Census 2000 Evaluation E.5, Revision 1
August 6, 2003

Group Quarters Enumeration

FINAL REPORT

This evaluation study reports the results of research and analysis undertaken by the U.S. Census Bureau. It is part of a broad program, the Census 2000 Testing, Experimentation, and Evaluation (TXE) Program, designed to assess Census 2000 and to inform 2010 Census planning. Findings from the Census 2000 TXE Program reports are integrated into topic reports that provide context and background for broader interpretation of results.

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EXECUTIVE SUMMARY

The Group Quarters population consists of all persons residing in the United States who do not live in housing units such as single-family houses, apartments, and mobile homes, but rather in group situations such as college dormitories, nursing homes, military barracks, prisons, juvenile institutions, migrant worker dormitories, convents, and group homes. Group Quarters populations differ greatly from the housing unit population, so Group Quarters enumeration is very different from housing unit enumeration.

The various types of Group Quarters and the Special Places that contain them[1] are very different from one another. Some types of Special Places tend toward having many Group Quarters and/or large populations; other types of Special Places almost always have a single Group Quarters or very few people. Some types of Group Quarters relied heavily on enumeration through administrative data in Census 2000; in others, respondent-filled forms were more common. Certain types of Group Quarters were more likely to have persons from household questionnaires included in their final tabulations, were more likely to have persons counted twice within a Group Quarters, or had a greater proportion of persons imputed due to differences in questionnaire counts at different stages of processing.

Group Quarters enumeration in Census 2000 succeeded in its underlying mission of gaining a fundamentally accurate count of the Group Quarters population. Beyond that, it provided enough additional information to give a more nuanced sense of what the Group Quarters universe and its components are like.

The major findings of this evaluation are:

- Universities, military bases, and correctional institutions were the most sizable special places, as measured by both population and number of Group Quarters.
- More Group Quarters questionnaires were filled out from administrative data than by any other method, with nursing homes, hospitals, group homes, and correctional institutions using administrative data most frequently.
- Over 200,000 Group Quarters person records (2.6 percent of all Group Quarters person records) had all characteristics imputed.
- Over 55,000 Group Quarters questionnaires were not tabulated because the hand-transcribed Group Quarters Identification Number was either left blank or could not be identified with a Group Quarters.
- Nearly 2.3 million Group Quarters person records were erroneously included in the Non-ID Process. (In the case of Group Quarters questionnaires, the Non-ID Process matches questionnaires claiming a Usual Home Elsewhere with Census residences.)

[1]A Special Place is an administrative and geographical entity containing one or more Group Quarters, and the Group Quarters are where people sleep. For instance, a university is a Special Place, and each dormitory there is a Group Quarters.

  - Of the 2.3 million, nearly 1.9 million were persons in types of Group Quarters that did not allow residents to claim a Usual Home Elsewhere. These were ultimately tabulated correctly in the Census.
  - The remaining 400,000 were person records that did not legitimately have a Usual Home Elsewhere. While approximately 250,0000 of these were ultimately tabulated in the Group Quarters universe, this still resulted in the Census not counting over 30,000 person records, and incorrectly counting nearly 120,000 Group Quarters residents in the housing unit population.
- An estimated 4.4 percent of all persons counted in group homes and religious Group Quarters were within Group Quarters duplicates: that is, records of persons already enumerated on another questionnaire at that Group Quarters. We believe this was primarily due to persons being enumerated on housing unit questionnaires at small Group Quarters.
- Nearly 150,000 housing units were identified by Group Quarters enumerators at Group Quarters and at transient locations such as recreational vehicle parks. These housing units contributed over 260,000 persons to the Census. For almost half of these units, it was necessary to impute the housing status (occupied, vacant, or delete).

We recommend a number of changes to Group Quarters enumeration for 2010, especially:

- Using available off-the-shelf technology to track individual questionnaires from enumeration to data capture.
- Improve the address list creation process by:
  - Gathering data on Special Places from Web-based sources;
  - Giving large Special Places the option of providing Group Quarters data by electronic and printed records, rather than by telephone and in-person interviews;
  - Reducing duplication between the address files for Group Quarters and housing units.
- Be more prepared for use of administrative data in enumeration.
- Track the population counts of individual T-Night sites.
- Tailor address list creation and enumeration strategies to each major category of Group Quarters.

1. BACKGROUND

1.1 The Purpose of Group Quarters Enumeration

The vast majority of United States residents live in housing units such as single-family houses, apartments, and mobile homes. However, several million people in the United States live in group situations such as college dormitories, nursing homes, prisons, migrant worker dormitories, convents, and group homes, collectively known as 'group quarters' (GQs). The purpose of Group Quarters Enumeration is to enumerate these people.

Group Quarters enumeration methods are distinct from housing unit (HU) enumeration methods. A distinct operation is needed because the means used to enumerate households are not appropriate for this universe. The household questionnaires that work well for people in a housing unit (usually a small group of related persons), are insufficient and inappropriate for enumerating larger groups of unrelated persons in a college dormitory or a nursing home. And the mailout approach to enumerating housing units would not work well with most of the GQ population.

1.2 The History of Group Quarters Enumeration

Before 1970 (the first Census which made significant use of mailout/mailback), the Census Bureau identified special places very simply: large Special Places (SPs) such as military installations, penitentiaries, and the like were located on maps and designated as separate enumeration districts. Census-takers added others as they made their door-to-door rounds.

When mailout/mailback enumeration of households became the backbone of the Decennial Census beginning in 1970, the enumeration of group quarters became a separate operation, as the mailback operation and housing unit questionnaires were ill-suited for the task of enumerating the larger and more disparate populations of dormitories, prisons, military barracks, nursing homes, and the like. A list of Special Places was constructed prior to Census Day. The Special Places on the list were enumerated on or about Census Day.

In order to provide a clear picture of the GQ universe, both for stakeholders and for the Census Bureau's own needs, different kinds of GQs have been given different typecodes by which data is grouped for publication. In Census 2000, there were nine major categories of GQs: correctional institutions, juvenile institutions, nursing homes, hospitals, college dormitories, military barracks, service-based facilities, group homes, and other GQs not fitting into the other eight categories. (Appendix A contains a complete list of GQ types used in Census 2000.) Each category contained between one and eleven distinct GQ types. There were 59 GQ types altogether.

By 1980, the broad outline of the GQ type code classification system was more or less the same as in Census 2000, and most of the individual GQ types were the same as well. Some

classifications present in the 1980 published data that no longer have a dedicated typecode (but are still part of the GQ universe) include tuberculosis hospitals, homes for unwed mothers, and communes. In contrast, rooming houses and low-cost transient quarters were enumerated as GQs in the 1980 and 1990 Censuses, but became part of the HU universe in Census 2000.

Group quarters have historically been broadly categorized as *institutional* and *noninstitutional*. Institutional GQs consist of correctional and juvenile institutions, nursing homes and hospital facilities. All other GQs are noninstitutional.

In 1980 and 1990, any residential unit with 10 or more unrelated persons was tabulated as a GQ. This requirement was eliminated prior to Census 2000.

In 1980 and 1990, the list of GQs to be enumerated was created in a two-step process: (1) the creation of the SP inventory, and (2) the SP Prelist. The SP Inventory in those Censuses was compiled in essentially the same manner as in Census 2000, described below in Section 1.3.2. The SP Prelist for the 1990 Census took place in January 1990. It was a field operation conducted out of the District Offices that lasted for a week and a half. Its purpose was to verify the existence and location of each SP, and otherwise accomplish the same tasks as Census 2000's Facility Questionnaire (FQ) operation (see Section 1.3.2) which superseded the SP Prelist. Prototype versions of the Facility Questionnaire were field tested in 1994 and 1995, and it underwent a thorough test in the Census 2000 Dress Rehearsal conducted in 1998.

1.3 Group Quarters Enumeration in Census 2000

1.3.1 Typing of Group Quarters

The system of GQ typecodes included nearly sixty distinct three-digit GQ types, which were effectively classified into nine broad categories, as discussed in Section 1.2. The following chart details the classification:

Types of Group Quarters Used In Census 2000 GQ Tabulation (Table 1.3)

Type of Facility	**GQ Types**
1: Correctional Institutions	101-107
2: Juvenile Institutions	201-209
3: Nursing Homes	301-307
4: Hospitals	400-410
5: Colleges and Universities	501
6: Military Facilities	601-603
7: Service-Based (SBE) Facilities	701-706
8: Group Homes	801-805
9: Other	900-906, 908, 909,911

Appendix A contains a complete list of GQ typecodes used in Census 2000 tabulation.

In addition to these types, two GQ types existed for the purpose of classifying facilities whose residences were treated as housing units. These were:

- GQ type 910, which were reserved for T-Night facilities (recreational vehicle (RV) parks, marinas, campgrounds, workers' housing at racetracks, fairs, and carnivals); and
- GQ type 913, dangerous encampments.

1.3.2 Address List Creation

The Special Place Inventory

From 1996 through 1998, the Census Bureau's Population Division (POP) did extensive research to identify prospective Special Places, combing reference materials and inventories compiled by trade associations, private concerns, the Census Bureau (including the Special Place inventory from the 1990 Census), and other governmental agencies. The resulting inventory formed the basis of the file variously known as the SP/GQ Control File, the SP/GQ Master File, or simply the SP/GQ File, which is what it will be called in this evaluation. Additional SPs gleaned from other pre-Census operations such as Address Listing and Block Canvassing were added to the SP/GQ file.

The SP/GQ File

The SP/GQ File, which was maintained by the Decennial Systems and Contracts Management Office (DSCMO), was the main repository of what was known about each SP and each GQ, and it was the hub of the information flow involving all SPs and GQs. Electronic files were developed from the SP/GQ File to support updating operations involving GQs, and the information gained was added to the SP/GQ File. The SP/GQ File updates were sent to the Geography Division (GEO) to update the Master Address File (MAF) and assign MAF IDs[2]. The SP/GQ File, updated with the addition of the MAF IDs, was then the basis for the next Census operation.

The Facility Questionnaire Operation

The Facility Questionnaire (FQ) operation was the means for gathering information about GQs and housing units in each Special Place. For each GQ, the Facility Questionnaire collected information on:

- where the GQ was
- what type of GQ it was
- approximately how many people would be living there on Census Day (the *expected*

[2]MAF IDs were 14-digit numbers that uniquely identified every address on the MAF.

population of the GQ) and its capacity (or *maximum population)*
- if there were times when enumeration would not be possible
- if the GQ contained any housing units.

The Facility Questionnaire operation was implemented in two distinct phases:

- the Facility Questionnaire Computer Assisted Telephone Interview (FQ-CATI), which gathered as much information as possible about each SP by telephone, and
- the Facility Questionnaire Personal Visit (FQPV), in which field workers conducted personal visit interviews with the contact persons of SPs that the CATI operation was unable to complete an interview with.

The CATI operation began in November 1998, and continued through August 1999. The Personal Visit operation ran from April to November 1999. Because of this overlap, and because the SP/GQ File was still being updated with lists of SPs from other sources as late as the summer of 1999, these operations were implemented in waves. There was never a single delivery of the entire file from the SP/GQ file to these operations, or vice versa.

Each wave originated from the SP/GQ File. A file was prepared for transfer to the CATI operation which was run by the Technologies Management Office (TMO). Working from that file, the callers in the telephone centers contacted the individual SPs and attempted to gather the necessary information, which they entered into the computerized system. Once a wave was finished in CATI, the captured data was transferred back to the DSCMO, who updated the SP/GQ File; from there, the records in that wave went to the GEO, who updated the MAF and returned the records with MAF IDs. The records in each wave were returned to TMO for inclusion in the Operational Control System 2000 (OCS 2000) system. The OCS 2000 system was used to track the workload in the Personal Visit phase of the Facility Questionnaire operation.

Field workers received their Facility Questionnaire Personal Visit assignments from the OCS 2000 system. They interviewed contact persons at the SPs and recorded the answers on paper Facility Questionnaires. The questionnaire data was then keyed into a data entry system and added to the SP/GQ File.

