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U.S. Census Bureau

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Washington Statistical Society
November 21, 2019
“The Census isn’t about anything important, except money and power”

Vince Barabba, circa 1980
“Never do anything for the first time.”

Unofficial Census Motto according to Eli Marks
Overview of Course

• Important Censuses in History

• Getting Started: 1790-1840

• Becoming Scientific: 1850-1900

• Transition: 1902-1930
Overview

• The Hanson Years: 1940 – 1970
• Modernizing the Census Again: 1980-2010
• Undercount Wars and their fall out
• Saving Lives
Important Censuses in History

• Israelite Census
• Census & Censors in Rome
• The Doomsday Book
Terra Hugonis Comitis.

In Witebi 7 Sutori ad gest sunt xxv. carucate.
- xxv. carucce possunt esse. Habet Witebi am po
manegro. Petro Hugo com. 7 Willi pu dev. Indino
n. car. 7 x. vii. 7 in. bord binti. car. Silvia past
in. lev 15. 7 in. lev lat. Lote plani. in. lev 15. 7 in.
T. in. dat. c. lib. 7. xvi. lib. m. lx. sol.
Ad hoc maner pane loca hi. sigelinae. Nordsigelin

Ser omi ad gest. xxviii. carucate 7 vi. bouag. 7 xxii.
carucce poss. te. Petro Hugo 7 Willi depo. penoma
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he abb. choracentis. sunt ii. car. in dio. 7 vii. locki
ni. car. 7 m. vii. sui. car. 71. molenda. x. solidoe.
Important Censuses in History

• Census of Hispaniola: 1584
• Jean Talon & 1666 Census of Quebec
• 1932 Census of Lebanon
• 1937 Census of the Soviet Union
• 1962/1963 Census of Nigeria
The Population Problems of Palestine
Notestein & Jurkat
1945
Getting Started: 1790-1840

• Constitution

• Census of 1790
  – Number of Households: 558,000
  – Number of marshals: 13
  – Number of households per marshal: ??
### 1790 Census

<table>
<thead>
<tr>
<th>Names of Heads of Families</th>
<th>Free White Male over 16 yrs old</th>
<th>Free White Male under 16 yrs old</th>
<th>Free White Female</th>
<th>All other free People</th>
<th>Slaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ted Stoughton</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nathan Smith</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jonathan Stoughton</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Sear</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Getting Started: 1790-1850

• 1800-1850
  – 1810: Non-population questions added
  – Up to 1840: Head of household only
  – 1850: Individual Enumeration
<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Age</th>
<th>Sex</th>
<th>Color</th>
<th>Occupation</th>
<th>Place of Birth</th>
<th>State</th>
<th>Whether alive or dead</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nancy Wheatley</td>
<td>59</td>
<td>F</td>
<td></td>
<td></td>
<td>Maryland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Walter S. Wheatley</td>
<td>17</td>
<td>M</td>
<td></td>
<td>Printer</td>
<td>Kentucky</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>John W. Craddock</td>
<td>71</td>
<td>M</td>
<td></td>
<td>Farmer</td>
<td>Ireland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Amelia McClendon</td>
<td>57</td>
<td>F</td>
<td></td>
<td></td>
<td>Ireland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Frederick Meyers</td>
<td>55</td>
<td>M</td>
<td></td>
<td>Gardener</td>
<td>Germany</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>C. M. McFarland</td>
<td>40</td>
<td>M</td>
<td></td>
<td></td>
<td>Massachusetts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>J. H. Munn</td>
<td>29</td>
<td>M</td>
<td></td>
<td></td>
<td>Maryland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Augustus Meyers</td>
<td>26</td>
<td>M</td>
<td></td>
<td>Baker</td>
<td>Germany</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Charles Hagg</td>
<td>25</td>
<td>M</td>
<td></td>
<td>Baker</td>
<td>Germany</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>James Hanna</td>
<td>40</td>
<td>M</td>
<td></td>
<td></td>
<td>Ireland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>James Clay</td>
<td>73</td>
<td>M</td>
<td></td>
<td>Statesman</td>
<td>Virginia</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1850 Slave Schedule

