

1990 Census of Population and Housing Public Use Microdata Samples (PUMS): United States Technical Documentation

D1-D90-PUMS-14-TECH

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Additionally, Census Bureau organization, telephone numbers, and staff cited in this technical documentation are not current. For updated information, see our Telephone Contacts site at <http://www.census.gov/contacts/www/contacts.html> or Staff Search at <http://www.census.gov/cgi-bin/main/email.cgi>.

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CENSUS '90



1990 Census of
Population and Housing

**Public Use
Microdata
Samples**

United States

**TECHNICAL
DOCUMENTATION
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DOCUMENTATION**

ACKNOWLEDGMENTS

The Decennial Planning Division, **Susan M. Miskura**, Chief, coordinated and directed all census operations. **Patricia A. Berman**, Assistant Division Chief for Content and Data Products, directed the development and implementation of the 1990 Census Tabulation and Publication Program. Other assistant division chiefs were **Robert R. Bair**, **Rachel F. Brown**, **James L. Dinwiddie**, **Allan A. Stephenson**, and **Edwin B. Wagner, Jr.** The following branch chiefs made significant contributions: **Cheryl R. Landman**, **Adolfo L. Paez**, **A. Edward Pike**, and **William A. Starr**. Other important contributors were **Linda S. Brudvig**, **Cindy S. Easton**, **Avis L. Fouts**, **Carolyn R. Hay**, **Douglas M. Lee**, **Gloria J. Porter**, and **A. Nishea Quash**.

The Decennial Operations Division, **Arnold A. Jackson**, Chief, was responsible for processing and tabulating census data. Assistant division chiefs were: **Donald R. Datzell**, **Kenneth A. Riccini**, **Billy E. Stark**, and **James E. Steed**. Processing offices were managed by **Alfred Cruz, Jr.**, **Earle B. Knapp, Jr.**, **Judith N. Petty**, **Mark M. Taylor**, **Russell L. Valentine, Jr.**, **Carol A. Van Horn**, and **C. Kambie Worley**. The following branch chiefs made significant contributions: **Jonathan G. Ankers**, **Sharon S. Baucom**, **Catharine W. Burt**, **Vickie L. Cotton**, **Robert J. Hemmig**, **George H. McLaughlin**, **Carol M. Miller**, **Lorraine D. Neece**, **Peggy S. Payne**, **William L. Pell**, **Cotty A. Smith**, **Dennis W. Stoutt**, and **Richard R. Warren**. Other important contributors were **Eleanor I. Banks**, **Miriam R. Barton**, **Danny L. Burkhead**, **J. Kenneth Butler, Jr.**, **Albert A. Casler**, **Donald H. Danbury**, **Judith A. Dawson**, **Donald R. Dwyer**, **Beverly B. Fransen**, **Katherine H. Gilbert**, **Lynn A. Hollabaugh**, **Ellen B. Katzoff**, **Randy M. Klear**, **Norman W. Larsen**, **Peter J. Long**, **Sue Love**, **Patricia O. Madson**, **Mark J. Matakot**, **John R. Murphy**, **Dan E. Philipp**, **Eugene M. Rashlich**, **Wille T. Robertson**, **Barbara A. Rosen**, **Sharon A. Schoch**, **Imelda B. Severdia**, **Diane J. Simmons**, **Emmett F. Spiers**, **Johanne M. Stovall**, **M. Lisa Sylla**, and **Jess D. Thompson**.

The Housing and Household Economic Statistics Division, **Daniel H. Weinberg**, Chief, developed the questionnaire content, designed the data tabulations, and reviewed the data for the economic and housing characteristics. **Gordon W. Green, Jr.**, Assistant Division Chief for Economic Characteristics, and **Leonard J. Norry**, Assistant Division Chief for Housing Characteristics, directed the development of this work. The following branch chiefs made significant contributions: **William A. Downs**, **Peter J. Fronczek**, **Patricia A. Johnson**, **Enrique J. Lamas**, **Charles T. Nelson**, and **Thomas S. Scopp**. Other important contributors were **Eleanor F. Baugher**, **Jeanne C. Benetti**, **Robert L. Bennetfield**, **Robert W. Bonnette**, **William S. Chapin**, **Higinio Feliciano**, **Timothy S. Grall**, **Cynthia J. Harpine**, **Solwyn Jones**, **Mary C. Kirk**, **Richard G. Kreinsen**, **Gordon H. Lester**, **Mark S. Littman**, **Wilfred T. Masumura**, **John M. McNeil**, **Diane C. Murphy**, **George F. Patterson**, **Thomas J. Palumbo**, **Kirby G. Posey**, **John Priebe**, **Anne D. Smoler**, and **Carmina F. Young**.