Between the Facility Questionnaire Operation and Enumeration

In November 1999, after completion of the FQPV operation, the entire SP/GQ file was unduplicated to the extent practicable and edited by the DSCMO. The file was transferred to the GEO to update the MAF, and then returned to the DSCMO with MAF IDs. This file, as adapted to the format of OCS 2000, is the file that was used to control the following Census field operations:

- Special Place Local Update of Census Addresses (SP LUCA)

- Local Knowledge Update
- Special Place Advance Visit
- GQ Enumeration

The SP LUCA operation (December 1999 - April 2000) allowed local governments to examine and add to the Census' list of Special Places and GQs. In Local Knowledge Update (January-February 2000), enumerators in each Local Census Office (LCO) were instructed to do so as well. Special Place Advance Visit enumerators visited Special Places already on the address list in February and March 2000 to verify and correct the information on OCS 2000 for each of the GQs at those Special Places. Adds and changes from these operations were entered into OCS 2000 in the LCOs (for Local Knowledge Update and Advance Visit) and the Regional Census Centers (RCCs) (for SP LUCA).

The SP/GQ File was not updated again until after the completion of all these operations; all changes in the interim were recorded on the OCS 2000 tracking system used in the field.

1.3.3 Group Quarters Enumeration

There were four main types of GQ questionnaires: the Individual Census Report (ICR), the Individual Census Questionnaire (ICQ), the Military Census Report (MCR), and the Shipboard Census Report (SCR). The ICR was the form used to enumerate the vast majority of the GQ population. The MCR, as the name implies, was used solely to enumerate armed forces personnel; the SCR was used to enumerate both military and civilian shipboard residents. The ICQ was used solely for enumerations at soup kitchens and mobile food vans.

The enumeration procedures differed with each form, and are described below.

Enumeration With ICRs and ICQs

From the OCS 2000 tracking system, GQ enumerators received a computer-generated control form[3] for each GQ. This form listed the name, the address, the control ID (the GQID[4]) of the GQ, and its expected population. The enumerator also was provided with blank questionnaires to enumerate the GQ residents.

When ICRs were used, the preferred method of response was for the respondents to fill out the questionnaires themselves, but many were filled out from the Special Place's administrative data, and some were filled out by the enumerator as he interviewed the respondent. (See Section 6.) In enumeration at soup kitchens and mobile food vans, where ICQs were used,

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[3]The Form D-352 Enumeration Record.

[4]The GQID was a 14-digit number that uniquely identified each GQ on the SP/GQ File and in the OCS 2000 control system.

enumerators normally interviewed the respondents, but if a client of the facility declined to be interviewed, the enumerator's fallback method was to collect person data by observation.

People counted at certain kinds of GQs could declare a 'usual home elsewhere' (UHE). That is, they could state on their questionnaire that their primary residence was not the GQ but a housing unit, and they could write in the address. (See Section 8.)

The enumerator collected the questionnaires and reviewed them for completeness. He/she transcribed the fourteen-digit GQID and a four-digit person number (PN) from the control form into the appropriate boxes on each Census questionnaire, wrote down the number of completed questionnaires on the control form, and returned everything to the LCO in a large envelope.

Enumeration With MCRs and SCRs

Military bases, and military and civilian ships, were self-enumerating facilities in Census 2000, as they had been in previous Censuses. Enumeration on each military base was supervised by a Project Officer for that base, and conducted by Unit Representatives of each military unit. The Project Officer and Unit Representatives were armed forces personnel; they (along with clerks who handled the questionnaires on base) were sworn in and trained by a Census Representative from the LCO.

The MCR questionnaires[5] and other enumeration materials were brought to the base by the Census Representative, and distributed to the Unit Representatives by the Project Officer. The Unit Representatives distributed the questionnaires to the personnel in their units, collected the questionnaires and reviewed them for completeness, followed up on missing and incomplete questionnaires, and returned the completed materials to the Project Officer. After another review by on-base clerks, the Project Officer returned the questionnaires and other enumeration materials to the Census Representative, who reviewed them and returned them to the LCO. At this point, the questionnaires were still grouped by military working unit. At the LCO, the forms were divided into stacks, one for each GQ. The appropriate GQID was transcribed onto the individual questionnaires in each such stack. All MCRs claiming a UHE were placed in a separate stack. No GQID was transcribed onto the questionnaires in that stack.

The procedures for enumeration using SCRs were similar but simpler. The Census Bureau's National Processing Center (NPC) mailed questionnaires and other enumeration materials to each military and civilian ship enumerated, and the completed questionnaires and materials were mailed back, bypassing the LCOs. Since each ship was a single GQ, no re-sorting by GQ was required. Otherwise the procedures for SCR enumeration were closely analogous to those for MCR enumeration.

[5] ICRs were used to enumerate civilians living on military bases.

1.3.4 Data Collection and Processing

From the Enumerator to Data Capture: Tracking the Questionnaire Count

Individual GQ questionnaires were not tracked during processing between enumeration and data capture. Only a count of the total number of questionnaires associated with each GQ was recorded. This was done at five points along their route through post-enumeration processing:

- By the enumerator, immediately after enumeration (recorded on the control sheet; see Section 1.3.3)
- By the LCO staff, when the GQ materials[6] were checked in from the field
- By the LCO staff, when the GQ materials were checked out to be sent to the NPC in Jeffersonville, IN
- By the NPC staff, when the GQ materials were checked in on arrival from the LCO
- By the data capture system, when the questionnaires were scanned and turned into electronic images.

From the Enumerator to Data Capture: Opportunities for Questionnaire Loss

There are reports from the field of GQ questionnaires being returned to the LCOs long after enumeration took place, which suggests that some small but undetermined number of completed questionnaires were not returned to the LCO at all.

LCO check-in and checkout counts of questionnaires indicate that questionnaires occasionally were misallocated. Those count discrepancies suggest that most of the count discrepancies were caused by questionnaires counted with different GQs at check-in and checkout.

There were four Data Capture Centers (DCCs) in Census 2000, but all GQ questionnaires were sent to the DCC at the NPC in Jeffersonville. Sometimes GQ questionnaires were erroneously shipped from an LCO to another DCC, and were then forwarded to the NPC.

In May 2000, as enumeration was nearing completion, the NPC reported that a considerable number of GQ questionnaires did not have GQIDs on them, and/or had no associated control sheet. A team of Census HQ staff who were familiar with GQ enumeration went to Jeffersonville and identified as many of the questionnaires as possible with a GQ. An estimated 700,000 questionnaires were handled by this process. No official records were kept of this special operation.

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[6]The GQ materials checked into and out of the LCO, and checked in at the NPC, consisted of the GQ questionnaires, the Form D-352, and other materials used in enumeration. The Form D-352 had an identifying barcode. At check-in and checkout, the barcode was wanded, and the questionnaires counted.

From Data Capture to the Final Counts: Offpop

After all the GQ questionnaires were data captured at the NPC and the captured data transmitted to Census headquarters, the SP/GQ File was updated with the counts listed at the beginning of Section 1.3.4, as well as with updates from the pre-Census operations (such as Advance Visit) listed at the end of Section 1.3.2. Examination of the counts by the interdivisional SP/GQ team at Census headquarters suggested that the data capture count was incomplete in various ways:

- A number of GQs had no recorded population, and were believed to have refused to be enumerated.
- A number of GQs had data capture population that fell far below the expected population recorded from the Facility Questionnaire and Advance Visit operations.
- A number of GQs had higher population counts at LCO checkout than at data capture.

In order to accommodate the changed counts, a temporary count called the "Offpop," short for "Official Population," was created for each GQ. For the vast majority of GQs, their Offpop was their data capture count. But for those that received a higher count as a result of the operations discussed in the following paragraphs, the Offpop was the new, higher count.

Two telephone operations were undertaken in July 2000 to address the problems listed in the first two causes listed earlier. The 'refusal' GQs, and the GQs with lower-than-expected data capture counts, were asked for their Census Day populations over the telephone, and unless that count was lower than the number of forms that were data captured from that GQ, the count received over the phone was accepted as the Offpop.

For the GQs that had higher counts at LCO checkout than at data capture, no new information was needed. The Special Places containing such GQs were considered as a whole, and if the SP had a higher count at LCO checkout than at data capture, then that difference was added to the count of the SP as a whole[7]. The difference was allocated among the SP's component GQs proportionately to the difference between the two counts for each GQ.[8]

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[7]Count differences were resolved at the SP level because inspection of the SP/GQ File had found SPs for which the data capture count and LCO checkout count were identical, but were unequal for their individual GQs. We assumed that questionnaires counted with one GQ at LCO checkout were attributed to another at data capture. If GQ A at a SP had counts of 300 at checkout and 500 at data capture, while GQ B at the same SP had 500 at checkout and 300 at data capture, then there was no reason to conclude that any records were missed.

[8]Full details of the allocation are in Decennial Statistical Studies Division (DSSD) Census 2000 Procedures and Operations Memorandum Series #O-14, Specification for Setting the Official Population for Each Group Quarters in the Special Place/Group Quarters Universe, March 20, 2001.

From Data Capture to the Final Counts: Household and BCF Adds, SBE Unduplication

The Offpop was not the final count. It was the best reflection of the number of people present at each GQ on the day of enumeration. But this count was updated by additional processing involving data captured person records that added persons to and subtracted persons from the GQ universe, mostly the latter.

- Adds to the GQ population came from:
  -- Be Counted Forms (BCFs)
  -- Household Questionnaires
- Subtractions left as a result of:
  -- Unduplication of Service-Based Enumeration (SBE) Facilities
  -- Persons declaring a Usual Home Elsewhere (UHE)

Persons with no usual residence were encouraged to fill out BCFs. Such persons were allocated to the shelters and other SBE locations in the LCOs where they turned in their forms. If there were no SBE locations in the LCO, these persons were allocated to other GQs in the LCO.

Some housing units had been in both the Housing Unit (HU) universe and the GQ universe in early versions of the Decennial MAF. These duplications were identified after the Census mailout list was compiled. Thus, these units were mailed a Census household questionnaire. If the HU questionnaire was returned, the persons listed on them were included in the count for the GQ at that address. No procedure existed to unduplicate persons who were consequently counted twice.

The SBE enumeration involved a number of opportunities for persons to be counted multiple times, and an unduplication process removed double-counts of duplicate enumerations from the Census.

Respondents at certain types of GQs could declare a 'Usual Home Elsewhere': that is, they could check a box to indicate that the GQ was not their usual residence, and provide the address of their usual residence.[9] If the Census was able to verify that a HU was at the given address, then the respondent was counted at that residence, and not in the GQ.

The handling of UHEs in Census 2000 is a fairly complex topic, and a more detailed treatment follows.

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[9]The types of GQs not eligible to declare a UHE: residents of prisons, juvenile facilities, hospital facilities, nursing homes, college dormitories, emergency shelters, and those enumerated at targeted nonsheltered outdoor locations. All others who filled out GQ questionnaires were eligible to declare a UHE, including armed forces personnel, those enumerated at soup kitchens and mobile food vans, residents of group homes, worker dormitories, civilian ships, and religious GQs.

From Data Capture to the Final Counts: Usual Homes Elsewhere and the Non-ID Process

The Non-ID process was the mechanism for placing a person claiming a Usual Home Elsewhere in the appropriate non-GQ residence. In order for a person record to be included in the Non-ID process, three conditions were required:

- The person record had to be from a GQ of an appropriate type, one of the following:
  -- Military GQs
  -- Group homes
  -- Workers' dormitories
  -- Religious GQs
  -- Other miscellaneous GQs
- In response to a screening question, the respondent had to have checked a box indicating that he had another residence where he lived or stayed most of the time; and
- the respondent had to provide an address of that residence.

Records that were included in the Non-ID process were geocoded and matched to the MAF. ICR and ICQ person records that could not be geocoded were returned to their GQs; nongeocodable MCR and SCR person records were dropped from the Census. (Analysis of 1990 Search/Match add rates showed only an eight percent add rate for MCRs which declared a UHE - less than half that for ICRs - indicating that military UHEs were much more likely than civilian UHEs to already appear on a HU questionnaire.[10])

If a geocoded record also could be matched to a housing unit on the MAF, then the person was tabulated at that HU. If the record could not be matched to the MAF, then it went into the Non-ID process' Field Verification (FV) operation. If the address provided by the respondent on the questionnaire was confirmed as a valid housing unit, then the respondent was tabulated at that housing unit. If not, the record was returned to the GQ universe.

How records were actually identified for inclusion into the Non-ID Process, however, differed from how they were supposed to be identified. Initially, all records that included a UHE address were included in the Non-ID process - regardless of what type of GQ they came from, or how the respondent had answered the screening question. The identification of records ineligible for the Non-ID Process because of inappropriate GQ type was done after the records were geocoded and matched to the MAF.

But the answers to the screening question were never used to exclude the records from the Non-ID Process. As a result, a substantial number of questionnaires were pulled out of the GQ universe that should have stayed in the GQ universe. See discussion in Section 8.

