

# **Comment on Census Internet and Electronic Data Collection**

**Steven Ruggles**

# The Shadow of the 2010 Census Electronic Data Collection Failures

“Let me be blunt: This is a colossal failure”  
(Waxman, 2008)



# UPDATE: \$3 billion Census Bureau IT failure

**Summary:** *The Census Bureau's \$600 million custom-handheld initiative has finally been scrapped. The upshot: the 2010 census will now cost \$3 billion more than planned. Guess those pesky handheld computers are a bit too complicated, so it's back to paper and pencil methods. Let's parse the official press release, translating government-speak into plain English.*



By Michael Kringsman for Beyond IT Failure | April 5, 2008 -- 09:29 GMT (02:29 PDT)

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# Probably the most costly software failure in U.S. history

GAO: “During the 2010 Census the Bureau planned to use handheld mobile devices to support field data collection for the census, including following up with nonrespondents. However, due to significant problems identified during testing of the devices, cost overruns, and schedule slippages, the Bureau decided not to use the handheld devices for non-response follow-up and reverted to paper-based processing, which increased the cost of the 2010 Census by up to \$3 billion and significantly added to its risk.”

# Nine warnings from GAO, 2004-2008



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## Fact Sheet

### Chronology of Warnings about the Census Bureau's Field Data Collection Automation System

Rep. Henry A. Waxman

Chairman, Committee on Oversight and Government Reform

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In April 2006, the Census Bureau entered into a contract with the Harris Corporation to develop a Field Data Collection Automation (FDCA) system. Under the contract, Harris was supposed to build handheld computers for data collection in two phases — address canvassing prior to the census and non-response follow-up as part of the census process — as well as provide support for the field operations. The contract was a cost-plus contract with an initial estimated value of \$600 million.

Even before the contract was awarded, the Government Accountability Office (GAO) and the Inspector General of the Department of Commerce identified serious concerns with the approach selected by the Census Bureau. In total, GAO and the Inspector General have written at least nine reports since 2004 that raised questions about the efforts of the Census Bureau to automate census operations on a short timeline and manage the contractors hired to do most of the work. Their concerns fell into four general categories:

- The Census Bureau needed to define specific measurable performance requirements for the handheld mobile computing device;
- The Census Bureau needed to develop an integrated and comprehensive plan to control its costs and manage operations;
- The Census Bureau needed to maintain diligent oversight of its contractors; and
- The Census Bureau needed to strengthen its systems testing and risk management activities.

# The Internet Option in 2010: A Missed Opportunity

## Census 2000:

- Internet response option existed
- No publicity
- Short form only
- 71 thousand responses
- Subsequent Census Bureau evaluation judged Internet response option an “operational success” and predicted that if the response option had been promoted it would have saved a lot of money



## Start Here!

### Instructions:

1. Help is available throughout the form by clicking on the -> [Text Links](#) <-. If help links do not function properly, manually open a new/different browser window to:  
<http://www.2000.census.gov/2k/formhelp.html>
2. Verify this form's authenticity to help protect your information.
3. Use your window scroll bars to move around the form and your screen arrow/pointer to position your text cursor inside boxes for entering text.
4. **DO NOT** use your keyboard's 'Return' / 'Enter' key or your web browser's 'Back' / 'Previous Page' button.
5. Please begin with question 1 below.

**1. How many people were living or staying in this house, apartment, or mobile home on April 1, 2000?**

Number of people

***INCLUDE*** in this number:

- foster children, roomers or housemates
- people staying here on April 1, 2000 who have no other permanent place to stay
- people living here most of the time while working, even if they have another place to live

***DO NOT INCLUDE*** in this number:

- college students living away while attending college
- people in a correctional facility, nursing home, or mental hospital on April 1, 2000
- Armed Forces personnel living somewhere else
- people who live or stay at another place most of the time

**2. Is this house, apartment, or mobile home -- Mark ONE box.**

- Owned by you or someone in this household with a mortgage or loan?
- Owned by you or someone in this household free and clear (without a mortgage or loan)?

# The Internet Option in 2010: A Missed Opportunity

## 2010 Census

- Internet response central part of initial plans
- Substantial tests in 2003 and 2005

Enter your Census ID number  
in the boxes below. Then  
click 'Submit'.

 -  -  - 

Your Census ID number is the 18-digit  
number in the address section of the  
materials we sent you in the mail.



Census ID Number: 00000-00000-00000-000

D-0000001 \*\*\*\*\*AUTO\*\*3-DIGIT 112  
TO RESIDENT AT  
APT. 0007  
2005 CENSUS AVENUE  
SUITLAND, MD 20233-1234



[Privacy Policy](#)

Household

Persons

Review/Submit

Name

Sex/Date of Birth/Age

Origin

Race

Ancestry

Residence

[Person 1](#)

Person 2

Person 3

Person 4

**What is Person 2's name?**

First Name

MI

Last Name

**How is this person related to Person 1?****Related**

- Husband or wife
- Biological son or daughter
- Adopted son or daughter
- Stepson or stepdaughter
- Brother or sister
- Father or mother
- Grandchild
- Parent-in-law
- Son-in-law or daughter-in-law
- Other relative

**Not Related**

- Roomer or boarder
- Housemate or roommate
- Unmarried partner
- Foster child or foster adult
- Other nonrelative

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# The Internet Option in 2010: A Missed Opportunity

2006: Internet response option dropped for 2010

- Concern about security, “phishing,” Census site could be hacked, spyware on home computers
- Despite extensive testing, contractor could not promise to get website functioning in time for the 2008 dress rehearsal
- “Utilizing the Internet could divert attention and resources from other planned improvements.”  
(Kincannon 2006)

# The Internet Option in 2010: A Missed Opportunity

The decision to drop the Internet option was sharply criticized by National Academy of Sciences (*Envisioning the 2020 Census*, 2010)

Given the experience of Canada and other countries, it looks like this was a *second* expensive electronic data collection failure.