The Population Division, **Paula J. Schneider**, Chief, developed the questionnaire content, designed the data tabulations, and reviewed the data for the demographic and social characteristics of the population. **Philip N. Fulton**, Assistant Division Chief for Census Programs, directed the development of this work. Other assistant division chiefs were **Nampeo R. McKenney** and **Arthur J. Norton**. The following branch and staff chiefs made significant contributions: **Jorge H. del Pinal**, **Campbell J. Gibson**, **Roderick J. Harrison**, **Donald J. Hernandez**, **Jane H. Ingold**, **Martin T. O'Connell**, **Marie Pees**, **J. Gregory Robinson**, **Phillip A. Salopek**, **Paul M. Siegel**, **Robert C. Speaker**, **Gregory K. Spencer**, and **Cynthia M. Taeuber**. Other important contributors were **Celia G. Boertlein**, **Rosalind R. Bruno**, **Janice A. Costanzo**, **Rosemarie C. Cowan**, **Arthur R. Cresce**, **Larry G. Curran**, **Carmon DeNavas**, **Robert O. Grymes**, **Kristin A. Hansen**, **Mary C. Hawkins**, **Rodger V. Johnson**, **Michael J. Levin**, **Edna L. Palisano**, **Sherry B. Pollock**, **Stanley J. Rolark**, **A. Dianne Schmidley**, **Denise I. Smith**, and **Nancy L. Sweet**.

The Data User Services Division, **Gerard C. Iannelli**, then Chief, directed the development of data product dissemination and information to increase awareness, understanding, and use of census data. **Marie G. Argana**, Assistant Chief for Data User Services, directed preparation of electronic data products and their dissemination. **Alfonso E. Mirabal**, Assistant Chief for Group Information and Advisory Services, directed activities related to the National Services Program, State Data Centers, and preparation of training materials. The following branch chiefs made significant contributions: **Deborah D. Barrett**, **Frederick G. Bohme**, **Larry W. Carbaugh**, **James P. Curry**, **Samuel**

H. Johnson, **John C. Kavallunas**, and **Forrest B. Williams**. Other important contributors were **Molly Abramowitz**, **Celestin J. Aguigul**, **Barbara J. Aldrich**, **Delores A. Baldwin**, **Albert R. Barros**, **Geneva A. Burns**, **Carmon D. Campbell**, **James R. Clark**, **Virginia L. Collins**, **George H. Dailey, Jr.**, **Barbara L. Hatchl**, **Theresa C. Johnson**, **Paul T. Manka**, **John D. McCall**, **Jo Ann Norris**, **David M. Pemberton**, **Sarabeth Rodriguez**, **Charles J. Wade**, **Joyce J. Ware**, and **Gary M. Young**.

The Geography Division, **Robert W. Marx**, Chief, directed and coordinated the census mapping and geographic activities. **Jack R. George**, Assistant Division Chief for Geoprocessing, directed the planning and development of the TIGER System and related software. **Robert A. LaMacchia**, Assistant Division Chief for Planning, directed the planning and implementation of processes for defining 1990 census geographic areas. **Silla G. Tomasi**, Assistant Division Chief for Operations, managed the planning and implementation of 1990 census mapping applications using the TIGER System. The following branch chiefs made significant contributions: **Frederick R. Broome**, **Charles E. Dingman**, **Linda M. Franz**, **David E. Galdi**, **Dan N. Harding**, **Donald I. Hirschfeld**, **David B. Meixler**, **Peter Rosenson**, **Joel Sobel**, **Brian Swanhart**, and **Richard Trola**. Other important contributors were **Gerard Boudriault**, **Desmond J. Carron**, **Anthony W. Costanzo**, **Paul W. Daisey**, **Beverly A. Davis**, **Carl S. Hartman**, **Christine J. Kinnear**, **Terence D. McDowell**, **Linda M. Pike**, **Rose J. A. Quarato**, **Lourdes Ramirez**, **Gavin H. Shaw**, **Daniel L. Sweeney**, **Timothy F. Trainor**, **Phyllis S. Willette**, and **Walter E. Yergen**.

The Statistical Support Division, **John H. Thompson**, Chief, directed the application of mathematical statistical techniques in the design and conduct of the census. **John S. Lineberger**, Assistant Division Chief for Quality Assurance, directed the development and implementation of operational and software quality assurance. **Henry F. Wolfman**, Assistant Division Chief for Census Design, directed the development and implementation of sample design, disclosure avoidance, weighting, and variance estimation. **Howard Hogan** and **David V. Bateman** were contributing assistant division chiefs. The following branch chiefs made significant contributions: **Florence H. Abramson**, **Deborah H. Griffin**, **Richard A. Griffin**, **Lawrence I. Iskow**, and **Michael L. Mersch**. Other important contributors were **Linda A. Flores-Baez**, **Larry M. Bates**, **Somonica L. Green**, **James E. Hartman**, **Steven D. Jarvis**, **Alfredo Navarro**, **Eric L. Schindler**, **Carolyn T. Swan**, and **Glenn D. White**.

The 1990 Census Redistricting Data Office, **Marshall L. Turner, Jr.**, Chief, assisted by **Cathy L. Talbert**, directed the development and implementation of the 1990 Census Redistricting Data Program.

The Administrative and Publications Services Division, **Walter C. Odom**, Chief, provided direction for the census administrative services, publications, printing, and graphics functions. **Michael G. Garland** was a contributing assistant division chief. The following branch and staff chiefs made significant contributions: **Bernard E. Beymier**, **Albert W. Cosner**, **Gary J. Lauffer**, **Gerald A. Mann**, **Clement B. Nettles**, **Russell Price**, and **Barbara J. Stanard**. Other important contributors were **Barbara M. Abbott**, **Robert J. Brown**, **David M. Coontz**, and **John T. Overby**.

The Data Preparation Division, **Joseph S. Harris**, Chief, provided management of a multi-operational facility including kit preparation, procurement, warehousing and supply, and census processing activities. **Pummer Alston, Jr.**, and **Patricia M. Clark** were assistant division chiefs.