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[10]Results from the 1990 Search/Match Operation: Add Rates and Erroneous Enumeration Rates by Search Form Type, 1990 Decennial Census Preliminary Research and Evaluation Memorandum No. 214 (1993). Search/Match was the predecessor to the Non-ID Process.

1.3.5 T-Night and Embedded Housing Units

Embedded and Free-Standing Housing Units

One challenging aspect of GQ enumeration was the existence of HUs on the grounds of Special Places, some of which were physically inside of facilities. For instance, a college might have a free-standing house for the college president on its grounds, and it also might have, within a dormitory, an apartment for a 'dorm mother.' The former would be known as a "free-standing housing unit," and the latter as an "embedded housing unit."

Housing units of both kinds were identified at Special Places through the Facility Questionnaire operation. The addresses and locations of the free-standing HUs at SPs were included in HU enumeration in Census 2000, and GQ enumerators had lists of these HUs at the SPs.

Embedded HUs, on the other hand, were enumerated as part of GQ enumeration. Enumerators also had lists of known embedded HUs, and were given HU questionnaires to enumerate the residents of embedded HUs with. They also had extra HU questionnaires to enumerate any HUs they encountered that were not on their lists.

T-Night Housing Units

Locations such as RV parks, campgrounds, marinas, racetracks, fairs, and carnivals, were known as *transient locations* since persons living or staying there on Census Day were not likely to be at that location year-round. Persons at these locations were enumerated by the T-Night (short for "transient night") operation if they indicated they had no other usual home.

At RV parks, marinas, and campgrounds, the object was to enumerate persons who primarily lived in RVs and houseboats, or other mobile or temporary housing. At racetracks, fairs, and carnivals, the population being enumerated was the resident workforce. Housing unit questionnaires were used to enumerate all such persons.

These locations were identified as part of the Facility Questionnaire operation, but were not included in the Special Place Advance Visit operation. No record was kept of the number of HU questionnaires filled out at each location, and no linkage was preserved between the questionnaires and the T-Night locations.

Enumerators were instructed to write a two-digit code in a box on the HU questionnaire to identify it as a questionnaire from a T-Night location. The questionnaires coded in this manner were identified and tabulated for this evaluation. (See Section 10.)

2. METHODS

2.1 Files Used in This Evaluation

2.1.1 Introduction

Four data sources were used to produce the numbers in this study:

- the SP/GQ File
- the Hundred Percent Census Unedited File (HCUF)
- the Hundred Percent Census Edited File (HCEF)
- the Non-ID File.

2.1.2 The SP/GQ File

The SP/GQ File, also known as the SP/GQ Master File or the SP/GQ Control File, was initially developed in 1997-98 from the Special Place Inventory compiled by Population Division. It was (and is still) maintained by the DSCMO. Its purpose was to keep a record of each Special Place, each Group Quarters, and each housing unit at a SP or GQ. The file was updated periodically, as the Facility Questionnaire and other operations caused SP and GQ records to be added to and deleted from the file. As a result, 'snapshots' of the SP/GQ File were kept as it had existed at different points in its development. The snapshots used in this evaluation were:

- The final file, including only those GQs that were on the HCUF and HCEF;
- The pre-Census snapshot;
- The post-Census, pre-cleanup snapshot.

The final file is used throughout this evaluation. When "the SP/GQ File" is cited without modification, it is the final file that is being cited.

The pre-Census snapshot, used only in Chapter 5 and Section 3.2.6, is the file as it existed in January 2000, at the time that the SP and GQ records on OCS 2000 were created from the SP/GQ file for use in the Census 2000 field operations.

The post-Census, pre-cleanup snapshot, used only in Section 3.2.6, is the file as it existed after the Census, when the changes resulting from all operations had been added to each record, but before any records were deleted for any reason.

2.1.3 The HCUF and HCEF

The HCUF and the HCEF were the official Census 2000 unedited and edited files.

2.1.4 The Non-ID File

The Non-ID File is a file of GQ person records that listed a Usual Home Elsewhere (UHE). It was created by the DSCMO for use in DSSD evaluations.

2.2 Geography Included in This Evaluation

All group quarters in the fifty states, the District of Columbia, and Puerto Rico are included in the summary statistics in this evaluation. State-by-state breakdowns of the GQ population, and the number of GQs, are provided in Appendices C and D.

2.3 Group Quarters and Special Place Types

The typecoding of Special Places for this evaluation went as follows: each Special Place on the SP/GQ File was assigned a typecode between 001 and 012 on the basis of its answers to the Facility Questionnaire. Types 001-008 on the SP/GQ File corresponded naturally with the GQ types: Correctional GQs were typecoded in the 100s, and correctional SPs were typecoded 001; juvenile facility GQs and SPs, 200s and 002, respectively; and so forth through group home GQs and SPs, 800s and 008, respectively.

Special Place types 010 and 011 on the SP/GQ File were reserved for T-Night locations and hotel/motels, respectively, neither of which contained any GQs. And SP types 009 and 012 on the SP/GQ File were assigned to SPs with GQs in the 900s.

However, the GQ types of over 20,000 of the 192,286 GQs in Census 2000 did not correspond with their SPs' types as recorded on the SP/GQ File. Consequently, a new typecoding of SPs was created to more closely reflect the GQs in the SP, for purposes of this study.

In doing so, the basic structure of the SP typecoding system remained largely unchanged. The SP types for this study are SP types 1-9. Types 1-8 correspond with types 001-008 on the SP/GQ File, and Type 9 corresponds with Types 009 and 012 combined. (In theory, there should have been no GQs in SPs of types 010 and 011, so no type was created for this evaluation to correspond with those types on the SP/GQ File.)

SP types from 1 to 9 were assigned to each SP by a two-step process. The first step was to assign an SP type to each GQ. Then the SP was assigned a type on the basis of the SP types of its component GQs.

Giving an SP type to each GQ was straightforward:

- For most GQ types, the SP type was the first digit of the GQ type.
  -- For instance, if the GQ type was 304, the SP type was 3.

- GQs with types 105, 401, 410, and 904 were given SP type 6. (These were military prisons, hospitals, and staff dormitories. Military bases were to have SP type 6.)

Once each GQ was assigned an SP type, the SP type assigned to the SP was the mode of the SP types assigned to its component GQs, that is, the SP type that appeared most frequently among the component GQs. These are the SP types used throughout this evaluation.

2.4 Use of JIC3 'Just-In-Case' Box

2.4.1 In Determining How GQ Questionnaires Were Filled Out

At GQ enumeration, enumerators were supposed to mark '11', '12', or '13' in the JIC3 box on each GQ questionnaire. The second digit was to indicate the means of filling out the questionnaire: '1', '2', or '3' if the questionnaire was filled out by the respondent, by the enumerator from interviewing the respondent, or from administrative data, respectively. The initial '1' was to indicate that the source of the questionnaire was GQ enumeration, even though this was apparent from the questionnaire.

Since the first digit of the response was superfluous, only the second digit in the JIC3 box was used to determine how each questionnaire was filled out.

2.4.2 In Determining That a HU Questionnaire Was from T-Night

At T-Night enumeration, enumerators were supposed to mark '22' in the JIC3 box on each HU questionnaire. The initial '2' was to indicate that the source of the questionnaire was T-Night enumeration. All T-Night questionnaires were to be filled out by the enumerator through an interview with the respondent.

Since the second digit of the response was superfluous, only the first digit in the JIC3 box was used to determine whether a questionnaire was a T-Night questionnaire.

2.5 Sampling

In Section 8.4.2, the results are based on statistical estimates of the number of duplicate person records within the GQ universe. The sample, and the method on which these estimates are based, are described here.

2.5.1 The Sample Universe and Sample Strata

The sample universe consisted of all GQs other than military, correctional, and service-based facilities. This created a sample universe of 154,042 GQs containing 5,156,168 person records.

The sample was motivated by the discovery that a number of small GQs, particularly group homes and religious GQs, had doubled in population between the GQ data capture count and the HCUF. Inspection of the person records showed that many of these GQs had been enumerated twice, once on the GQ questionnaires and again on the mail return HU questionnaires. Persons on both types of questionnaires were included in the total count for the GQ on the HCUF.

The sample strata were designed to estimate the level of duplicate enumeration in the sampling universe. The sampling universe was divided into five strata:

- Group homes and religious GQs whose population count increased from Offpop to HCUF
- Other GQs whose population count increased from Offpop to HCUF
- GQs whose population count stayed the same from Offpop to HCUF
- Group homes and religious GQs whose population count decreased from Offpop to HCUF
- Other GQs whose population count decreased from Offpop to HCUF.

These strata are referred to below as Strata 1-5, respectively.

2.5.2 The Sample

Based on error estimates and available clerical resources, it was decided to sample 100 GQs each from each of Strata 1, 2, and 4, and 50 each from Strata 3 and 5. Within each stratum, the GQs were listed in the order of their GQIDs, which began with their LCO number. A systematic random sample of GQs was then drawn from each stratum. We oversampled the group home and religious GQs so that we could produce reliable estimates separately for this stratum.

2.5.3 Matching

Within each GQ in the sample, the person records were ordered in alphabetical order by last name and first name. Rules for identifying duplicate persons were provided to DSSD clerical staff, who reviewed the ordered lists of persons and identified matches. Matching was done clerically by name, sex, and age/date of birth. A hundred percent review of the matching was conducted by a second person. The complete matching rules are in Appendix B.

2.5.4 Determination of Statistical Estimates

Within each of the strata listed in Section 2.5.1, a sample of GQs was chosen. All persons in each selected GQ were included in the sample.

Let N and n be the number of GQs in the sampled population, and in the sample, respectively. Then let N_h be the number of GQs in stratum h, and let n_h be the number of sample GQs in that stratum.

Given the jth person record in the ith GQ of a stratum, let y_{ij} equal 1 or 0, depending on whether that person record matches a previous person record in that GQ. Let y_i be the number of matches (the sum of the y_{ij}'s) in the ith GQ, and let M_i be the number of person records in that GQ. And let $\bar{y}_i = y_i/M_i$, the proportion of duplicate person records in GQ I.

Then the best point estimate for the proportion of duplicated person records in stratum h is $\bar{y}_h = \sum y_i / \sum M_i$. The estimate of the sampling variance for $\bar{y}_h$ is:

$$\hat{V}(\bar{y}_h) = \left(\frac{N_h - n_h}{n_h N_h}\right)\left(\frac{1}{n_h - 1}\right)\sum_{i=1}^{n}\left(\frac{M_i^2}{\overline{M}_n^2}(\bar{y}_i - \bar{y}_h)^2\right)$$

where $\overline{M}_n = \sum_{i=1}^{n} M_i / n$.

For the sampled population as a whole, the best point estimate is $\sum \bar{y}_h$

and the sample variance is $\sum \left(N_h / N\right)^2 \hat{V}_h$.

3. LIMITATIONS

3.1 Global Limitations

3.1.1 Introduction

There were two global limitations that affected this evaluation as a whole. These were:

- The absence of a system for tracking individual questionnaires through the enumeration process, and
- The limitations of the system designed to track Special Places and Group Quarters from the beginning of the Facility Questionnaire process through tabulation.

3.1.2 The Absence of Tracking Information for Individual Questionnaires

Individual GQ questionnaires contained a space where enumerators recorded the GQID and the person number (PN) at the time of enumeration. No GQID or bar-coded information was preprinted on the GQ questionnaires. As Section 7.4 will discuss, there was room for error and omission at this step. This tracking information was not used to track the progress of individual forms from enumeration to data capture. Information on which questionnaires were captured for each GQ was not available for this report. So prior to HCUF creation, we cannot say which person records were in a GQ.

This deficiency affected Chapters 7 and 8 of this evaluation in particular, making it impossible in Sections 7.2, 7.3, and 7.5 to develop an exact correspondence between changes in Official Population with imputed person records, and making Section 7.4 necessary in the first place. In Section 8.1, the ability to track individual questionnaires would have resulted in an exact count of person records added to and subtracted from the GQ universe, rather than a net per GQ. In Section 8.2, that ability would have enabled a direct comparison of the data capture and HCUF files to identify which person records were lost to the GQ universe in the UHE process, instead of having to rely on very indirect means of comparison to ascertain what happened during processing.

