

2020 Census Operations Quality Control Overview

NAS: Panel to Evaluate the Quality of the 2020 Census
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Operations Discussed

- **In-Office Address Canvassing – Interactive Review (IR)**
- **In-Field Address Canvassing (IFAC)**
- **Nonresponse Followup (NRFU)**
- **Group Quarters Enumeration (GQE)**

Quality Assurance Procedures for Census 2020

The goals of our quality assurance (QA) programs were to detect and deter falsification and promote quality work.

- **Training:** All staff underwent training for their position.
- **Observations:** Some field staff underwent observations by their supervisors.
- **Data edits:** Field operations with automated instruments had built-in edits. Paper field operations had in-office edits.

In-Office Address Canvassing QC - Interactive Review

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In-Office Address Canvassing Interactive Review Quality Control

- **In-Office Address Canvassing consisted of several components. We will focus on Interactive Review (IR).**
- **The goals of IR were to:**
 - Complete an imagery-based review that assessed changes in the residential landscape between current imagery and baseline vintage imagery to identify growth, decline, and potential future growth.
 - Measure the extent to which the number of housing units in the Master Address File (MAF) was consistent with the number visible in the current imagery to identify undercoverage or overcoverage.
- **The goal of IR Quality Control (QC) was to ensure each clerk maintained an outgoing error rate of five percent or less.**

IR QC Sampling

- We initially used a two-tier QC plan, then switched to a three-tier plan to resolve some deficiencies with the original plan.
- In the two-tier plan, the first 500 blocks each clerk worked were all checked; in three-tier plan, this was reduced to the first 75 blocks for each clerk.
- Poor performing clerks had all their work checked and we had a graduated sampling strategy.
- Selected blocks were sent to a second clerk for independent review.

IR QC Adjudication

- **When the outcomes from the first and second clerks disagreed, the block went to an adjudicator for final disposition.**
- **The adjudicator could:**
 - Accept the first clerk's outcome.
 - Accept the second clerk's outcome.
 - Determine that a third outcome was appropriate.
- **If the adjudicator found that one (or both) of the clerks committed an error, the adjudicator assigned an error to the appropriate clerk(s).**
- **Five percent of the adjudicator's work was reviewed.**

IR QC Clerk Disposition

Clerks who performed poorly were retrained or removed from the project.

In-Field Address Canvassing QC

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In-Field Address Canvassing

- The workload for the In-Field Address Canvassing (IFAC) was based on the outcome of the IR.
- IFAC Basic Collection Units (BCU) were worked by a lister using standard listing procedures. They compared what they saw on the ground to an existing census address list. The lister either verified or corrected the address and added any living quarters not displayed on the list.

IFAC QC Selection

- **After a production lister finished each BCU, the BCU was sent to the Sampling, Matching, Review and Coding System (SMaRCS).**
- **SMaRCS reviewed every BCU for various characteristics that may indicate poor quality work or the BCU was difficult to list:**
 - High proportion of added addresses
 - High proportion of deleted addresses
 - Many addresses in small multi-unit structures (5 or fewer units)
 - GPS data indicated lister was far from addresses while working
 - GPS data indicated lister worked multiple addresses from the same location

IFAC QC Selection (cont'd)

- **The BCUs were stratified into 3 strata, based on the number of characteristics each BCU had.**
 - High – All of these were selected for field follow-up
 - Middle – Selected at 10% rate
 - Low – Selected at 5% rate
- **BCUs selected for field follow-up were assigned to a separate staff of QC listers.**

IFAC QC Field Followup

- QC listers started at a predetermined, randomly selected spot, usually an intersection.
- Following standard listing procedures, they dependently canvassed a sample of addresses on the ground, updating the information collected during production in the listing device, as necessary.
 - The listing device recorded and categorized any errors found automatically.
- **The sample size and number of critical errors allowed in the BCU varied based on the number of addresses in the BCU.**
- **If there were any deleted addresses in the BCU, at least one of them would be part of the sample.**

IFAC QC Field Followup (cont'd)

- If the number of critical errors exceeded the specified threshold, the BCU failed and the QC lister was instructed to rework the remainder of the BCU immediately.
- If the number of critical errors was less than the specified threshold, the QC lister was informed the BCU passed QC, and they were finished with the BCU.

Nonresponse Followup QC

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Nonresponse Followup

- **Nonresponse Followup (NRFU) Household Interviews** focused on following up with nonresponding households.
- The same staff did all types of cases – no separate staff for reinterview.
- Enumerators could not reinterview their own work.
- **SMaRCS** received the case after the production interview was completed.

NRFU Household Reinterview Eligibility

- **All production household interview NRFU cases were matched to administrative records associated with that MAFID to see if the production interview generally agreed with administrative records. If so, we concluded the enumerator likely completed the case correctly and rendered it ineligible for reinterview.**
- **Other eligibility checks included but were not limited to:**
 - Case was complete.
 - Case was not an in-field add.
 - Case was not marked as a duplicate of another address.

NRFU Household Reinterview Selection

- **SMaRCS selected household interview cases for reinterview via multiple methods. The primary methods of selection were:**
 - Random — a systematic sample of each enumerator's cases was selected.
 - 1 of the first 3 eligible cases, then every 40th eligible case thereafter.
 - Analytic — enumerators whose work differed significantly from the work of other enumerators in the same geographic area were identified and a sample of cases was selected.
 - Examples: Duration of interview, household roster size, distance from the housing unit using GPS.

