institution

200 Years and Counting: How The U.S. Census Tracks Social Trends

Once every 10 years, the U.S. government carries out a population census; 1990 marks the 200th year since the Constitution calls for a census to be carried out once a decade to provide updated population facts for policymakers. Collecting, processing, and disseminating this much information is a formidable and costly undertaking, but up-to-date population facts are essential to planning for the future. The census, which solicits a response from every household in the United States, provides such facts and information displays.

Lesson Plan

Step 1: Introducing the Census—the Population Map

Give each of the children a copy of the Pull-Out Page and ask them to look at the Population Map. Make sure they all recognize that it shows the United States. Ask: Where do a lot of people live? Where do very few live? Can you think of why they may be distributed that way? Can you find where are? Are we in an area with many people? Now ask: Would it really be possible to see these lights? Would every household ever really turn on just one light, all at the same time? Of course not. Then how did the people who made this map know how many lights there should be and where they should go? You can get a hint by seeing who made the Population Map. (The credit line next to the picture gives this information.) Do you know who they are? Do you know what the census is? When the children have shared what they know, give them a few more basics about what the census is and how the Bureau of the Census gets its information from graphs, tables, and other information displays.

**A sample survey is a statistical study in which conclusions are drawn about a whole population, based on data on only some members (the sample) of that population. Most surveys you read about are sample surveys. For its results to be dependable, the sample must be well selected. Even a good gravy may contain a single lump. If that’s what you get when you take a sample, your sample is misleading. This can happen in a survey as well as in a kitchen. The decennial census actually contains both a complete census and a sample survey. Most households receive the so-called short form of the census questionnaire (the form reproduced in this ART TO ZOO). But the remaining 17.7 million households receive the long form, which contains all the short form questions but also contains an additional group of questions that appear only on long forms. In other words, the short form data that everyone contributes constitute a complete census of the U.S. population. The data that come from the questions that are only on the long form constitute a (large) sample survey.**

Continued on page 2
Finally, ask: What is the date on the map? How long ago was that? Are there exactly the same number of people now as then? Why not? Is everyone living in the same place now as then?

How can the 1990 census help update this map?

Step 2: Collecting Census Data
Give each student a copy of the census short form reproduced on page 3, and tell the children that these are census forms that everyone in the United States is supposed to answer. Have them read through the form and ask about whatever they don't understand. Then give each a copy of "Meet the Johnsons" (in the box below), and tell them: This is a description of an imaginary family, the Johnsons. Read the article through. Then pretend you are Leonard Johnson, the family member who is going to fill in the short form, and fill it in. The article gives all the information the children will need. Point out that it also gives information they won't need. An important part of their job is to pick out the required facts.

Keeping Secrets
The law requires people to answer census questions, and the same law protects the confidentiality of their answers. Bureau of the Census employees are not allowed to reveal census information about any individual or family. What you say on the census form will remain secret for 72 years — until your students are old enough to be great-great-grandparents! This confidentiality is very important. If people thought that other individuals, organizations, or government agencies could learn what they answered, many might hesitate to answer honestly or to answer at all.

When people don't answer, undercounts occur: the census count is smaller than the actual population. Since census counts are often the basis of allocating funds and services, an undercount means that people will get less than they are entitled to. An undercount means people will lose out.

Meet the Johnsons
One of the millions of families across the United States who are filling out the 1990 census short form are the Johnsons. They live at 4192 Hollerith Way, N.W., in Washington, D.C., in a row house with 7 rooms and a small back yard. They bought this house six years ago, and would guess that it is now worth just over $82,000. The house is mortgaged. There are five people in the Johnson household, all Black. They are (in order of age):

- Ella G. Mason, 66 years old, born 1924, Jacqueline Johnson's mother. Has lived in the household since her husband died 6 years ago. Does volunteer work in her church.
- Leonard F. Johnson, 41 years old, born 1949, is a youth worker.
- Jacqueline A. Johnson, 38 years old, born 1952, Leonard's wife, is a nurse in a local hospital.
- Rebecca M. Johnson, 11 years old, born 1979, Leonard and Jacqueline's daughter. Is in the 6th grade, loves animals, wants to be a veterinarian.
- Jeremy ("Chip") L. Johnson, 9 years old, born 1981, Rebecca's brother. Is in the 4th grade, favorite hobby is magic tricks, wants to be a television sports caster.

When the kids have finished, go over their answers and give them plenty of time to discuss the process. Finally, remind them that April 1, 1990, is Census Day: their own family too will be answering these questions (and those who get the long form will be answering additional ones as well). Have the children take the completed Johnson form home and compare this imaginary family's answers with those that their own family will be giving on the real form: ask each child to list 3 ways that their own family's answers will be different, and 3 ways (if possible) that they will be the same. The children's answers should be categories (not specifics like names or age of individuals, which will, of course, vary). For example: Is their household a different size? Do they rent their home? Is their race or ethnic background different? Are there people who are not relatives living in their household?