3.1.3 The Limitations of the System That Tracked Special Places and Group Quarters

The deletion of Special Places and GQs was accomplished by deleting a record from the SP/GQ File. If an SP or GQ record was deleted from the universe in the CATI phase of the Facility Questionnaire operation, its record was deleted from the database. Similarly, if records were deleted during the Personal Visit phase of the Facility Questionnaire operation, they were dropped from the SP/GQ File before it was reconciled with the MAF in November 1999. As a result, there are no counts of the potential Special Places contacted in CATI but found not to be SPs at that stage, nor are there counts of SPs visited but eliminated from the universe in the Personal Visit phase. All we have are the survivors. This reduced the number of comparisons we could draw between the SP/GQ universe as it was seen in the Facility Questionnaire

operation, and the universe as it existed after enumeration.

Furthermore, if SPs and GQs were deleted and later re-added during enumeration, they received new IDs when they were re-added, rather than re-acquiring their original IDs. As a result, comparing snapshots of the SP/GQ file at different times does not allow a record of a SP from the Facility Questionnaire operation to be identified with a record of the same SP at enumeration, if it was deleted and re-added during enumeration. (According to headquarters personnel involved in the GQ field operations in Census 2000, there were a significant percentage of such deletes and re-adds.) This made our comparison of the Facility Questionnaire and enumeration universe problematic in Section 5.1, and shrank the universe we had to work with when comparing the expected populations from the Facility Questionnaire operation with the actual population of each GQ at enumeration.

3.2 Specific Limitations

3.2.1 There Is No Pre-Enumeration SP/GQ File with Adds from 2000 Pre-Enumeration Operations.

The absence of such a file removes the possibility of distinguishing adds from Local Knowledge Update and Advance Visit from adds at the time of enumeration.

3.2.2 Most GQs Did not Have a Recorded Maximum Population on the SP/GQ file.

This fact made it impossible in Section 5.2.1 to answer the question about the efficacy of acquiring maximum population projections from Special Place representatives.

3.2.3 The Coding of GQ Questionnaires to Indicate How They Were Filled Out, Depended on the Diligence of the Individual Enumerators.

As indicated in Chapter 6, one out of every eight ICRs was either left uncoded in this respect, or given a code that was out of range. (Higher percentages of absent/erroneous codes were recorded for the other GQ questionnaire types.) The degree of error in the within-range codes is unknown, but it would be prudent not to divine too much importance in small differences in the tallies in Chapter 6.

3.2.4 The Non-ID File Omitted Short Form ICQ Records Which Were Included in the Non-ID Process.

The Non-ID File made available by DSCMO includes short and long form ICR records, but only long form ICQ records. The original data files from which the Non-ID File was created are no longer available. However, one out of every six ICQs should have been a long form, so the number of ICQ records missing from the Non-ID counts is easily estimated.

3.2.5 Identification of T-Night Questionnaires Is Entirely Dependent on Coding by Enumerators.

The percentage of T-Night questionnaires that *were not* coded properly, or not coded at all, is unknown. As a result, how many household questionnaires in the Census are T-Night questionnaires, but are not identified as such, is unknown. This is a limitation on the accuracy of the numbers in Section 10.1 and 10.2.

3.2.6 It Is Unclear How Many SPs and GQs Were on the SP/GQ File That Did Not Contribute to the Final Census Tally.

The Facility Questionnaire operation resulted in a file of 137,584 Special Places, and 270,009 GQs. There were 100,358 Special Places and 192,286 GQs were on the final file resulting from enumeration. There were 71,851 Special Places and 120,446 GQs were on both files.

There were 191,258 Special Places on the final version of the SP/GQ file before all facilities without population were cleaned from the file. All but 75 of the SPs from the Facility Questionnaire operation were on the final file, so a total of 191,333 potential SPs are known to have been on the SP/GQ file during 2000, and were presumably visited during Advance Visit or during enumeration itself.

A large number of SPs and GQs are believed to have been deleted and re-added in the LCOs in order to meet deadlines. But with just under 72,000 SPs that are on both the pre-census SP/GQ File and the final version of the file, fewer than 29,000 SPs could have been deleted and re-added to appear under different Special Place IDs on the file. And we had a net loss of 37,000 SPs between the pre-census SP/GQ File and the final version of the file. With 72,000 SPs present throughout Census 2000, 37,000 deletes, and 29,000 counted twice, we can explain approximately 167,000 SPs. Since it is difficult to believe that SP LUCA and Local Knowledge Update added 24,000 SPs to the rolls, it is hard to account for the total number of distinct Special Place IDs on the file.

File counts suggest that the forms of residents at some GQs were data captured at other GQs in the same SP. It is possible that in some cases, all of the residents of a GQ were data captured at another GQ. This could have resulted in valid GQs not appearing in the Census. If so, this would have caused the GQ counts in Chapter 4 to be slightly understated.

RESULTS

4. THE GROUP QUARTERS UNIVERSE: STATISTICAL SUMMARY

4.1 Composition of the GQ Universe: Number of Special Places, Group Quarters, Population

Tables 4.1a and 4.1b, below, show the overall composition of the GQ universe, as enumerated in Census 2000.

Number of Special Places Enumerated (Table 4.1a)

	Special Places	
Special Place Type	**Number**	**Percent**
1: Correctional Institutions	5,420	5.4
2: Juvenile Institutions	2,440	2.4
3: Nursing Homes	21,051	21.0
4: Hospitals	3,552	3.5
5: Colleges and Universities	3,528	3.5
6: Military Facilities	916	0.9
7: Service-Based Facilities and Other GQs	38,783	38.7
8: Group Homes	24,668	24.6
Totals	**100,358**	**100.0**

Sources: HCEF, SP/GQ File

Number of Group Quarters Enumerated (Table 4.1b)

	Group Quarters		Population	
Group Quarters Category	**Number**	**Percent**	**Number**	**Percent**
1: Correctional Institutions	15,775	8.2	1,993,302	25.5
2: Juvenile Institutions	6,335	3.3	129,132	1.7
3: Nursing Homes	29,736	15.5	1,727,811	22.1
4: Hospitals	9,289	4.8	237,597	3.0
5: Colleges and Universities	23,842	12.4	2,066,302	26.4
6: Military Facilities	6,104	3.2	356,354	4.6
7: Service-Based Facilities and Other GQs	56,092	29.1	854,435	10.9
8: Group Homes	45,113	23.5	460,474	5.9
Totals	**192,286**	**100.0**	**7,825,407**	**100.0**

Source: HCEF

Some quick facts about the GQ universe enumerated in Census 2000:

- The GQ universe was home to 7.8 million people in 2000.

- Colleges (2.1 million), prisons (2 million), and nursing homes (1.7 million) had the most people in 2000. Population-wise, the GQ universe divides into four nearly equal pieces: colleges, prisons, nursing homes, and all other GQs.
- 192,286 GQs were enumerated in 100,358 Special Places.

4.2 How Many GQs Did Each Special Place Contain? What Proportion of GQs Were in Large SPs, and What Proportion Were in Small SPs?

The following table sheds some light on which types of Special Places had many GQs, and which did not. But first, two quick facts to put the table in context:

- Roughly 78 percent of the Special Places enumerated consisted of only one GQ.
- Over 98 percent of SPs contained fewer than 10 GQs.

Distribution of GQs, by Size of SP (Table 4.2)

Special Place Type	Number of GQs in SPs with: More than 10 GQs		More than 50 GQs		All GQs
	Number	Percent of SP Type	Number	Percent of SP Type	
1: Correctional Institutions	6,280	39.8	652	4.1	15,775
2: Juvenile Institutions	1,392	22.0	184	2.9	6,335
3: Nursing Homes	825	2.8	7	0.0	29,736
4: Hospitals	2,984	32.1	333	3.6	9,289
5: Colleges and Universities	16,457	69.0	3,488	14.6	23,842
6: Military Facilities	4,932	80.8	2,880	47.2	6,104
7: Service-Based Fac./Other GQs	4,303	7.7	217	0.4	56,092
8: Group Homes	11,612	25.7	1,402	3.1	45,113
Totals	**48,785**	**25.4**	**9,163**	**4.8**	**192,286**

Note: percentages are of the right-hand column numbers. They do not sum vertically, and do not sum to 100 percent horizontally.
Sources: HCEF, SP/GQ File

But as the table shows:

- Two percent of the SPs are ‘large’ SPs (having 10 or more GQs) and contain over 25 percent of the GQs.
- Types having the largest proportion of GQs in large SPs:
  -- Military bases (81 percent)
  -- Colleges and universities (69 percent)
  -- Correctional institutions (40 percent).
- Types having the smallest proportion of GQs in large SPs:
  -- Nursing homes (three percent)

-- Service-based facilities and other GQs (eight percent).

4.3 How Many People Were Enumerated at Each Special Place? Each GQ? What Proportion of the GQ Population Were in Large SPs, and What Proportion Were in Small SPs?

The following table shows the distribution of Special Places by size of SP as measured by population. It also shows the distribution of the population of those SPs.

Distribution of Special Places, by Population (Table 4.3)

	Special Places		Population	
Number of Residents	**Number**	**Percentage**	**Number**	**Percentage**
1-9	40,516	40.4	178,335	2.3
10-24	20,504	20.4	312,644	4.0
25-49	12,182	12.1	436,562	5.6
50-99	12,867	12.8	923,811	11.8
100-249	9,884	9.8	1,434,274	18.3
250-499	1,956	2.0	675,723	8.6
500-999	1,154	1.2	821,605	10.5
1000 or more	1,295	1.3	3,042,453	38.9
All	**100,358**	**100.0**	**7,825,407**	**100.0**

Sources: HCEF, SP/GQ File

Different types of SPs have different size distributions, which is why the chart shows two distinct population peaks. In particular:

- Nearly 99 percent of the residents in Special Places with 1000 or more people were in colleges, prisons, and military bases:
  -- 61 percent of the prison population is in correctional facilities with over 1000 residents.
  -- 72 percent of the college population is at colleges and universities with over 1000 residents.
  -- 78 percent of the on-base military population in the Census lives on military bases with over
  1000 GQ residents.
- Excluding colleges, prisons, and military bases, only one percent of the rest of the GQ population was counted in SPs with 1000 or more residents.
- The bulk of the population in Special Places with between 50-99 residents, and between 100-249 residents, is attributable to nursing homes:

-- 78 percent of nursing home residents live in nursing home SPs with between 50 and 250 residents.
-- 90 percent of group home residents live in group home SPs with fewer than 250 residents.

- Forty percent of SPs had less than 10 residents, and 61 percent had less than 25 residents. These were mostly:
  -- Group homes
  -- SBEs and Other SPs
- The 40 percent of SPs with less than 10 residents had only 2.3 percent of the GQ population.

5. THE FACILITY QUESTIONNAIRE AND ENUMERATION

How did the actual GQ population counts compare with the expected and maximum population counts reported from the Facility Questionnaire and the Advance Visit operations?

As part of the Facility Questionnaire operation, the GQ contact person was asked, "how many residents do you expect to have on Census Day?" and "what is the maximum number of residents that can stay at (building name)?" The answers given to these questions were the expected population and maximum population, respectively, for the GQ. In the Advance Visit operation (in February and March of 2000), the contact person was asked whether the expected population given in response to the Facility Questionnaire was still valid, and given the opportunity to provide an updated estimate.

In this section, we will not be comparing the expected population with the population of the GQ shown on the HCEF, but rather with the "Offpop," the count of the persons at each GQ before persons claiming a UHE were removed from the population count of each applicable GQ. The purpose of the expected population was not to estimate the final tally, but to estimate the Census Day workload. The Offpop is the count on the SP/GQ file that best measures how many people actually filled out Census forms at the GQ when it was enumerated, regardless of how many of them may have ultimately been counted elsewhere.

5.1.1 Maximum Population

The maximum population count was reported in too spotty a manner to be of much use: of the 192,286 GQs enumerated, only 7,597 have a nonzero maximum capacity recorded on the file.

5.1.2 Expected Population on the Facility Questionnaire

Of the GQs canvassed in the Facility Questionnaire operation, 120,446 were ultimately enumerated. Of these GQs, 71 percent (85,397) had Offpop counts that were within 10 persons, or within 10 percent, whichever was larger, of the expected population.

5.1.3 Expected Population on the Advance Visit

For 84 percent of all GQs enumerated (161,529 out of 192,286), the expected population on the file at the time of enumeration (that is, after the Advance Visit) was within 10 or 10 percent, whichever was larger, of the Offpop. So for the vast majority of GQs, the post-Advance Visit expected population was a good predictor of workload.

5.1.4 Conclusions

In Census 2000, the revised workload estimates provided by the Advance Visit substantially improved the usefulness of the expected population as a predictor of enumeration workload.

6. ENUMERATION

How many GQ residents filled out their forms themselves, and how many forms were filled out by other means?