The Field Division, **Stanley D. Matchett**, Chief, directed the census data collection and associated field operations. **Richard L. Bitzer**, **Richard F. Blass**, **Karl K. Kindel**, and **John W. Marshall** were assistant division chiefs. Regional office directors were **William F. Adams**, **John E. Bell**, **LaVerne Collins**, **Dwight P. Dean**, **Arthur G. Dukakis**, **Shella H. Grimm**, **William F. Hill**, **James F. Holmes**, **Stanley D. Moore**, **Marvin L. Postma**, **John E. Reeder**, and **Leo C. Schilling**.

The Personnel Division, **David P. Warner**, Chief, provided management direction and guidance to the staffing, planning pay systems, and employee relations programs for the census. **Colleen A. Woodard** was the assistant chief.

The Technical Services Division, **C. Thomas DiNenna**, Chief, designed, developed, deployed, and produced automated technology for census data processing.

1990 Census of
Population and Housing

**Public Use
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United States

**TECHNICAL
DOCUMENTATION**

Issued October 1992



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SPECIAL ACKNOWLEDGMENTS

This documentation was prepared by persons in the Microdata Access Branch, Data User Services Division. **Carmen D. Campbell**, **Ramala Basu**, and **Shelly T. Moody** developed the technical documentation, under the direction of **Marie G. Argana**, Assistant Division Chief (User Data Services). **Vickie L. Cotton**, **Evelyn Proctor**, **Jeong S. Kim**, **Arnold Goldstein**, **James Clark**, **Tawana Wilson**, and **Tina Egan** were all part of an interdivisional team that made significant contributions toward the development of the Public Use Microdata Samples.

The files should be cited as follows:

Census of Population and Housing, 1990: Public Use Microdata Samples U.S. [machine-readable data files] / prepared by the Bureau of the Census. —Washington: The Bureau [producer and distributor], 1992.

The technical documentation should be cited as follows:

Census of Population and Housing, 1990: Public Use Microdata Sample U.S. Technical Documentation / prepared by the Bureau of the Census. —Washington: The Bureau, 1992.

For additional information concerning purchasing the files, contact Data User Services Division, Customer Services Branch, Bureau of the Census, Washington, DC 20233. Telephone: 301-763-4100.

For additional information concerning the technical documentation or file content, contact Data User Services Division, Microdata Access Branch, Bureau of the Census, Washington, DC 20233. Telephone: 301-763-2005.

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CITATION

Census of Population and Housing, 1990:
Public Use Microdata Samples [machine-readable data files]
/ prepared by the Bureau of the Census. -Washington: The
Bureau [producer and distributor], 1992.

TYPE OF FILE

Microdata

UNIVERSE DESCRIPTION

All persons and housing units in the United States.

SUBJECT MATTER DESCRIPTION

Public Use Microdata Samples (PUMS) contain records representing 5% or 1% samples of the housing units in the U.S. and the persons in them. Selected group quarters persons are also included. The file contains individual weights for each person and housing unit which, when applied to the individual records, expand the sample to the total population. Most population and housing items are listed below. Please see the Data Dictionary for a complete listing of variables and recodes. Both the 5% and 1% samples have the same subject content and vary only in geographic composition of the Public Use Microdata Area (PUMA). A 3% elderly sample will be available later.

Items on the housing record include:

Allocation Flags for Housing Items	Cost of Utilities
Bedrooms	Family Income in 1989
Condominium Status	Family, Subfamily and Relationship Recodes
Contract Rent	

ABSTRACT

The user should note that there are limitations to many of these data. Please refer to the technical documentation provided with the Public Use Microdata Samples for a further explanation on the limitations of the data.

Farm Status and Value	Real Estate Taxes
Fire, Hazard, Flood Insurance	Rooms
Fuels Used	Sewage Disposal
Gross Rent	Source of Water
House Heating Fuel	State (Residence)
Household Income in 1989	Telephone in Housing Unit
Household Type	Tenure
Housing Unit Weight	Units in Structure
Kitchen Facilities	Vacancy Status
Linguistic Isolation	Vehicles Available
Meals Included in Rent	Year Householder Moved into Unit
Mortgage Status and Selected Monthly Owner Costs	Year Structure Built
Plumbing Facilities	
Presence and Age of Own Children	
Presence of Subfamilies in Household	
Property Value	

Items on the person record include:

Ability to Speak English	Migration PUMA
Age	Migration State
Allocation Flags for Population Items	Military Status, Periods of Active Duty Military Service, Veteran Period of Service
Ancestry	Mobility Status
Children Ever Born	Occupation
Citizenship	Person's Weight
Class of Worker	Personal Care Limitation
Disability Status	Place of Birth
Educational Attainment	Place of Work PUMA
Hispanic Origin	Place of Work State
Hours Worked	Poverty Status in 1989
Income in 1989 by Type Industry	Race
Language Spoken at Home	Relationship
Marital Status	
Means of Transportation	

School Enrollment and
Type of School
Time of Departure for Work
Travel Time to Work
Vehicle Occupancy

Weeks Worked in 1989
Work Status in 1989
Work Limitation Status
Year of Entry

the 1990 census. Some tables will be based on the 100-percent tabulations, others on the sample tabulations. [Scheduled for release in 1992-93.]