# Canada

- 2006: 18.5% Internet response
- 2011: 54.4 % Internet response
  - (target was 35-40%)
- Short-form item non-response declined 99% for Internet responses compared with paper

# The Internet Option in 2020

- Given Canadian experience in 2011, 75% Internet response for the U.S in 2020 would be a reasonable goal
- That would reduce the number of paper forms by ~135 million
- Savings could be ~\$2 billion for printing, mailing, scanning and other processing
- Dramatic reduction in item non-response

# Urgent needs for 2020

- Website must be bulletproof
  - Extrapolating from Canadian experience, could reach over 20 million respondents per day at the peak, more than 10 times the peak volume on HealthCare.Gov
- Multi-platform
- Easy to use
- Absolutely secure

# Challenges

- Federal contracting system for IT development is broken
- There are many terrible federal websites, and vanishingly few outstanding ones
- Excellent federal contractors for web development are in short supply (and may not even exist)

# Challenges

***Core question:*** how can Census overcome the limitations of IT contractors and the contracting system to build a fantastic website that will operate smoothly and securely under very high loads?

- Extensive and early testing is critical
  - Usability
  - Realistic simulations of capacity under load
  - Security
  
- To maximize savings, we must get accurate estimates of participation

# BYOD

- BYOD for census employee fieldwork is higher risk than an Internet response option for respondents
- Devices must be operable without an Internet connection; therefore must be local software and storage, cannot all be in cloud
- Downside risk posed by spyware or other malware is much greater if the data are collected on a device that is not locked
- If employee hardware is not optimal, productivity will suffer



United States Government Accountability Office

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Testimony  
Before the Subcommittee on Federal  
Workforce, U.S. Postal Service, and the  
Census, Committee on Oversight and  
Government Reform, House of Representatives

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For Release on Delivery  
Expected at 9:30 a.m. EDT  
Wednesday, September 11, 2013

## 2020 CENSUS

# Progress Report on the Census Bureau's Efforts to Contain Enumeration Costs

Statement of Robert Goldenkoff  
Director, Strategic Issues

Carol R. Cha, Director  
Information Technology Acquisition Management  
Issues

## 2013 GAO warning:

The Bureau is exploring technology options for census operations that collectively represent a dramatic leap from 2010. These options include the possible use of a “bring your own device” model to enable enumerators to use their own mobile devices for field data collection.

## 2013 GAO warnings:

*At this time the bureau has not yet achieved the level of institutional maturity needed to reliably bring these solutions to bear.*

The Bureau lacks well-established IT management and security controls . . .

A high-degree of risk and uncertainty exists.

# The Brazilian Alternative

- Brazil 2010:  
enumerators did fieldwork with handheld devices
- 225,000 locked smartphones with GPS  
Cost: \$42 million
- Cost of the phone has since declined by two-thirds



# The Brazilian Alternative

- Used for the main enumeration, not just non-response follow-up
- One of the world's largest questionnaires:
  - Short form 37 questions
  - Long form 107 questions
- Despite the larger US population, the fieldwork will be easier.



# The Potential Benefits of BYOD are very small compared with the Brazilian model of uniform devices

- BYOD would not save much on hardware costs
  - The range is about \$10 to \$50 million depending on the device chosen
- Alleged saving on training costs
  - this is unproven and seems unlikely, since training would have to cover differences in the operation of the software on different devices.

# Benefits of Uniform Devices

- Reduced software development risk
  - Much less complex task
- Reduced security risk
  - Minimal threats on locked-down operating systems

# Benefits of Uniform Devices

- Saving on training costs, since everyone is using the identical software and hardware
- Broadened pool of potential enumerators, since there is no requirement to own a compatible device
- New devices that meet standards will maximize fieldwork productivity

# Benefits of Uniform Devices

Minimize cost of software development and risk of software development failure

- Do not have to design for many operating systems, inferior or malfunctioning equipment
- Cost of ensuring data security greatly reduced: on a locked device, little worry about spyware or other malware
- UI development simpler with uniform platform

# Conclusions: Internet Response Option

- Perfecting the Internet response option and figuring out how to promote it can save billions and substantially reduce item nonresponse
- These are the most important 2020 Census activities

# Conclusions: BYOD

BYOD for enumerators (as opposed to respondents) would be expensive and carries a lot of risk.

- The potential upside is small, and the potential downside is large
- Potential savings on hardware is trivial compared with the increased costs of software development, reduced security
- Uniform locked cellphones or tablets would be cheaper than BYOD, and would probably increase fieldwork productivity