On each GQ questionnaire, the enumerator was supposed to record how the form was filled out by coding the second character of the JIC3 box on the back of the form with a '1,' a '2,' or a '3,' depending on whether the respondent had filled out the form him/herself, the enumerator had filled it out by interviewing the respondent, or the form had been filled out from administrative data.

The following table shows the results of the enumerators' coding.

How GQ Questionnaires Were Filled Out (Table 6.1a)

Method	Number	Percent
Respondent filled out form him/herself	1,872,951	24.8
Enumerator filled out form by interviewing respondent	727,759	9.7
Form filled out from administrative data	3,681,456	48.9
Blank or invalid response	1,249,502	16.6
Total	**7,531,668**	**100.0**

Note: the totals above exclude the household and Be Counted forms that were counted as part of the GQ universe.
Source: HCUF

- One-sixth of the forms either were not coded at all by the enumerators, or were given an invalid code.
- Of the forms that were coded within range (that is, the code supplied was not invalid or left blank):
  -- Some 58.6 percent were filled out from administrative data.
  -- Some 29.8 percent were filled out by the respondent.
  -- Some 11.6 percent were filled out by enumerator interview of the respondent.

Since 7.1 million of the 7.5 million GQ questionnaires in the Census were ICRs, they are worth looking at by themselves:

How ICRs Were Filled Out: Percent by Source for Each GQ Type (Table 6.1b)

Group Quarters Category	Admin Records	Respondent	Interview	No Response	Number
1: Correctional Institutions	56.3	15.3	4.4	24.0	1,930,233
2: Juvenile Institutions	48.8	23.8	9.9	17.5	122,291
3: Nursing Homes	72.8	5.0	15.1	7.1	1,707,039
4: Hospitals	65.8	8.8	9.8	15.6	216,403
5: Colleges and Universities	30.2	57.5	5.5	6.7	2,028,150
6: Military Facilities	37.6	36.9	5.7	19.7	279
7: Service-Based Fac./Other GQs	41.3	25.3	23.3	10.1	669,702
8: Group Homes	59.5	9.4	16.0	15.1	415,205
Totals	**51.7**	**25.8**	**10.0**	**12.5**	**7,089,302**

Note: Percentages sum up to 100 percent *by row*. (Subject to rounding.)
Source: HCUF

- At most types of GQs, use of administrative data was clearly the primary means of completing the questionnaires.
  -- Most ICRs filled out at correctional institutions (56 percent), hospitals (66 percent), nursing homes (73 percent), and group homes (60 percent), were filled out by administrative data.
  -- At juvenile institutions, more than half of the forms that were coded within range, were filled out from administrative data.
- Colleges and universities were the only facility where respondents filled out most of the ICRs completed (58 percent).

7. FROM LCO AND DATA CAPTURE COUNTS TO 'OFFICIAL POPULATION'

7.1 Introduction

The Census Bureau successfully captured 8,303,771 GQ questionnaires. However, the Official Population (Offpop) set on the SP/GQ file, the Census Bureau's intermediate assessment on how many people were present at the GQs on Census Day, was 8,515,020. This was 211,249 more than the number of captured questionnaires. This difference resulted in the imputation of 206,671 GQ person records. In the following sections of this chapter, we will show in more detail what the sources of the imputation are. But in a nutshell, the difference (and the resulting imputation) came from two sources:

- Two telephone followup operations, which added a count of 101,598 persons to the GQ universe; and
- The reconciliation of the multiple and often differing population counts for each GQ, which added a count of 109,651 persons to the GQ universe.

7.2 Effect of Telephone Operations on the GQ Population Counts

In July 2000, after GQ data capture was completed, two special review/followup operations were undertaken, one out of the RCCs to contact 'refusals' that would not allow enumeration to take place at their facilities, and another at the NPC to contact facilities whose data capture population of a GQ was substantially lower than expected. Telephone operations were put in place to ask the contact persons at facilities in both of these categories what their Census Day population had actually been. If the facility provided a count of its population on April 1, 2000, that count was accepted as definitive for that facility, unless that count was lower than the actual number of forms captured for that facility. The number of forms captured was an inviolable floor for the Offpop of a GQ.

Together, these operations accounted for 101,598 persons in the GQ universe that were not included in the data capture count. The following chart shows the combined results of these two operations, by SP type:

Effect of Phone Operations on Population of Affected GQs (Table 7.2)

Group Quarters Category	GQs	Data Capture Population	Population from Phone Ops	Increase	Percent of GQ Category Pop
1: Correctional Institutions	486	36,042	57,199	21,157	1.1
2: Juvenile Institutions	137	1,660	2,951	1,291	1.0
3: Nursing Homes	550	23,255	41,205	17,950	1.0
4: Hospitals	169	2,599	13,096	10,497	4.4
5: Colleges and Universities	351	37,328	55,332	18,004	0.9
6: Military Facilities	1	166	200	34	0.0
7: Service-Based Fac./Other GQs	1,373	15,412	38,735	23,323	2.7
8: Group Homes	598	4,702	14,044	9,342	2.0
Totals	**3,665**	**121,164**	**222,762**	**101,598**	**1.3**

Source: SP/GQ File.

- Most of these added person records were in prisons, nursing homes, and colleges.
- Each of those three GQ categories had between 17,000 and 21,000 person records added to their rolls through these operations.
- As a percentage of Census population, hospitals (4.4 percent), SBEs and other GQs (2.7 percent), and Group Homes (2.0 percent) were the big gainers from these operations.

7.3 Resolution of LCO Checkout and Data Capture Count Differences

Group quarters were tracked through the enumeration and data capture process, but the individual questionnaires were not tracked. Counts of the GQ questionnaires were recorded on each GQ control sheet at several points between enumeration and data capture. In August 2000, an effort was made to reconcile two of these counts – the count of questionnaires checked out of the LCO, and the number of questionnaires data captured for that GQ. To avoid problems caused by forms from one GQ at a SP being incorrectly counted with those from another GQ at the same SP, the reconciliation was done at the SP level.

The reconciliation consisted of taking the larger of the total LCO checkout pop (copop) and the total data capture pop (dcpop) for each SP as the "official population," or Offpop, for that SP. This reconciliation excluded the facilities that had their populations set by the telephone followup operations discussed in section 7.2. More detail is contained in the specification for this reconciliation, DSSD Census 2000 Procedures and Operations Memorandum Series #O-14, Specification for Setting the Official Population for Each Group Quarters in the Special Place/Group Quarters Universe (March 20,2001). The reconciliation accounted for 109,651 persons between the GQ Offpop total and the data capture count.

The following table shows the results of this reconciliation, by GQ category:

Effect of Checkout/Data Capture Pop Reconciliation on Affected GQs (Table 7.3)

Group Quarters Category	GQs	Data Capture Population	Population after Reconciliation	Increase	Percent of GQ Category Pop
1: Correctional Institutions	1,758	504,373	527,279	22,906	1.1
2: Juvenile Institutions	336	11,397	13,661	2,264	1.8
3: Nursing Homes	2,847	225,784	243,956	18,172	1.1
4: Hospitals	575	27,536	30,494	2,958	1.2
5: Colleges and Universities	2,386	310,047	331,765	21,718	1.1
6: Military Facilities	955	151,017	167,704	16,687	4.7
7: Service-Based Fac./Other GQs	3,445	104,122	120,963	16,841	2.0
8: Group Homes	2,269	31,389	39,494	8,105	1.8
Totals	**14,571**	**1,365,665**	**1,475,316**	**109,651**	**1.4**

Source: SP/GQ File

- The percentage increase in the military population is artificially high, since this reconciliation took place prior to Usual Homes Elsewhere being removed from the GQ universe. The increase represents only 1.7 percent of the pre-UHE military population.
- Prisons, colleges, nursing homes, and military bases were the big gainers from the reconciliation in terms of numbers.

7.4 Questionnaires With Blank or Insufficient GQ IDs

As the following table shows, 141,055 questionnaires (1.7 percent) out of the over 8.3 million captured did not have a GQID that matched a legitimate GQID on the file. Most of these were found to be shifts or transpositions of legitimate GQIDs, and could be matched by undoing the shift or transpose. This left 55,222 questionnaires, or 0.7 percent of all GQ questionnaires, whose GQIDs could not be fixed.

Invalid GQIDs on Data-Captured GQ Person Records (Table 7.4)

Quality of GQID	Number of Questionnaires	Percent
Fixable IDs	85,833	60.9
Blank IDs	33,711	23.9
Other Unfixable IDs	21,511	15.2
Total	**141,055**	**100.0**

Source: Email from DSCMO

The person counts added in the telephone operations were making up in large part for refusals and enumerations that, for one reason or another, failed to enumerate much of a GQ's population. As a result, it is not believed that there are lost questionnaires for many of the persons counted in the telephone operations.

However, counts added in the reconciliation between LCO checkout population and data capture population *were* once backed by questionnaires, if the LCO checkout count is to be trusted. The 55,222 questionnaires that were data captured, but not identified with a GQ, represent over half of these missing questionnaires. This at least in part supports the use of the count reconciliation procedure described in section 7.3.

7.5 Imputed Person Records

The table below shows the number of imputed person records, by SP type. Each percentage shown is the percentage of the Census population for that SP type that was imputed.

Number of Imputed Person Records, by GQ Category (Table 7.5)

Group Quarters Category	Imputed Person Records	
	Number	**Percent**
1: Correctional Institutions	44,019	2.2
2: Juvenile Institutions	3,544	2.7
3: Nursing Homes	35,935	2.1
4: Hospitals	13,400	5.6
5: Colleges and Universities	39,577	1.9
6: Military Facilities	16,637	4.7
7: Service-Based Facilities and Other GQs	37,391	4.4
8: Group Homes	16,168	3.5
All	**206,671**	**2.6**

Source: HCUF

- Approximately 5.6 percent of the hospital population was imputed.
- SBEs and other GQs, and military bases, had between 4.3 percent and 4.7 percent of their populations imputed.

8. FROM 'OFFICIAL POPULATION' TO HCUF COUNTS

8.1 Introduction

The GQ population count decreased from roughly 8.5 million to just over 7.8 million between the Offpop (which reflected the number of people found at the GQs at the time of the Census) and the final Census count (which reflected the number of people actually residing there).

Persons were both added to and subtracted from the GQ universe, as the following table indicates.

Change in GQ Population Between Offpop and the HCUF, by SP Type (Table 8.1)

Group Quarters Category	Offpop	GQs that gained- increase	GQs that lost- (decrease)	HCUF Pop
1: Correctional Institutions	1,994,748	3,723	(3,421)	1,995,050
2: Juvenile Institutions	125,930	762	(280)	126,412
3: Nursing Homes	1,741,562	10,815	(3,104)	1,749,273
4: Hospitals	239,807	1,557	(465)	240,899
5: Colleges and Universities	2,067,255	7,634	(3,395)	2,071,494
6: Military Facilities	1,007,267	194	(651,034)	356,427
7: Service-Based Fac./Other GQs	872,310	37,480	(84,412)	825,378
8: Group Homes	466,141	29,559	(35,226)	460,474
Total	**8,515,020**	**91,724**	**(781,337)**	**7,825,407**

Source: HCUF, SP/GQ File

- Roughly five-sixths of the decrease is due to the military population. Military enumeration was conducted by working unit rather than by barracks. Most persons serving in the armed forces live in housing units. They were required to fill out questionnaires when their units were enumerated, and were removed from the GQ universe between Offpop creation and HCUF creation if they listed a Usual Home Elsewhere (UHE) on their questionnaire.
- The numbers on the table do not show the total number of persons added to and subtracted from the GQ universe. The status of individual GQ questionnaires were not tracked by this evaluation. Accordingly, the numbers reflect the *net* gain or loss for each GQ. If a GQ gained two people, and lost seven, between the Offpop count and HCUF creation, all that is known is that there was a net loss of five people, and this is what is reflected on this table.

There are two main sources of both the adds and the subtractions:

- Adds:
  -- Be Counted Forms (36,608 persons)
  -- Household Questionnaires (50,460 persons)
- Subtractions:
  -- Persons declaring a Usual Home Elsewhere (793,544 persons)
  -- SBE Unduplication (16,787 persons)

These numbers imply a loss of roughly 30,000 more people between Offpop and HCUF than actually occurred. This difference is addressed in Section 8.2.4.

8.2 GQ Questionnaires Reporting a Usual Home Elsewhere

How many GQ residents were taken out of the GQ universe as part of the Non-ID Process? How many persons were taken out that should have stayed? We have answered these questions in this section, on the basis of the Non-ID File provided by the DSCMO.