NRFU Household Reinterview Data Collection

- Reinterview cases were assigned to a different enumerator than completed the production case (same staff).
- Reinterviewer contacted respondent and attempted to confirm the respondent was contacted during production.
 - If the respondent indicated they were contacted, reinterviewer collected limited information only.
 - If the respondent indicated they were not contacted, or were unsure, reinterviewer collected all NRFU information.
- **After reinterview was complete, case was returned to SMaRCS.**

NRFU Household Reinterview Computer Matching

SMaRCS compared production and reinterview data.

- If the production and reinterview data matched within a given tolerance, the case passed reinterview.
- Otherwise, the case was sent to a clerk at the National Processing Center (NPC) for review.

NRFU Household Reinterview Clerical Matching

- **Clerks compared production and reinterview data.**
 - Pass – The case was not suspicious
 - Fail – The results of reinterview indicated honest enumerator error
 - Hard Fail Recommendation – The results of reinterview demonstrated falsification by the enumerator
- **Clerks could select additional cases for supplemental reinterview, if more information was needed to make a determination.**

NRFU Household Reinterview Final Decision

- **RCC staff reviewed all cases by enumerator if:**
 - The enumerator was suspected of falsification, or
 - The enumerator had multiple instances of poor quality work.
- **Enumerators released for falsification or poor quality work had all remaining eligible cases selected for rework RI.**

Group Quarters Reinterview

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Group Quarters Overview

Group Quarters (GQ) are group living arrangements that are owned or managed by an entity or organization providing housing or other services for the residents. College dormitories and nursing homes are examples of GQs.

- First, we did an Advance Contact operation that collected the expected population count for the GQ.**
- Then, we had a GQ Enumeration (GQE) operation that collected detailed information about the GQ.**

GQE Population Count Discrepancy Check

GQE cases completed via in-person enumeration underwent a population count discrepancy check after the case was completed.

- The count collected during GQE was compared to the count collected during GQ Advance Contact.
- If the counts were within a specified tolerance, the case passed the check.
- Otherwise, the supervisor had to correct or explain the discrepancy and the manager received an alert.

The system also confirmed the number of forms checked in matched the population count recorded during the interview.

GQ RI Selection

- One of the first three eligible cases of each enumerator was selected for reinterview.
- Thereafter, we selected every tenth eligible case by enumerator.
- Office staff or managers could select additional eligible cases completed by an enumerator who was suspected of falsification.

Conducting GQ RI

- We first attempted reinterview via telephone; if that was unsuccessful, we attempted an in-person reinterview.
- The reinterviewer contacted the facility and attempted to confirm the production enumerator conducted the interview.
- They also collected a population count of the GQ.

Conducting GQ RI (cont'd)

Office staff or managers reviewed the completed reinterview cases and assigned an outcome:

- **Pass** – The case was not suspicious
- **Soft Fail** – The results of reinterview indicated honest enumerator error
- **Hard Fail Recommendation** – The results of reinterview demonstrated falsification by the enumerator

GQ Hard Fail Recommendation

- If an enumerator received a Hard Fail Recommendation, the Area Census Office (ACO) Manager reviewed the associated GQ case.
- If the ACO manager chose to release the enumerator for falsification or poor quality work, all of that enumerator's eligible cases were put into reinterview (except cases already reinterviewed).

Questions?

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Back Up Slides

IR QC Sampling

To prevent clerks from jumping between tiers too quickly, we incorporated minimum sample sizes required for movement between tiers.

	Sampling Rate	Observed Error Rate, by Clerk	Minimum Blocks Worked to Move to Lower Sampling Rate	Minimum Blocks Worked to Move to a Higher Sampling Rate
Tier A	100%	Above 5%	100	N/A
Tier B	10%	3%-5%	15	2
Tier C	4%	Below 3%	N/A	4

IFAC Sampling Tests

Sampling test
More than a certain percent of addresses in BCU are adds
More than a certain percent of addresses in BCU are deleted
More than a certain percent of addresses fall in multi-unit structures with 5 or fewer units
GPS data indicates the lister is often far from the address they are updating
GPS data indicates the lister is working 6 or more structures from the same physical location

IFAC: Within-BCU Sample Size and Allowable Errors

Range of BCU Sizes (Addresses)	Sample Size (Addresses)	Number of Allowable Errors (Addresses)
$0 \leq x \leq 20$	all	0
$21 \leq x \leq 70$	20	0
$71 \leq x \leq 105$	35	1
$106 \leq x \leq 245$	40	1
$246 \leq x \leq 525$	50	2
526+	65	3

Examples of NRFU Analytic Sampling Tests

Enumerator-level tests	Case-level tests
Average duration time of completed interviews	Duration of interview
Average GPS distance from the enumeration device to the housing unit	GPS distance from the housing unit
Distribution of administrative records match rate	No matches to administrative records
Distribution of population count in the households	Population count of 0 when unit status is occupied or null
Distribution of contact attempt event codes	Unsuccessful attempts on a case per event codes
Distribution of housing unit status; occupied, vacant, or delete	Type of housing unit status
Distribution of respondent phone responses; valid, invalid, missing, or null.	Duplicate, invalid, or missing phone responses
	Population count given differs from roster count

GQ RI Enumeration Methods and Eligibility for Reinterview

Eligible

- Drop-off/Pick-up Questionnaire cases
- In-Person Interview cases, when completed by only one enumerator
- Paper Response Data Collection (administrative records) cases

QA processes are similar, though the exact procedures differ slightly for each method.

Ineligible

- In-Person Interview cases, when completed by more than one enumerator
- eResponse cases
- Facility Self-Enumeration cases
- Soup Kitchens
- Mobile Food Vans
- Certain GQ types (military and shelters)

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