<table>
<thead>
<tr>
<th>Names of Slave Owners</th>
<th>Description</th>
<th>Age</th>
<th>Sex</th>
<th>Color</th>
<th>Deaf &amp; Dumb</th>
<th>Blind</th>
<th>Insane</th>
<th>Illiterate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner name</td>
<td></td>
<td>1850</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Owner name

Age, Sex, Color

Owner name

Age, Sex, Color
STATISTICAL ATLAS
OF THE
UNITED STATES
BASED ON THE RESULTS OF THE
NINTH CENSUS 1870
WITH CONTRIBUTIONS FROM MANY EMINENT MEN OF SCIENCE
AND SEVERAL DEPARTMENTS OF THE GOVERNMENT.
COMPILED UNDER AUTHORITY OF CONGRESS
BY
FRANCIS A. WALKER, M.A.
SUPERINTENDENT OF THE 9TH CENSUS.
PROFESSOR OF POLITICAL ECONOMY AND HISTORY,
SHEFFIELD SCIENTIFIC SCHOOL, YALE COLLEGE.

JULIUS BIEN, LITH.
1874.
Becoming Scientific: 1850-1900

• 1890: Punch cards and automated processing

• 1918: American Statistical Association Advisory Committee
Transition: 1902-1930
The Failed Census: 1920

• Census and Immigration Policy

• The Science of Reapportionment
America was Changing
The Method of Equal Proportions

\[
\text{Priority Order} = \frac{\text{Population}}{\sqrt{n(n + 1)}}
\]

\[n = \text{number of members of Congress}\]
Overview

• The Hanson Years: 1940 – 1970

• Modernizing the Census Again: 1980-2010

• Undercount Wars and their fall out

• Saving Lives
The Hansen Years: 1940 – 1970
Morris Hansen
Evolution of Census Taking

- Sampling
- Imputation
- Computers
Sampling for the Census
Evolution of Census Taking

- Sampling
- Imputation
- Computers
### CHARACTERISTICS

**AND SEX, FOR CITIES OF 10,000 OR MORE: 1930—Con.**

<table>
<thead>
<tr>
<th>CITY AND AGE (YEARS)</th>
<th>ALL CLASSES</th>
<th>NATIVE WHITE</th>
<th>FOREIGN-BORN WHITE</th>
<th>NEGRO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Sacramento city</td>
<td>83,760</td>
<td>49,790</td>
<td>33,960</td>
<td>38,309</td>
</tr>
<tr>
<td>Under 5</td>
<td>6,161</td>
<td>3,127</td>
<td>3,034</td>
<td>2,557</td>
</tr>
<tr>
<td>Under 1</td>
<td>1,209</td>
<td>688</td>
<td>521</td>
<td>510</td>
</tr>
<tr>
<td>5 to 9</td>
<td>7,208</td>
<td>3,628</td>
<td>3,580</td>
<td>2,949</td>
</tr>
<tr>
<td>10 to 14</td>
<td>6,647</td>
<td>3,335</td>
<td>3,312</td>
<td>2,835</td>
</tr>
<tr>
<td>15 to 19</td>
<td>7,036</td>
<td>3,831</td>
<td>3,205</td>
<td>2,868</td>
</tr>
<tr>
<td>20 to 24</td>
<td>7,048</td>
<td>3,688</td>
<td>4,000</td>
<td>3,120</td>
</tr>
<tr>
<td>25 to 30</td>
<td>8,178</td>
<td>4,264</td>
<td>3,914</td>
<td>3,085</td>
</tr>
<tr>
<td>30 to 34</td>
<td>8,209</td>
<td>4,304</td>
<td>3,842</td>
<td>3,218</td>
</tr>
<tr>
<td>35 to 44</td>
<td>10,287</td>
<td>9,055</td>
<td>7,242</td>
<td>6,030</td>
</tr>
<tr>
<td>45 to 64</td>
<td>12,701</td>
<td>7,484</td>
<td>5,307</td>
<td>4,839</td>
</tr>
<tr>
<td>65 to 74</td>
<td>7,601</td>
<td>4,384</td>
<td>3,307</td>
<td>2,907</td>
</tr>
<tr>
<td>75 and over</td>
<td>4,003</td>
<td>2,155</td>
<td>1,908</td>
<td>1,410</td>
</tr>
<tr>
<td>Unknown</td>
<td>1,467</td>
<td>738</td>
<td>719</td>
<td>442</td>
</tr>
<tr>
<td>Age Group</td>
<td>Count</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>--------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 to 44</td>
<td>16,297</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>45 to 54</td>
<td>12,701</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 to 64</td>
<td>7,601</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 to 74</td>
<td>4,003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 and over</td>
<td>1,457</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9,055</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 to 44</td>
<td>4,384</td>
</tr>
<tr>
<td>45 to 54</td>
<td>2,155</td>
</tr>
<tr>
<td>55 to 64</td>
<td>738</td>
</tr>
<tr>
<td>65 to 74</td>
<td>37</td>
</tr>
</tbody>
</table>
Univac 1 in Suitland
Mail Out/Mail Back