8.2.1 The Screening Process

The process designed to deal with all Census forms without a MAF ID, including GQ person records claiming a UHE, was called the Non-ID Process.

- Not all GQ records providing the address of a claimed UHE were supposed to go into the Non-ID Process.
- Records with a UHE address were to be screened for exclusion:
  -- By GQ type
  -- By the outcome of a screening question on each GQ questionnaire.
- How screening was done:
  -- Screening by GQ type was done after the clerical part of the non-ID process (geocoding and matching to the MAF) was completed, but before field verification.
  -- Screening according to the outcome of the screening questions was not done.
- The failure to screen beforehand added 2.3 million questionnaires to the Non-ID Process' clerical workload, doubling its workload.

The screening by GQ type was done after the initial Non-ID processing, returning 1,892,742 records to their original GQs. Excluding UHEs from the Non-ID Process for certain GQ types was done to prevent people in certain UHE-ineligible types of GQs (for example, prisons) from being improperly enumerated at a residence other than their GQ.

GQ questionnaires also were supposed to be screened from inclusion in the Non-ID Process by their responses to the residence question on each type of questionnaire. (For example, "Do you live or stay here most of the time?" on the ICR.) This screening was intended to ensure that if persons whose primary residence was the GQ also provided a UHE address, they would not be

enumerated elsewhere on that basis. Excluding cases from the Non-ID Process based on the residence screening questions never took place. Of the 1,048,536 records that underwent the full Non-ID process, another 388,970 would have been excluded if the residence screening questions had been used as intended.

Because the procedures to screen GQ questionnaires out of the Non-ID Process were applied incorrectly, 37 percent of the GQ questionnaires ultimately resolved by the Non-ID process were in that process inappropriately.

GQ Records in the Non-ID Process, by Form Type (Table 8.2a)

	ICQs	ICRs	MCRs	SCRs	All
GQ records that went into the Non-ID Process	8,551	2,232,674	630,252	69,801	2,941,278
Records removed from Non-ID Process, due to invalid GQ Type:	(222)	(1,862,295)	(30,225)	(0)	(1,892,742)
GQ records that remained in the Non-ID Process	8,329	370,379	600,027	69,801	1,048,536
Records that were not removed but should have been, due to the answers to the screening questions:	(1,432)	(345,524)	(39,251)	(2,763)	(388,970)
GQ records that belonged in the Non-ID Process	6,897	24,855	560,776	67,038	659,566

Source: Non-ID File

8.2.2 Once a GQ record was in the Non-ID Process, what happened to it?

Once in the Non-ID Process, a nonmilitary (ICQ or ICR) GQ record was geocoded. If geocoding was unsuccessful, the record was returned to the GQ from which it had come. After successful geocoding, the UHE address was matched to the addresses on the MAF. If a match was found, then the GQ record was included in the Census at that address. (It did not matter whether that address was for a housing unit or a GQ.) If geocoding was successful but the record could not be matched to a known MAF unit, it went to Field Verification to determine if the address given by the respondent was a valid address. If it was, then the GQ record got included in the Census at that address; otherwise, it was returned to the GQ from which it originated.

Records from military or shipboard enumeration (on MCRs and SCRs) were treated in the same manner, with one major distinction: if they could not be geocoded, they were dropped from the Census. The results of the process on GQ questionnaires is shown below:

Comparing Non-ID Outcomes:
UHEs That Belonged v. UHEs That Should Have Been Screened Out (Table 8.2b)

	Military UHEs Dropped		UHEs Returned to GQs		UHEs Matched to HUs		All
	Number	Pct.	Number	Pct.	Number	Pct.	Number
Should have been screened out	31,041	8.0	238,655	61.3	119,274	30.7	388,970
Correctly included in Non-ID Process	187,744	28.5	16,337	2.5	455,485	69.0	659,566
All	**218,785**	**20.9**	**254,992**	**24.3**	**574,759**	**54.8**	**1,048,536**

Note: Percentages sum to 100 percent by row.
Source: Non-ID File

Of the 1,048,536 GQ person records that were ultimately included in the Non-ID Process:

- Some 54.8 percent were matched to a housing unit. (These represent 69.0 percent of those that belonged in the process; 30.7 percent of those that did not.)
- Some 24.3 percent were either returned to the GQs from which they came, or matched to a GQ in the matching and geocoding process. (These represent 2.5 percent of those that belonged in the process; 61.3 percent of those that did not.)
- Some 20.9 percent were dropped from the Census. (These represent 28.5 percent of those that belonged in the process; 8.0 percent of those that did not.)
- A record that should have been excluded from the Non-ID Process based on the questionnaire screening question, was much more likely to be returned to the GQ universe. (Though Table 8.2b does not show it, this was true for each form type.) And 61.3 percent of records that should have been kept out of the Non-ID Process were put back in the GQ universe, as opposed to only 2.5 percent of the records that belonged in the process.
- By a margin of 69 percent to 30.7 percent, a record that should have been excluded also was less likely to be matched to a housing unit. (This was true for all form types except for ICQs.)
- The GQ population was reduced by over 150,000 by the failure to exclude records from entering the Non-ID Process. While most of these persons were counted in the HU universe, over 31,000 were lost to the Census altogether.

Records that were not geocoded were returned to the GQ (if an ICR or ICQ) or dropped from the Census (if an MCR or SCR). This applied to 103,253 of the former and 195,655 of the latter.

8.2.3 What happened when person records were returned to the GQ universe?

As indicated in Table 8.2b, 254,992 person records were returned to the GQ universe. Of these, 103,253 were ICQ and ICR records with UHE addresses that could not be geocoded, and were returned to their GQs because they could not go any further in the Non-ID process. Another 73,857 were returned to their GQs because they were either matched to late MAF adds that

ultimately were not accepted as Census HUs, or went to Field Verification but could not be matched to a HU in the field.

The remaining 77,882 person records that were returned to the GQ universe were records that were geocoded and matched to the address of a GQ. Of these, 64,351 (83 percent) were matched to the very same GQ that the respondent had originally been enumerated at. In these cases, the respondent had written the address of the GQ in the space given for writing a (UHE) address, and the process succeeded in putting the respondent back in his original GQ.

Of the 77,882 records geocoded and matched to a GQ address, only 779 were properly in the Non-ID process; the rest should have been excluded by their answers to the screening questions.

8.2.4 Did all the GQ person records that were supposed to be redirected to the HU universe by the Non-ID Process, leave the GQ universe?

An unknown number of GQ person records that should have been redirected to the HU universe apparently remained in the GQ universe. However, the inability to track individual GQ person records through the enumeration process stands in the way of any certainty on this score.

Of the 574,759 person records that were believed to have been redirected from the GQ universe to the HU universe as a result of the Non-ID Process, 125,855 of them were ICR records from GQs other than military bases or SBEs. These records came from 24,785 GQs. Of those GQs, we considered the 5,502 GQs that included no HU or BCF records. This pool of GQs had no apparent reason to change count between the Offpop and the HCUF, other than due to the Non-ID Process.

According to the Non-ID File, these GQs contained 32,158 person records that were matched to HUs through the Non-ID Process. But the count of persons in these GQs dropped by only 8,849 between the Offpop and the HCUF, seemingly leaving 23,309 persons that stayed in the GQ universe that, in theory, should have been moved to the HU universe.

At the end of Section 8.1, we mentioned that the counts of the GQ universe's gains and losses from specific sources between Offpop and HCUF, including the Non-ID process, amounted to a loss that was about 30,000 greater than the total drop in the GQ person record tally between Offpop and HCUF. The results of this section seem to explain most of that difference. The remainder of that difference may well be accounted for by similar events to those described in this section, but in the GQs other than the 5,502 GQs that our study examined in this section.

8.3 Household Questionnaires and Be Counted Forms Included in GQ Enumeration

The following numbers of persons were added to GQs in each of the following SP types from household and Be Counted Forms:

Persons in GQs from Household and Be Counted Forms (Table 8.3)

Group Quarters Category	BCFs	HU Records	Total	Percent
1: Correctional Institutions	30	136	166	0.0
2: Juvenile Institutions	1	494	495	0.4
3: Nursing Homes	1,925	3,902	5,827	0.3
4: Hospitals	140	681	821	0.3
5: Colleges and Universities	514	3,011	3,525	0.2
6: Military Facilities	10	11	21	0.0
7: Service-Based Facilities/Other GQs	33,264	14,246	47,510	5.6
8: Group Homes	724	27,979	28,703	6.2
Totals	**36,608**	**50,460**	**87,068**	**1.1**

Source: HCUF

- Approximately 6.2 percent of the Group Homes population came from BCFs and household questionnaires, primarily the latter.
- Approximately 5.6 percent of the population in SBEs and other GQs came from Be Counted and household questionnaires.
- Approximately 55 percent of the person records from household questionnaires in the GQ universe were counted in group homes.

8.4 Within-GQ Person Duplication

Early non-systematic observations of Census data suggested that there were a significant number of duplicate person records within GQs, particularly group homes and other small GQs, especially religious GQs, which had an average population of less than 7. A stratified sample of 400 GQs in five strata was designed to estimate the magnitude of duplication within the GQ population. It excluded correctional institutions, military bases, and service-based facilities[11], but included the rest of the GQ universe. The portion of the GQ universe from which the sample was drawn included 154,042 GQs containing 5,156,168 person records, or 66 percent of the GQ population. The 400 GQs in the sample contained 18,650 person records.

The person records in each GQ were clerically examined to identify duplicates. Records with the same name, sex, and age/date of birth were considered duplicates. The clerical review identified 549 person records that fit the definition of duplicate records.

We obtained a 95 percent confidence interval for the number of duplicate person records in this portion of the GQ universe. The best point estimate for the number of duplicate person records is 56,416, and the 95 percent confidence interval for the number of duplicate person records is

[11]

56,416 ± 34,409, which is 1.1 percent ± 0.7 percent of the persons in GQs from which the sample was drawn.

Group homes and religious GQs were found to be by far the largest single source of duplication, apparently because many such facilities returned household questionnaires in addition to being counted by GQ enumerators. There were 57,348 group homes and religious GQs in Census 2000, with 539,938 person records. The restriction of the sample strata to group homes and religious GQs had 163 GQs with 2,290 person records, of which 191 were found to be duplicates. The best point estimate for the number of duplicate person records in the sub-universe of group homes and religious GQs is 23,491, and the 95 percent confidence interval for the number of duplicate person records is 23,491 ± 4,750, which is 4.4 percent ± 0.9 percent of the persons in these GQs.

8.5 SBE Unduplication

Because the process of Service-Based Enumeration made it possible for a single individual to be enumerated multiple times (for example, at a shelter one night, then at a soup kitchen the following day), an unduplication process was included in its design. According to Evaluation E.6, Service-Based Enumeration, 16,787 person records were removed from the counts of service-based facilities as a result of the unduplication. More detailed information is provided in that evaluation.

9. FROM HCUF COUNTS TO HCEF COUNTS

After the HCUF file was created, the Census analyzed the age distribution of the respondents at each GQ to ensure that the ages of the residents were consistent with the type of GQ. If the median age of a GQ's respondents was inconsistent with its GQ type, then at HCEF creation, that GQ was assigned a new GQ type on the basis of its median age.

The criteria for determining whether the GQ's median age was inconsistent with its GQ type differed by GQ type. For instance, if the median age of a nursing home was 49 or lower, or if the median age of a college dormitory was either less than 16 or greater than 45, it was regarded as inconsistent with its GQ type.

For any GQ whose median age was determined to be inconsistent with its GQ type, the following rules applied to reclassify it to a new GQ type:

- if its median age was 17 or below, it was assigned a GQ type of a juvenile institution.
- if its median age was 65 or above, it was classified as a nursing home.
- if its median age was between 18 and 64, it was assigned the GQ type of 908, "other nonhousehold living situations," the GQ type assigned to GQs that did not fit in any other category.

As the following tables show, 4,067 of the more than 192,000 GQs, containing 65,000 residents, had different typecodes on the HCEF than the HCUF. This represents 2.1 percent of GQs in Census 2000, and 0.8 percent of the GQ population.