GEOGRAPHIC COVERAGE

Each PUMS file provides records for States and many of their geographic levels. The hierarchy is shown below: The 5% sample identifies every State and various subdivisions of States called "Public Use Microdata Areas", each with at least 100,000 persons. These PUMAs were primarily based on counties, and may be whole counties, groups of counties, and places. When these entities have more than 200,000 persons, PUMAs can represent parts of counties, places, etc. None of these PUMAs on the 5% sample crosses state lines.

On the other hand, the 1% sample was based primarily on metropolitan/nonmetropolitan areas, and contains PUMAs which were made from whole central cities, whole MSAs or PMSAs, MSA or PMSAs outside the central city, groups of MSAs or PMSAs, and groups of areas outside MSAs or PMSAs. When the areas have more than 200,000 persons, 1% PUMAs can represent parts of central cities, MSA/PMSAs, and so forth. 1% PUMAs may cross State lines and in that case State codes are not shown. See examples of PUMAs in figures 2-4.

RELATED PRINTED REPORTS

Since individual weights are provided on PUMS, most estimates derived from PUMS tabulations can be checked for reasonableness against other 1990 printed reports, STF's or microfiche produced from sample data.

Listed below are the 1990 census printed reports containing sample data from summary tape products STF 3 and STF 4 which may be used to verify estimates provided from PUMS files. These reports will be available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. An order form follows this abstract.

1990 CPH-3, Population and Housing Characteristics for Census Tracts and Block Numbering Areas. One report will be published for each metropolitan area (MA) and one for the non-metropolitan balance of each State, Puerto Rico and the U.S. Virgin Islands showing data for most of the population and housing subjects included in

1990 CPH-4, Population and Housing Characteristics for Congressional Districts of the 103rd Congress. A report for each State and the District of Columbia which provides both 100-percent and sample data for States, congressional districts, and, within congressional districts, counties, places of 10,000 or more inhabitants, county subdivisions of 10,000 or more inhabitants in 12 States, and American Indian and Alaska Native areas. [Scheduled for release in 1994.]

1990 CPH-5, Summary Social, Economic, and Housing Characteristics. These reports, issued for the United States, States, District of Columbia, Puerto Rico and the U.S. Virgin Islands, provide sample population and housing data for states and local government units, (i.e., counties, places, towns, and townships) other county subdivisions and American Indian and Alaska Native areas.

1990 CP-2, Social and Economic Characteristics. These reports are issued for the United States, States, District of Columbia, Puerto Rico, and the U.S. Virgin Islands. They focus on the population subjects collected on a sample basis in 1990. Data are shown for States (including summaries such as urban and rural), counties, places of 2,500 or more inhabitants, county subdivisions of 2,500 or more inhabitants in selected States, and the State portions of American Indian and Alaska Native areas. [Scheduled for release in 1993.]

1990 CP-2-1A, Social and Economic Characteristics for American Indian and Alaska Native Areas. Data are shown for American Indian and Alaska Native areas. [Scheduled for release in 1993.]

1990 CP-2-1B, Social and Economic Characteristics for Metropolitan Areas. Data are shown for MA's. [Scheduled for release in 1993.]

1990 CP-2-1C, Social and Economic Characteristics for Urbanized Areas. Data are shown for UAs.

1990 CP-3, Population Subject Reports. Thirty reports are planned covering populations subjects and subgroups. These include migration, income, and the older population. Geographic areas generally will include the United States, regions, and divisions; some reports may include data for highly populated area such as States, MA's, counties and large places. Scheduled for release in 1993.

1990 CH-2, *Detailed Housing Characteristics*.

These reports, issued for the United States, States, District of Columbia, Puerto Rico, and the U.S. Virgin Islands focus on the housing subjects collected on a sample basis in 1990. Data are shown for State (including summaries such as urban and rural), counties, places of 2,500 or more inhabitants, MCD's of 2,500 or more inhabitants in selected States, Alaska Native areas and the State portion of American Indian areas. [Scheduled for release in 1993.]

1990 CH-2-1A, *Detailed Housing Characteristics for American Indian and Alaska Native Areas*. Data are shown for American Indian and Alaska Native areas. [Scheduled for release in 1993.]

1990 CH-2-1B, *Detailed Housing Characteristics for Metropolitan Areas*. Data are shown for MA's. [Scheduled for release in 1993.]

1990 CH-2-1C, *Detailed Housing Characteristics for Urbanized Areas*. Data are shown for UA's. [Scheduled for release in 1993.]

1990 CH-3, *Housing Subject Reports*. Ten Housing subject reports are planned covering 1990 census items such as structural characteristics and space utilization. Geographic areas generally include the United States, regions, and divisions; some reports may include data for other highly populated geographic areas such as States, MA's, counties, and large places. [Scheduled for release in 1993.]

RELATED ELECTRONIC MEDIA PRODUCTS

PUMS data on compact disk-read only memory (CD-ROM) are issued after the all tape files are released. CENDATA, the Census Bureau's online system, carries PUMS Technical Documentation. STF 3 data are available also on CD-ROM and magnetic tape. Contact Customer Services (301-763-4100) for additional information on electronic media products.

FILE AVAILABILITY

PUMS files are provided for each State and the District of Columbia and are released on a State-by-State basis. All files and pricing information are available from Customer Services, Data User Services Division, Bureau of the Census, Washington, DC 20233. (See above for phone and FAX information.) A machine-readable data dictionary is included on the tape without charge. Options include 6250

or 1600 bpi, ASCII or EBCDIC, labeled or unlabeled. The files are also available on tape cartridges (IBM3480 or compatible format) for the same price. When ordering, please use the order form at the end of this Chapter.