Be flexible in the answers you accept: the point of this activity is simply to have the children connect the census with their own lives. Be sure the kids bring their Johnson forms back to class. They will be using them again in Step 3.

Step 3: Tabulating the Data
When the Johnsons have completed the form, they will mail it in to the Bureau of the Census. High-speed cameras will microfilm their questionnaire, and another machine will record their fill-in-the-dot answers on computer tape.

* All the Pull-Out Page displays are based on Bureau of the Census information, but they include data from other surveys as well as from the decennial censuses.

To understand figures 3, your students must know what a median is. A median is a central number simple to understand: it is the middle value of a ranked group of values.

The children will group this easily through a concrete description: imagine a group of apples. Line them up in order, from smallest to the largest. The middle one is the median. This is true no matter how large the group is, and no matter how the group is ranked.

For example, if the numbers are 2, 6, 12, 14, and 22, then the median is 12. (If the group consists of an even number of values, then the median is the average of the two middle ones. For example, if the group consists of 2, 6, 12, 14, 15, and 22, then the median is 12½.)

You may want the children to practice with a couple of real examples. For instance, have a group of kids line up in order of height. Then ask their classmates to point out which child's height is the median for the line-up.
## Acsmile of the 1990 Census questionnaire: Basic Form

### Census Instructions:
- Identify the household members living together on Sunday. List at least one person who is related by blood, marriage, or adoption. If everyone is staying temporarily or usually lives somewhere else, circle elsewhere.
- Write in the name of each person living here, including those who usually live elsewhere but stayed here temporarily. Include household members and nonmembers. List and number the persons in this household as follows:
  1. Husband or wife
  2. Son or daughter
  3. Other relative
  4. Child of the head
  5. Other nonrelative.
- Include each member of a group, for example, Americans of Spanish/Hispanic origin for whom Spanish is a mother tongue.

### Questions ASKED of All Households:

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>11a. Did you leave anyone out of your list of persons for Questions 1a on page 1 because you were not sure if the person should be listed? If so, continue this page.</td>
<td>Yes</td>
</tr>
<tr>
<td>11b. Did you include anyone in your list of persons for Questions 1e on page 1 even though you were not sure that the person should be listed? If so, continue this page.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Questions for Households with One Family House

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>12a. What is the type of this building?</td>
<td>Single-family house detached from any other house</td>
</tr>
<tr>
<td>12b. What is the type of this dwelling?</td>
<td>Apartment in a building</td>
</tr>
<tr>
<td>12c. How many rooms does this house or apartment have?</td>
<td>1 room</td>
</tr>
</tbody>
</table>

### Questions for Households with One-Family House

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>14d. Is this house or apartment?</td>
<td>Owned</td>
</tr>
<tr>
<td>14e. Is the monthly rent paid for this house or apartment?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Rental Information

- If you RENT the house or apartment, check the month and year paid for this month.
- If the tenant does not own the house or apartment, leave blank.
- House or apartment rented to you or someone in this household.

### Income Information

- Income is for the 12 months ending Sunday, March 19, 1990.
- Include income not received in cash or in kind.

### Education Information

- Include education not completed.
- Include education completed after March 19, 1990.

### Occupation Information

- Include those not in need of social security or retirement income.
- Include those not working and not in need of social security or retirement income.

### Employment Information

- Include those who retired.
- Include those not employed but in need of social security or retirement income.

### Household Income Information

- Include income not received in cash or in kind.
- Include income not received in cash or in kind.

### Household Address Information

- Include the address of the household.
- Include the address of the household.

### Household Size Information

- Include the size of the household.
- Include the size of the household.

### Household Members Information

- Include all household members living together on Sunday.
- Include all household members living together on Sunday.
For we do with a vast collection of national treasures. Just those bits of census information that help, and example, if someone wants to find out how many Black people own their homes, they can look just at those people who identified themselves as Black, and see how they answered the question about homeownership. Of course, it’s computers that make it possible to do this with a collection of data the size of the census. People got the numbers for the Full-Out displays in this way. These displays give information like the country’s total population. But census data is also put together for much smaller areas—for states, counties, towns, even for neighborhoods—so people can use this data to plan for the whole country or to see what’s happening a few blocks from home. Have your students think about this by inventing questions that could be answered by the right bits of information from the census short form. They can look at their neighborhood for one of the form and do this.

These instructions in the abstract may sound confusing, but a few examples (with whatever accompanying context is necessary) should get the children going. For instance: How many people live in Rhode Island? How many people in Nebraska own their own homes? How many Hispanic children live in El Paso? How many elderly people pay rents of over $500 a month?

After you have given enough examples so the children understand what to do, give them plenty of time to create examples of their own—perhaps out loud at first, and then in writing as homework. Later, point out that they can use census data from other years to compare current situations with past ones. When was the population half as large as it is now? How many women over 25 have never been married, or got married at 20 years ago, or so? This activity can be done with simple examples or with more complicated ones (including percentages, for example), depending on the level of sophistication of your class.