GQs Changing Type Between Initial and Final Tabulation Due to Age Edits (Table 9a)

GQ Category:	**On Final Tabulation (HCEF)**				
On Initial Tabulation (HCUF)	**Juvenile Insts.**	**Nursing Homes**	**Other**	**Total**	**Pct.**
1: Correctional Institutions	79	53	0	132	3.2
2: Juvenile Institutions	0	23	325	348	8.6
3: Nursing Homes	148	0	1,678	1,826	44.9
4: Hospitals	11	96	0	107	2.6
5: Colleges and Universities	156	108	212	476	11.7
6: Military Facilities	9	2	25	36	0.9
7: Service-Based Fac./Other GQs	575	429	138	1,142	28.1
8: Group Homes	0	0	0	0	0.0
Total	**978**	**711**	**2,378**	**4,067**	**100.0**
Percentages	24.0	17.5	58.5	100.0	

Sources: HCUF, HCEF

- Juvenile institutions gained a net of 630 GQs between initial and final tabulation due to the age edits.

- Nursing homes lost a net of 1,115 GQs between initial and final tabulation due to the age edits.
- One hundred forty-eight facilities that had been identified as nursing homes by the Facility Questionnaire were classified as juvenile institutions on the HCEF.
- Twenty-three facilities that had been identified as juvenile institutions by the Facility Questionnaire were classified as nursing homes on the HCEF.

Population of GQs That Changed Type Due To Age Edits (Table 9b)

	People in GQs reclassified into:				
People in GQs reclassified from:	**Juvenile Insts.**	**Nursing Homes**	**Other**	**Total**	**Pct.**
1: Correctional Institutions	917	831	0	1,748	2.7
2: Juvenile Institutions	0	151	6,533	6,684	10.3
3: Nursing Homes	2,898	0	32,152	35,050	54.0
4: Hospitals	92	3,210	0	3,302	5.1
5: Colleges and Universities	1,806	1,916	1,470	5,192	8.0
6: Military Facilities	22	4	47	73	0.1
7: Service-Based Fac./Other GQs	3,669	7,476	1,761	12,906	19.8
8: Group Homes	0	0	0	0	0.0
Totals	**9,404**	**13,588**	**41,963**	**64,955**	**100.0**
Percentages	14.5	20.9	64.6	100.0	

Sources: HCUF, HCEF

- Nursing home population decreased by a net of 21,462 between initial and final tabulation due to the age edits.

10. HOUSING UNITS IN THE GROUP QUARTERS UNIVERSE: T-NIGHT AND EMBEDDED HOUSING UNITS

10.1 Introduction

10.1.1 How many persons were enumerated at T-Night locations and at embedded housing units? How many of each kind of household were there?

The short answer is in Table 10.1:

Number and Population of T-Night and Embedded Housing Units (Table 10.1)

	HU Records	Percent	Census Pop	Percent
Records Identified as Embedded HU records	59,076	40.3	139,875	52.3
Records Identified as T-Night Records	87,338	59.7	127,766	47.7
All	**146,414**	**100.0**	**267,641**	**100.0**

Sources: HCUF, SP/GQ File

10.1.2 How did we identify housing units as part of the universe of T-Night and embedded housing units?

All but one of the housing unit records tabulated above were distinguished as having to do with the SP/GQ universe in one of two ways: (i) the MAF listed 'SP/GQ Enumeration' as the highest-confidence source for the address (108,313 records), or (ii) the enumerator filled out the JIC3 box on the questionnaire in a manner that identified the return as a T-Night return (40,123 records). There were 2,023 records that were identified by both means.

A third means of identifying housing unit records also was used: records of embedded housing units and T-Night locations on the SP/GQ master file were matched against the HCUF. This process found 76,663 housing unit records. All but one of them also had been identified by way (i) above.

10.1.3 How did we distinguish between T-Night records and embedded housing unit records?

Two means were used here as well: (i) as noted above, 40,123 records were identified as T-Night returns in the JIC3 box by the enumerator. And (ii) of the 76,663 housing unit records identified by matching the HCUF with the SP/GQ master file (as discussed in the previous paragraph), 49,154 were matched with T-Night locations on the SP/GQ master file; the rest were matched with embedded housing units. (There were 1,939 records that were identified as T-Night records by both means.)

10.2 Imputation of Embedded and T-Night Housing Units

Imputation Status of Embedded and T-Night Housing Units (Table 10.2)

	Imputed	Pct.	Not Imputed	Pct.	All
Embedded HU Records	15,645	26.5	43,431	73.5	59,076
T-Night Returns (Identified from SP/GQ File)	54,992	63.0	32,346	37.0	87,338
All	**70,637**	**48.2**	**75,777**	**51.8**	**146,414**

Percentages sum to 100 percent by row.
Source: HCUF

A group of 56,510 SP/GQ housing unit addresses were added to the Decennial Master Address File (DMAF) in August 2000. The timing of the DMAF update prevented the data captured records for these housing units from being included in the Decennial Response File (DRF). Because these housing records were not on the DRF, Census data was imputed for all of these records. These records made up 80 percent of the imputed T-Night and embedded HU records. It is

10.3 Geographical Distribution of Persons Enumerated in T-Night

The following table gives some insight into the geographical distribution of the T-Night population:

States With Largest Proportions of T-Night Location Residents (Table 10.3)

State	T-Night Households	T-Night Population	T-Night Residents Per 1000 People
Nevada	5,021	7,996	3.99
Arizona	18,113	20,315	3.95
Oregon	4,754	8,529	2.49
New Mexico	3,084	4,337	2.38
Alaska	564	873	1.39
Idaho	1,059	1,784	1.38
Washington	3,709	6,513	1.10
Florida	13,286	15,430	0.96
Virginia	2,951	6,513	0.92
Montana	377	646	0.71
Texas	8,070	14,081	0.67
California	14,925	22,592	0.67
Hawaii	369	769	0.63
Arkansas	995	1,497	0.56
Mississippi	708	1,279	0.45
Wyoming	176	202	0.41

All Other States	9,177	14,410	0.08
Total	**87,338**	**127,766**	**0.45**

Source: HCUF

- Approximately 63 percent of the T-Night population was enumerated in five Sun Belt states: California, Nevada, Arizona, Texas, and Florida.
- The Northwest (both Pacific and Rocky Mountain Northwest, including Alaska) also had a high proportion of persons counted at T-Night locations. Approximately 15 percent of the T-Night population was counted in this group of states.

11. RECOMMENDATIONS

Group Quarters enumeration in Census 2000 succeeded in its underlying mission of gaining a fundamentally accurate count of the Group Quarters population.[12] Beyond that, it provided enough additional information to give a more nuanced sense of what the GQ universe and its components are like.

There are still a number of ways in which GQ enumeration could be improved, and some of these are discussed in this chapter.

11.1 Study Whether GQ Enumeration Can Benefit from Different Strategies for Different Special Place and Group Quarters Types

This study contains a great deal of information delineated by Special Place types. Some types of Special Places tend toward having many GQs and/or large populations; other types of Special Places almost always have a single GQ or very few people. Some relied heavily on enumeration through administrative data in Census 2000; in others, respondent-filled forms were more common. Certain types of GQs were more likely to have persons from household questionnaires included in their final tabulations, and were more likely to have persons counted twice within a GQ.

Our first recommendation, then, is that this information - along with information from other sources - be used to evaluate whether there are benefits to be gained in using different procedures for different categories of GQs in 2010, in building the address list, in the enumeration itself, and in post-enumeration processing. We further recommend that the Census Bureau develop persons who would become category experts in the different Special Place types, to aid in this evaluation process.

11.2 Recommendations Concerning the SP/GQ File

11.2.1 Collect GQ Data Via Electronic Means in Address List Creation

Most Special Places consist of a single GQ. But (as shown in Chapter 4) a handful of SPs contain dozens or even hundreds of GQs, and those SPs contain tens of thousands of GQs altogether. Collecting GQ information one GQ at a time via telephone or personal interview, as was done in Census 2000's Facility Questionnaire operation, is time-consuming and burdensome to the contact persons at such SPs, making them reluctant to cooperate, and making the pre-Census roster of GQs less than complete.

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[12] Census Bureau memorandum (January 9, 2002).

We recommend that the option be given for facilities with 10 or more GQs to provide GQ information by electronic or paper records during the Facility Questionnaire operation (or its successor) in 2010.

11.2.2 Make Use of Facility Web Sites in Address List Creation

Many types of facilities already have Web sites containing much of the information we gathered through the Facility Questionnaire in Census 2000. For instance, the typical college website provides a list of its dormitories, a map showing where they are located, and frequently the capacity of each dorm. If such information about a facility is available and more current than the list of GQs on the SP/GQ Master File from the previous Census, we should incorporate that information into our database and confirm it with the Special Place contact person, rather than initially collecting it from the contact person, to minimize respondent burden.

We recommend that a study be done of the best way to use such information sources to enhance the GQ address list development operations in 2010.

11.2.3 Reduce Duplication Between the GQ and HU Address Lists

As discussed in Chapter 8, tens of thousands of people were counted twice at GQs, frequently when small GQs received HU mailback questionnaires and were enumerated as GQs. One likely cause of this was that many small GQs are indistinguishable in appearance from single-family residences. As a result, some found their way into both the HU and GQ universes before being identified as the same place.

We recommend that new measures be taken in 2010 to avoid such duplication between HU and GQ units. This could take one or more of several forms. One possible approach is to give Facility Questionnaire workers access to the MAF, to enable them to provisionally identify such a GQ with a particular housing unit's MAF ID at the time it is added to the SP/GQ File.

Any successful means of reducing the duplication between the two universes would help reduce the within-GQ person duplication discussed in Section 8.4.

11.2.4 Maintain All Special Place and GQ Records Throughout the Census

In the address list development phase of Census 2000, the SP/GQ File was periodically 'cleaned up' to eliminate potential Special Places from the electronic file that were shown not to be Special Places after all. This complicated evaluation from a number of vantage points, particularly in terms of measuring the effectiveness of the Facility Questionnaire CATI and Personal Visit operations. It also foreclosed the possibility of tracking such things as whether SPs remained in existence, but moved from one location to another, or whether a particular address was home to different SPs over time. A continuous SP/GQ File that uses flags to indicate deletes (as is the case for the DMAF), rather than permanently removing records from

the file, would provide much more complete information about the SP/GQ universe over time.

As mentioned in the Limitations, a substantial number of SPs and GQs were deleted and then re-added in the field under new GQIDs in order to comply with Census deadlines. Needless to say, this also detracted from the continuity of the GQ database.

Therefore, we recommend that, for Census 2010:

- SP/GQ File use delete flags, rather than physical deletes; and
- safeguards be instituted to make it more likely that if the same SP or GQ is deleted and re-added, it is identified as the same entity and identified by the same Census identification numbers.

11.2.5 Do not Overwrite Earlier Counts With Later Counts

In Census 2000, expected population counts obtained later (in the Advance Visit) overwrote those that were obtained earlier (in the Facility Questionnaire operation) on the SP/GQ File. We recommend that multiple fields be provided on the file where multiple iterations of a count are possible, so that such overwriting will be avoided for all recorded counts in 2010.

11.3 Recommendations for Enumeration

11.3.1 Track Individual Forms from Enumeration through Data Capture

The problems created by tracking the number of questionnaires from each GQ, rather than the questionnaires themselves, are documented in Chapter 7. Differing counts of the number of completed GQ questionnaires were obtained for many GQs, but in many cases the true count was impossible to know. The differing counts resulted in the imputation of over 100,000 person records.

We recommend that the Census track individual GQ questionnaires through post-enumeration processing, from enumeration through data capture. In Census 2000, each GQ questionnaire had a unique barcoded number printed on it; however, the barcode was not used to track GQ questionnaires before they were data captured.

If enumerators working from the LCOs had been equipped with bar code readers in Census 2000, the questionnaires could have been tracked in this manner, and there would have been no doubt as to whether a questionnaire initially counted with one GQ was later counted with another, or whether - and at what point - it was lost to the Census altogether. If such technology is employed in 2010, the result will be a much more exact and trustworthy GQ population count.

11.3.2 Anticipate and Accommodate Use of Administrative Data

As shown in Chapter 6 of this study, more GQ questionnaires were filled out from administrative

data than by any other means. In addition, the proportion of questionnaires filled out from administrative data varied greatly by type of GQ.

We recommend that the Census prepare its enumerators for heavy use of administrative data at certain types of GQs in 2010, and to work with organizations representing correctional institutions, nursing homes, and other GQs with high rates of use of administrative data in Census 2000, to evaluate how best to work together to gain as complete information as possible for each GQ resident in an environment where heavy use of administrative data may be unavoidable.

We further recommend that more efficient means of collection of administrative record data, including electronic means, be tested for feasibility in one of the intercensal tests in order to be made available on an optional basis in 2010.