Files for the individual States are priced according to the number of megabytes of data they contain; each megabyte is priced at \$1.25 regardless of the tape specifications. The minimum charge for a computer tape is \$175 for one or more files. See the enclosed order blank for prices of the various PUMS files.

Although a user can order a single file, we have packaged the files by census division for sale since many users order all of the states or at least states which border their state. Discount prices are available where all files in a group are paid for at the time of ordering. See order blank for specific prices.

RELATED REFERENCE MATERIALS

1990 Census Population and Housing Tabulation and Publication Program. This booklet provides descriptions of the data products available from the 1990 census. Available without charge from Customer Services (see above).

Census '90 Basics. This booklet provides a general overview of census activities and detailed information on census content, geographic areas, and products. Available without charge from Customer Services (see above).

Census ABC's-Applications in Business and Community. This booklet highlights key information about the 1990 census and illustrates a variety of ways the data can be used. Available without charge from Customer Services (see above).

A comprehensive *1990 Census of Population and Housing Guide* will be available in 1990. It will provide detailed information about all aspects of the census and a comprehensive glossary of census terms.

TECHNICAL DESCRIPTION

The file contains two record types a "housing" record and a "person" record each consisting of 231 characters of data. Each housing unit record is followed by a variable number of persons records, one for each occupant. Vacant housing units will have no person record, and selected persons in group quarters will have a dummy housing record and a person record.

The 5% (A) sample includes a separate file for each state. The 1% (B) sample includes a file for each State and a file containing PUMAs which cross State lines. The 3% (O) sample (elderly file) has the same geographic composition as the 5% sample, (but includes housing units with at least one person age 60 and over or group quarters persons age 60 and over.)

The block size for the files varies with each user's specifications, however the standard block size is 32,340 characters for 1990 PUMS.

SOFTWARE CONSIDERATIONS

The 1990 Public Use microdata files are a special type of nonrectangular file-hierarchical. That is, the file contains several record types each with different variables, rather than one gigantic record with all the variables. We release the PUMS in this format because of the tremendous amount of data contained in one record. The file is sorted to maintain the relationship between both record types.

Although these records are extremely large they can be handled by most statistical or report writing software. There are two basic record types: the housing unit record and the person record. For 1990, each of the records contains a serial number which links the persons in the housing unit to the proper housing unit record, so that a user no longer needs to worry about keeping the record sequence as the file was delivered.

In today's information processing environment, most standard statistical software packages are now capable of handling the file in either format: hierarchical or rectangular structure. Most software packages, such as SAS, SPSS, BMDP, and some relational data base systems, will in fact rectangularize hierarchical files. Further, the manuals accompanying most packages contain samples of code showing how to process the files. Several of the packages also have extract procedures already coded into the software.

The 1990 PUMS will be accompanied by electronic data dictionaries in a format which will allow the user to read in ASCII characters and prepare statements transforming the variables and their corresponding descriptions and values to the proper statements required by the software package of choice.

The files will be ASCII, with no special software appended, so as to be compatible with most software packages. But the technical documentation will include a section on "how to use this file", where software concerns

will be addressed. The user must be familiar with the processing system's limitations and the efficiency of the procedures within the software packages.

Users may also write their own code enabling them to perform custom tabulations on their system of choice.

Order Form (Prelim.): 1990 Public Use Microdata Samples on Computer Tape

Product Overview

The 1990 Public Use Microdata Samples (PUMS) contain individual records of responses to questionnaires with unique identifiers (names, addresses, etc.) removed so that the confidentiality of respondents is protected. These files, on computer tape, enable users to produce their own tabulations within the limits of the data provided. For 1990, the Bureau will produce PUMS for the United States and those outlying areas which meet a 100,000 minimum population size threshold. Currently, the standard PUMS products are the 5% and 1% samples for the United States and Puerto Rico, and a special 3% sample dealing specifically with the elderly population. The 5% and 1% samples are similar in content to the "A" and "B" files made available in 1980.

Besides the obvious difference in file size, the 5% and 1% files differ in the geography around which the files are constructed. For example, the Public Use Microdata Area (PUMA) is the lowest level of geography identified on any PUMS file. The 5% sample is basically a county level file; that is the PUMA can be a single county (county equivalent), a group of counties, a place, or county/place parts if that county had more than 200,000 persons. On the other hand, the 1% sample is basically a metropolitan area file. For this, the PUMA will be an MSA, groups of MSAs, parts of MSAs when the MA is larger than 200,000 persons, and groups of nonmetropolitan areas.

The file structure of all PUMS files is hierarchical, with special features to aid in their use with commercial/existing software packages. While no "value-added" user software will be provided by the Census Bureau, the technical documentation will include a section with suggestions and pointers on how to use these files. All PUMS files have two record types; one for housing units, and one for persons. The number of records per file are determined by the sample size.

All 1990 5% and 1% PUMS files on computer tape will be available by the end of 1992. These files will also be released on CD-ROM, at a date to be determined. The Elderly 3% PUMS files will be made available early 1993, on computer tape only.

Customer Typology

To enable us to learn more about our customers, Please check one:

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Company or personal name

Additional address/attention line

Street Address (No P.O. box numbers please - the shipping service we use cannot deliver to a post office box.)