• 1960
  – Mail Out / Pick up
  – FOSDIC

• 1970
  – Mostly Mail Out / Mail Back
  – Sample Vacant Delete Check & PEPOC

• 1980  Almost the whole country
Overview

• The Hanson Years: 1940 – 1970

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Modernizing the Census -- Again
Vince Barabba

• Co-founder Decision Making Information

• Director of Market Intelligence
  – Xerox
  – Kodak

• Census Director
  – 1973-1976
  – 1979-1980

• 83rd ASA President
graphic presentation of statistical information

Papers Presented at the 136th Annual Meeting of the American Statistical Association
Social Statistics Section
Session on Graphical Methods for Presenting Statistical Data
Boston, Massachusetts
August 23-26, 1976

U.S. Department of Commerce
Jeanita M. Kreps, Secretary
Courtney M. Slater, Chief Economist

BUREAU OF THE CENSUS
TIGER

Topologically Integrated Geographic Encoding and Referencing database
2010 Census Estimates of Same-sex Couples and DOMA

• Initial comparisons of 2010 Census counts of same-sex couples with recent ACS data:
  • 900,000 Census vs. 600,000 ACS
  • 350,000 spouses Census vs. 150,000 ACS vs. 50,000 in admin records
Why are 2010 Census Estimates of Same-sex Couples So High?

• H1: Errors in how we measured relationship or sex:
  • Data capture, questionnaire design, editing, processing
  • H 2: Changes in society in how respondents interpret and report relationships

• Analysis confirms H1: pencil & paper NRFU form prone to errors

• Focus groups also shows little support for H2
Overview

• The Hanson Years: 1940 – 1970

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• Saving Lives
The Undercount Wars 1980-2000

You might as well answer - we'll get you eventually
Coverage Evaluation & Correction

- 1850 Census for California
- Census Evaluation
- Statistical Correction of 1970
The foreign phenomenon of deliberately lying to the census enumerator and of hiding individuals or whole families is almost totally absent, even in the slums of our large cities.

William Lane Austin,  
Director of the Census  
March 22, 1939
Figure 1. Percent Net Undercount by Race, Sex, and Age: 1990 DA

- Black Male
- Black Female
- Nonblack Male
- Nonblack Female
1990 Adjustment Decisions
Impacts of Undercount Wars

• Increased Census Funding
• Use of Administrative Records
• Coverage Research Innovations
• Resistance to all statistical inference
• No Associate Director for Research and Methodology for 6 years: 2004-2010
Using Administrative Records

• Counting “overseas” Military, Federal Employees and their dependents.
  • Use of aggregated counts
  • No unduplication
  • Upheld in Franklin v Massachusetts
    • “Enduring Ties”

• 1990 Parolee and Probationer
  • Use of state and local records
    • Never challenged
1990 Coverage Research Innovations

- Improved PES
- Computer matching system
- Computer assisted clerical matching
- Remote data access site
- Curb-stoning detection
Overview

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DEMOBASE Haiti
100 meter gridded population
Haiti: Custom Polygon Tool

To get started, watch these training videos: Site Overview, Explore Haiti, Drawing Polygons, Hurricane Tool

Polygon 1
Population Estimate: 397,974
Area: 41.331 km²

Polygon 2
Population Estimate: 90,125
Area: 3.004 km²

Total Population: 488,099
Total Area: 44.335 km²

Caution: Clicking the basemap on/off clears the map.
Contact Information

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Chief Demographer(Ret.)

Howard.Hogan@Gmail.com