11.4 Other Recommendations

11.4.1 Institute More Effective Software Quality Assurance Programs

We recommend that the software used to process GQ records in 2010 undergo a quality assurance review involving representatives from more than one Census division.

As discussed in Section 8.2.1, the software used for Non-ID processing in Census 2000 failed in two different ways to screen GQ questionnaires from inclusion in the Non-ID process. This failure doubled the workload of that process. An independent review might have caught this omission.

11.4.2 Track T-Night Sites and Their Population Counts

We recommend that the Census track the population of each T-Night site in 2010.

In Census 2000, T-Night sites were a hybrid, containing transient HUs rather than GQs, but enumerated by GQ enumerators. As a result, the population of each T-Night location was zero, for purposes of GQ enumeration. There is no linkage between the T-Night questionnaires and the T-Night locations. It may be possible to identify T-Night questionnaires and locations by use of Census 2000 address data, but with what degree of accuracy and completeness is not yet known.

If T-Night enumerators in 2010 carry handheld bar code readers, they can record the bar codes from each HU questionnaire filled out at each T-Night location, and those bar code IDs can later be used to identify the T-Night questionnaire records from each location on the Census data files, and re-create the count from each T-Night location.

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APPENDICES

Appendix A: Group Quarters Classifications Used on the HCEF

1. Correctional institutions

101. Federal detention centers
102. Federal Prisons
103. State Prisons
104. Local jails and other confinement facilities
105. Halfway houses (correctional)
106. Military disciplinary barracks and jails.
107. Other types of correctional institutions

2. Juvenile institutions

201. Homes for abused, dependent, and neglected children (publicly owned)
202. Homes for abused, dependent, and neglected children (privately owned)
203. Homes for abused, dependent, and neglected children (ownership type unknown)
204. Residential treatment centers (for emotionally disturbed children)
205. Training schools for juvenile delinquents (publicly owned)
206. Training schools for juvenile delinquents (privately owned)
207. Training schools for juvenile delinquents (ownership type unknown)
208. Detention centers (Diagnostic centers and short-term care facilities)
209. Juvenile institution (type unknown)

3. Nursing homes

301. Nursing homes (federally owned)
302. Nursing homes (state/local ownership)
303. Nursing homes (publicly owned, undetermined)
304. Nursing homes (privately owned, nonprofit)
305. Nursing homes (privately owned, for profit)
306. Nursing homes (privately owned, undetermined)
307. Nursing homes (type of ownership unknown)

4. Hospitals/wards, hospices, and schools for the handicapped

400. Hospitals and wards for drug/alcohol abuse
401. Hospitals or wards for chronically ill (military hospitals)
402. Hospitals or wards for chronically ill (civilian hospitals)
403. Hospices
404. Mental (psychiatric) hospitals
405. Schools, hospitals, or wards for the mentally retarded
406. Institutions for the deaf
407. Institutions for the blind
408. Orthopedic wards and institutions for the physically handicapped

409. Wards in general hospitals for patients who have no usual home elsewhere
410. Wards in military hospitals for patients who have no usual home elsewhere

5. College dormitories (includes college quarters off campus)

501. College dormitories, fraternity and sorority houses

6. Military Quarters

601. Barracks and unaccompanied personnel housing
602. Transient quarters for military personnel
603. Military ships

7. Service-Based Facilities

701. Emergency and transitional shelters (with sleeping facilities)
702. Shelters for children who are runaways, neglected, or without conventional housing
703. Shelters for abused women (shelters against domestic violence)
704. Soup kitchens
705. Regularly scheduled mobile food vans
706. Targeted nonsheltered outdoor locations

8. Group homes/Halfway houses

801. Homes or halfway houses for drug/alcohol abuse
802. Homes for the mentally ill
803. Homes for the mentally retarded
804. Homes for the physically handicapped
805. Other group homes (communes, foster homes, homes for unwed mothers)

9. Dormitories and Other Group Quarters

900. Crews of maritime vessels
901. Agriculture workers' dormitories
902. Other workers' dormitories
903. Job Corps and vocational training facilities
904. Dormitories for staff at military institutional group quarters
905. Dormitories for staff at civilian institutional group quarters
906. Religious group quarters
908. Other nonhousehold living situations (includes hostels, YMCAs, YWCAs)
909. Natural disaster emergency shelters
911. Residential facilities providing "protective oversight"

Appendix B: Complete Matching Rules for the Person Duplication Sample

Clerical person matching within each GQ was done by name, sex, and age/date of birth.

The clerical matching had two components: first, a DSSD staffer reviewed the person rosters of each GQ, which had been printed out alphabetically, by last name followed by first name, and indicated matches and possible matches according to the instructions that follow.

Second, a reviewer (a DSSD mathematical statistician) examined the staffer's work for accuracy, and counted the possible matches as matches or nonmatches according to the guidelines that follow the instructions for the staffer.

The staffer's instructions:

Instructions for Matching

Purpose: We are trying to estimate how many people living in group quarters may have been counted twice in that group quarters (GQs).

Your task: You will decide whether or not pairs of person records from group quarters enumeration are close enough to be considered the same person. We will give you rules for making these decisions.

Materials: You'll be given a roster of each GQ you'll match people in, with name, sex, age, and date of birth for each person. (Assuming they provided all of the above.) The names of the people will be in alphabetical order for ease of comparison. You will be given the rosters of 400 GQs altogether.

Matching Rules: You'll be matching names on the basis of three categories: name, sex, and age/date of birth. A pair of person records will be a match if:

- they match in all three categories, or
- they match on two out of three, but ca not be compared on the third because the information for one or both records is blank.

Name Match: First and last names, taken together, differ by no more than two typos.

- An additional letter is one typo (Gardner v. Gard**e**ner)
- A substitution of one letter for another is one typo (Gar**d**ner v. Gar**t**ner)
- A transposition of two letters is one typo (G**ar**dner v. G**ra**dner).

Sex Match: 1 = Male; 2 = Female. Either they match or they don't.

Age/DOB Match:

- If the ages are the same, or differ by only a year, they're a match.
- Where age is blank for one or both records, but both dates of birth are available, match by date of birth.
  You've got a date-of-birth match if, out of month/day/year, two out of three match exactly, and the year is off by at most one year.
- If you've got age for one and date of birth for the other, they're a match if the difference is no more than a year.

Exceptions:

1. If there's an exact date-of-birth match, then we'll allow a three-typo difference on names.
2. If one of the names is entirely missing, we need an exact date-of-birth match, as well as a sex match.

When you find matches in a GQ:

Mark matched pairs on the roster, and put the number of matched pairs in the blank at the bottom of the roster.

Nonmatches that could be the same person:

Some GQs will have pairs of records that look like they *could* be the same person, but will flunk the tests for being a match. I'll want to look at those. If you find any, mark them on the roster (in some distinct fashion: asterisks? Another color of pen?), and circle the 'Y' at the bottom of the roster.

Keep an eye out for pairs of names that aren't together on the list.

<u>The reviewer's additional guidelines</u>:

Additional Matching Exceptions

1. Disagreements in age are overruled by exact DOB match.
2. 2-year YOB difference will be allowable as an age match if day and month agree.
3. Exact match on name and DOB will overrule sex disagreement.
4. First name/last name reversal will count as one typo.
5. Familiar variants of first names (Jim/James, Elizabeth/Liz, etc.) will count as matches.

Appendix C: State-by-State Group Quarters Population, by GQ Category

State	Correctional Institutions	Juvenile Institutions	Nursing Homes	Hospitals	Colleges/ Universities	Military Facilities	Group Homes	Service-Based and Other GQs	Total
AK	3,331	427	803	263	1,748	3,970	1,776	7,031	19,349
AL	33,542	1,885	26,697	3,239	31,086	5,370	4,424	8,477	114,720
AR	20,565	1,061	21,379	2,147	18,280	1,290	3,317	5,869	73,908
AZ	45,783	1,955	13,607	2,423	17,340	5,256	8,058	15,428	109,850
CA	248,516	17,900	120,724	26,516	126,715	58,810	71,447	149,126	819,754
CO	30,136	2,446	18,495	1,664	23,631	8,512	4,173	13,898	102,955
CT	20,023	916	32,223	2,094	38,051	2,097	4,824	7,711	107,939
DC	2,838	67	3,759	1,300	19,322	927	2,807	4,542	35,562
DE	5,965	98	4,852	595	9,394	381	1,170	2,128	24,583
FL	139,148	7,330	88,828	13,044	54,085	13,457	19,093	53,960	388,945
GA	81,773	4,360	34,812	5,078	47,910	25,461	9,500	24,928	233,822
HI	3,233	216	2,949	1,292	4,716	13,992	4,305	5,079	35,782
IA	11,771	1,264	33,428	3,793	41,171	4	4,809	7,929	104,169
ID	7,401	668	5,735	3,913	8,006	673	1,064	4,036	31,496
IL	67,820	4,653	91,887	10,367	90,463	10,865	15,785	29,941	321,781
IN	34,676	3,074	48,745	4,390	69,147	7	6,961	11,154	178,154
KS	16,703	1,307	25,248	2,138	24,492	4,580	3,014	4,468	81,950
KY	28,388	1,686	29,266	2,717	31,883	7,277	3,667	9,920	114,804
LA	49,854	2,781	31,521	5,846	26,959	3,877	6,382	8,745	135,965
MA	23,513	2,443	55,837	6,660	103,583	472	10,605	18,103	221,216
MD	35,698	2,039	26,716	4,865	35,371	7,412	7,815	14,140	134,056
ME	2,864	424	9,339	464	13,793	688	2,849	4,491	34,912
MI	65,330	5,083	50,113	5,606	69,854	112	24,289	29,502	249,889
MN	16,999	2,032	40,506	3,521	44,835	12	16,661	11,317	135,883
MO	35,206	2,604	48,708	3,912	44,587	5,435	6,538	15,068	162,058
MS	25,778	1,530	18,382	5,136	29,238	5,722	4,180	5,448	95,414
MT	4,124	373	6,470	1,101	7,035	404	1,668	3,587	24,762
NC	46,614	2,275	50,892	6,878	76,018	37,022	9,267	24,915	253,881
ND	1,518	341	7,254	575	10,137	1,244	1,269	1,293	23,631
NE	6,060	1,500	16,195	2,256	18,376	590	2,012	3,829	50,818
NH	3,468	438	9,316	562	17,574	95	1,133	2,953	35,539
NJ	47,941	2,610	51,493	8,125	45,222	3,291	12,252	23,887	194,821
NM	10,940	707	6,810	721	7,921	1,827	2,433	4,948	36,307
NV	15,940	949	4,895	389	2,498	1,312	1,436	6,256	33,675
NY	108,088	8,126	123,852	22,196	174,111	8,598	50,909	84,581	580,461
OH	68,873	4,593	93,157	5,745	91,713	369	12,761	21,910	299,121
OK	33,919	1,613	28,021	3,193	26,643	7,616	3,137	8,233	112,375
OR	19,523	1,961	14,677	1,740	18,831	95	7,923	12,741	77,491
PA	76,553	6,987	114,113	16,137	147,542	758	27,446	43,765	433,301
RI	3,576	429	9,222	574	20,551	870	1,626	1,968	38,816
SC	34,909	1,847	20,867	2,910	39,360	17,102	6,485	11,557	135,037
SD	4,479	1,016	7,791	1,101	8,998	566	2,139	2,328	28,418
TN	38,481	2,818	36,994	5,104	45,030	2,593	6,961	9,965	147,946
TX	244,363	8,909	105,052	16,380	92,246	34,056	24,163	35,940	561,109
UT	9,921	1,336	6,853	1,357	9,837	1,760	1,382	8,034	40,480
VA	64,036	3,552	38,865	5,031	65,557	33,752	5,490	15,115	231,398
VT	1,219	167	4,037	240	12,863	22	470	1,742	20,760
WA	28,871	2,596	23,275	2,476	30,858	13,868	10,679	23,759	136,382
WI	31,068	1,925	41,370	4,710	51,397	82	8,778	16,628	155,958
WV	10,505	558	11,601	1,345	14,300	59	1,969	2,810	43,147
WY	4,176	404	2,869	412	3,850	545	754	1,073	14,083
USA	**1,976,019**	**128,279**	**1,720,500**	**234,241**	**2,064,128**	**355,155**	**454,055**	**846,256**	**7,778,633**
PR	17,283	853	7,311	3,356	2,174	1,199	6,419	8,179	46,774
Sum	**1,993,302**	**129,132**	**1,727,811**	**237,597**	**2,066,302**	**356,354**	**460,474**	**854,435**	**7,825,407**

Source: HCEF

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