City, State, ZIP code

Telephone: Voice

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To be completed by customer:

Total this Order: _____

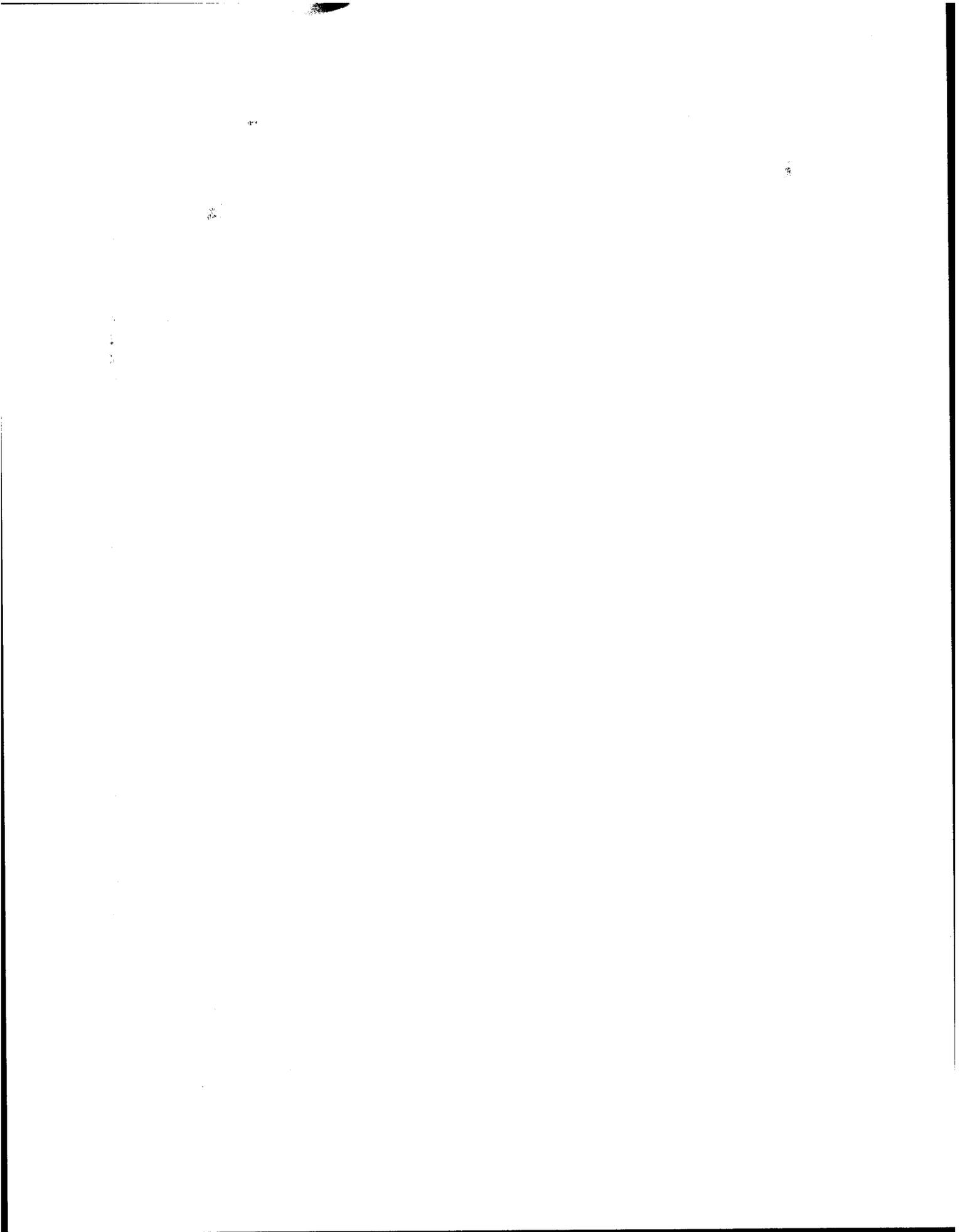
Method of Payment (Please check one):

Check payable to Commerce-Census Census deposit account:

VISA or MasterCard Account:

Expiration date: month: year: Name on card: _____

Census use only: Order taken by: _____ Date: _____



1990 Public Use Microdata Samples on Computer Tape

Yes, Please send all states for the 5% (\$4000); 1% (\$800); 3% - Elderly (\$2400) PUMS Files.

File Availability

The 1990 Public Use Microdata Sample (PUMS) files on computer tape are provided for each State and the District of Columbia, and are available for purchase State-by-State, by division, or as a complete set.

Tape Format Options

The PUMS files are available in the following formats. Please specify the format of choice when ordering. Remember, the format selection has no bearing on product pricing. Computer tape reels are industry standard 9 track, 2400 foot reels.

Density:

- 6250 BPI
 1600 BPI

Translation coding:

- EBCDIC
 ASCII

Labeling:

- Standard IBM Label
 Unlabeled
 or, you may select:
 IBM 3480 Tape Cartridge

A machine-readable data dictionary is included without charge.

Product Pricing

PUMS files on computer tape are priced according to file size. Specific State prices for the 5% sample are shown below. Otherwise, the 1% and 3% (Elderly) samples are priced by Division only. A special discount price is available for those wishing to purchase all States/divisions in a PUMS file at one time. Priority shipping and handling service is available at additional cost. Call for details.