Finally, have the kids think of these kinds of combinations from the users’ points of view. Which question or questions from the census short form would be helpful to the following users? (Carry out this activity orally in class. Give the hints if the children need them.)

A state is deciding where its funding for bilingual (Spanish-English) education should be spent. (Hint: What is the child population?)

The Boy Scouts are trying to decide where to start new troops. (Hint: What is your troop?)

A church is deciding where to locate its senior citizen center. (Hint: Who uses a senior center?)

A government agency is deciding where to fund programs that help repair rundown houses. (Hint: How much money is run-down housing actually worth?)

A Korean-language newspaper is deciding where to locate. (Hint: Who will its readers be?)

A city is figuring out in what neighborhood to build a new playground. (Hint: Who uses playgrounds?)

A city is deciding in which part of the town to look for a reasonably priced apartment. (Hint: What question will tell you about rental costs?)

A city government has to decide which public library branch should house its biggest collection of large-print books for grown-ups. (Hint: At what age are most people likely to have trouble reading regular print?)

A school district is trying to figure out whether more elementary schools are going to be needed 10 years from now. (Hint: What kind of people are likely to have school-age children in 10 years?)

Step 5: The Population Map Again —

Census is Y ... You and You ... and You ...

A simple and fun way to conclude is to have the children make their Population Map Personal. First, the children cut out and mount the maps, so it has a border around it and space for writing under it. Then say: Use a small colored sticker to mark each community where you were born, or where you have lived for several people. Number the stickers and provide a key at the bottom of the page. The key should give the name of the community and of the person (or people) you are there. Do this as homework and ask your parents to help you think of as many people as possible.

The next day, ask the children to total the number of people in all the households on their maps. Write the totals on the board and have the children figure out a grand total for the class — they will be surprised at the number of people in the United States that the class has some connection with.

Other children will have fun figuring out what fraction of the total population (expected to be about 250 million in 1990) their class knows.

MULTICULTURAL APPROACHES TO TEACHING MUSIC

A symposium to help teachers meet the challenge of cultural diversity in their classrooms will be held March 26-28 in Washington, D.C. Sessions on African-American, Hispanic-American, Asian-American, and Native American music will be led by an ethnomusicologist, performers, and an experienced music educator.

The symposium is offered by the Music Educators National Conference in cooperation with the Smithsonian Institution’s Office of Folklife Programs, the Society for Ethnomusicology, and MENC’s Society for General Music. To register call toll-free, 1-800-525-0930. For more information write Multicultural Approaches, MENC, 1902 Association Drive, Reston, VA 22091, or call 703-866-4000.

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Deborah Barnett and Detelles Shuck, Data User Services

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Peggy Kidwell, National Museum of American History
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To the "Johnson family":

Oits Daniels, Jr., Daisy Hannah, Jason Hannah, Monique Hannah-Collins, and Marjorie Hind

And to Rachel Eisendrath

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BIBLIOGRAPHY

Sources for Teachers


Books for Children


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And to Rachel Eisendrath
Each of the following sentences gives a fact that people have learned from census data. Each of these facts is also shown in one of the figures on this page. Which figure goes with which sentence? (Write the figure number in the blank after each sentence.)

A. The population of the United States is about double what it was in 1930.

B. Except for the period after World War II, when an unusually large number of children were born, the median age of Americans has been rising.

C. About 2/3 of all households lives in single-family houses.

D. For 200 years, U.S. households have been growing smaller.

E. Many more marriages than divorces.

F. Over 1 in 10 people are Black.

G. Throughout our history, more Americans have lived in cities.

H. Only 3 out of 4 children have two parents.

I. The population is growing faster in the West than in any other country.

All of the figures are based on data compiled by the Bureau of Census, U.S. Department of Commerce.


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Gente... y más gente

¿Cuál va con cuál?
Cada una de las siguientes oraciones proporciona datos que la gente ha aprendido sobre el censo. Cada uno de estos datos aparece también en cada uno de los gráficos en esta página. ¿Qué gráfico va con cada oración? (Escribe el número del gráfico en cada espacio en blanco al final de cada oración.)

A. La población de los Estados Unidos es ahora aproximadamente el doble de lo que era en 1930. ______

B. Excepto por el período posterior a la Segunda Guerra Mundial, cuando nacieron un número extraordinario de niños, la edad promedio de los norteamericanos ha estado aumentando. ______

C. Cerca de dos tercios de todos los hogares están compuestos por familias de un solo padre. ______

D. Por 200 años, los h Estados Unidos han tenido ______

E. Muchos más matrizes en divorcio que en ______

F. Más de 1 persona es negra. ______

G. A través de nuestra más norteamericana, en ciudades. ______

H. Solo 3 de 4 niños viven con padres. ______

I. La población está más en el oeste que en ______

Traducido por el Dr. Ricardo Inestroza

ARTE A ZOOLOGICO Marzo 1990
Noticias para las escuelas de parte del Instituto Smithsoniano
The population of the United States in 1980. Each point represents 1000 households. (Office of the Census, Department of Commerce of the United States.)