Upon receipt, an acknowledgment letter will be sent noting an approximate shipping date.

Return this Order to:

For regular US Postal delivery, use the following mailing address:

**Customer Services
 Bureau of the Census
 Washington, DC 20233**

or fax it to 301-763-4794.

However, if you are sending your order by *any specialized courier service* (such as Federal Express for example), please use our special direct delivery address instead:

**Customer Services
 Washington Plaza Bldg.
 Room 326
 8903 Presidential Pkwy
 Upper Marlboro, MD 20772**

Division/State	5%	1%	3% (Elderly)	Division/State	5%	1%	3% (Elderly)
New England Division	\$275	\$175	\$175	<input type="checkbox"/> South Carolina	175		
<input type="checkbox"/> Connecticut	175			<input type="checkbox"/> Florida	275		
<input type="checkbox"/> Maine	175			<input type="checkbox"/> Georgia	175		
<input type="checkbox"/> Massachusetts	175			East South Central Div.	\$300	\$175	\$175
<input type="checkbox"/> New Hampshire	175			<input type="checkbox"/> Alabama	175		
<input type="checkbox"/> Rhode Island	175			<input type="checkbox"/> Kentucky	175		
<input type="checkbox"/> Vermont	175			<input type="checkbox"/> Mississippi	175		
Middle Atlantic Div.	\$750	\$175	\$450	<input type="checkbox"/> Tennessee	175		
<input type="checkbox"/> New York	350			West South Central Div.	\$550	\$175	\$325
<input type="checkbox"/> New Jersey	175			<input type="checkbox"/> Arkansas	175		
<input type="checkbox"/> Pennsylvania	225			<input type="checkbox"/> Louisiana	175		
East North Central Div.	\$825	\$175	\$500	<input type="checkbox"/> Oklahoma	175		
<input type="checkbox"/> Indiana	175			<input type="checkbox"/> Texas	350		
<input type="checkbox"/> Ohio	225			Mountain Division	\$275	\$175	\$175
<input type="checkbox"/> Illinois	225			<input type="checkbox"/> Arizona	175		
<input type="checkbox"/> Michigan	175			<input type="checkbox"/> Colorado	175		
<input type="checkbox"/> Wisconsin	175			<input type="checkbox"/> Idaho	175		
West North Central Div.	\$350	\$175	\$225	<input type="checkbox"/> Montana	175		
<input type="checkbox"/> Minnesota	175			<input type="checkbox"/> Nevada	175		
<input type="checkbox"/> Missouri	175			<input type="checkbox"/> New Mexico	175		
<input type="checkbox"/> South Dakota	175			<input type="checkbox"/> Utah	175		
<input type="checkbox"/> Iowa	175			<input type="checkbox"/> Wyoming	175		
<input type="checkbox"/> Kansas	175			Pacific Division	\$750	\$175	\$450
<input type="checkbox"/> Nebraska	175			<input type="checkbox"/> Alaska	175		
<input type="checkbox"/> North Dakota	175			<input type="checkbox"/> Hawaii	175		
South Atlantic Division	\$925	\$175	\$550	<input type="checkbox"/> Oregon	175		
<input type="checkbox"/> Delaware	175			<input type="checkbox"/> Washington	175		
<input type="checkbox"/> District of Columbia	175			<input type="checkbox"/> California	575		
<input type="checkbox"/> Maryland	175						
<input type="checkbox"/> Virginia	175						
<input type="checkbox"/> West Virginia	175						
<input type="checkbox"/> North Carolina	175						
				Special Package Price (discounted)	\$4000	\$800	\$2400

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CHAPTER 1. INTRODUCTION

OVERVIEW

Public-use microdata samples are computer accessible files which contain records for a sample of housing units, with information on the characteristics of each unit and the people in it. We exclude information which would identify a household or an individual in order to protect the confidentiality of respondents. Within the limits of the sample size and geographic detail, these files allow users to prepare virtually any tabulations they require.

Separate public-use microdata samples are available, each representing five percent or one percent of the population and housing of the United States:

- o 5% Sample, identifying all States and various subdivisions within them, including most counties with 100,000 or more inhabitants;
- o 1% Sample, identifying all metropolitan territory and most MAs with 100,000 or more inhabitants individually, and groups of [MAs] elsewhere; A 3% elderly sample will be available also.

WHAT IS MICRODATA?

We provide computer accessible data products in several formats as summary data or as microdata. Summary data are the type of data found in census printed reports, summary tape files, microfiche, and most special tabulations; microdata are the information collected from each person and housing unit on the questionnaire.

In summary data, the basic unit of analysis is a specific geographic area (for example, a census tract, county or State) for which counts of persons or housing units (or aggregated data) in particular categories are provided. In microdata, the basic unit is an individual housing unit and the persons who live in it. Figure 1 illustrates the basic distinctions between summary data and microdata.

Often, there are two types of microdata: Confidential microdata include the census basic record types, computerized versions of the questionnaires collected from households, as coded and edited during census processing. The Census Bureau tabulates these confidential microdata in order to produce the summary data that go into the various reports, summary tape files (STFs), and special tabulations.

Public-use microdata samples are extracts from the confidential microdata taken in a manner that avoids disclosure of information about identifiable households or individuals.

PROTECTING CONFIDENTIAL INFORMATION

All data released (in print or electronic media) by the Bureau of the Census are subject to strict confidentiality measures imposed by the legislation under which our data are collected: Title 13, U.S. Codes which protects the confidentiality of individual respondents. Responses to the questionnaire can be used only for statistical purposes, and Census Bureau employees are sworn to protect respondents' identities.

Records on public-use microdata samples are selected after the confidentiality edit is performed, and contain no names or addresses. Also, the Bureau limits the detail (topcodes, recodes) on place of residence, place of work, high incomes, and other selected items to further protect the confidentiality of the records.

Microdata records identify no geographic area with fewer than 100,000 inhabitants. Microdata samples include only a small fraction of the population, drastically limiting the chance that the record of a given individual is even contained in a public-use microdata file, much less identifiable.

Uses Of Microdata Files

Public-use microdata files essentially make possible "do-it-yourself" special tabulations. Since the 1990 files furnish nearly all of the detail recorded on long-form questionnaires in the census, subject to the limitations of sample size and geographic identification, users can construct an infinite variety of tabulations interrelating any desired set of variables. Users have the same freedom to manipulate the data that they would have if they had collected the data in their own sample survey, yet these files offer the precision of census data collection techniques and sample sizes larger than would be feasible in most independent sample surveys.

Microdata samples will be useful to users (1) who are doing research that does not require the identification of specific small geographic areas or detailed cross tabulations for small populations, and (2) who have access to programming and computer time needed to process the samples. Microdata

users frequently study relationships among census variables not shown in existing census tabulations, or concentrate on the characteristics of certain specially defined populations, such as unemployed homeowners or families with four or more children.

SAMPLE DESIGN AND SIZE

Each microdata file is a stratified sample of the population, actually a subsample of the full census sample (approximately 15.9% of all housing units) that received census long-form questionnaires. Sampling was done housing unit-by-housing unit in order to allow study of family relationships and housing unit characteristics. Sampling of persons in institutions and other group quarters was done on a person-by-person basis. Vacant units were sampled also.

There are two independently drawn samples, designated "5% (A)" and "1% (B)," each featuring a different geographic scheme, as discussed below. Samples from the 1970 and 1960 censuses also employed a 1% sample size, the 5% sample was new for 1980. Nationwide, the 1990 5% Sample gives the user records for over 12 million persons and over 5 million housing units. On the other hand, since processing a smaller sample is less expensive, some users will want to produce extracts using the subsample numbers provided in the housing record. Sample design is discussed more thoroughly in chapter 4.

Unlike 1980, each file contains individual weights for both the housing unit and the persons in the unit. The user can estimate the frequency of a particular characteristic for the entire population by summing the weight variables for records with that characteristic from the microdata file. A section of Chapter 4 discusses the preparation and verification of estimates (see page 4-1).

Reliability improves with increases in sample size, so the choice of sample size must represent a balance between the level of precision desired and the resources available for working with microdata files. By using tables provided in chapter 3 (see page 3-2), one can estimate the degree to which sampling error will affect any specific estimate prepared from a microdata file of a particular sample size.

Many factors affect the user's decision on which file to use. Users of microdata files for State or MSA estimates would normally use a 1% or 5% sample, while users concerned only with national figures can frequently get by with a smaller sample, say a 0.1-percent (one-in-a-thousand) sample. **Although we no longer provide the 0.1% file we do provide subsample numbers which allow scientifically**

designed extracts of various sizes to be drawn. Even national users may need a 1% or a 5% sample if extremely detailed tabulations are needed, or if users are concerned with very small segments of the population, for example, females 75 years old or over of Italian ancestry.

One of the examples in chapter 3 discusses the selection of the appropriate sample size for a particular study.

SUBJECT CONTENT

Microdata files contain the full range of population and housing information collected in the 1990 census: 500 occupation categories, age by single years up to 90, wages in dollars up to \$140,000, and so forth. Because the samples provide data for all persons living in a sampled household, users can study how characteristics of household members are interrelated (for example, income and educational attainment of husbands and wives).

Information for each housing unit in the sample appears on a 231-character record with geographic and housing items, followed by a variable number of 231-character records with person's information, one record for each member of the household. Items on the housing record are listed beginning on page 5-1; items on the persons record are listed beginning on page 5-4. Although each of the items as collected is further defined in the glossary (reprinted from the 1990 Census Users' Guide) presented as appendix B to this document, it is important to note that we modified several items on the microdata file to provide protection for individual respondents. We also include many transformed variables (recodes), such as those appearing on the STF 3A files, so that users can analyze many complex relationships between records. Data users will frequently want to generate additional variables or develop recodes to meet their individual needs.

While it is impossible to predict all the transformations (recodes) required by data users, we included many of the more common ones (household income, selected monthly owner costs, poverty status, and so forth). Transformations such as these, as well as corrections that apply to certain subjects, are discussed in appendix C.

We edited the sample questionnaires for completeness and consistency, and made substitutions or allocations for any missing data. Allocation flags appear at the end of each record indicating each item which has been allocated. Thus, a user desiring to tabulate only actually observed values can eliminate variables with allocated values. Editing and allocation flags are discussed beginning on page 3-15.

Figure 1. Comparison of Summary Data With Information on Microdata Files

SUMMARY DATA

- Basic unit is an identified geographic entity
- Data summarized on people and housing in specified entity
- Available for small areas

ILLUSTRATIVE SUMMARY DATA

Place	Total population	Occupied housing units	Persons per unit	Renter occupied units	Gross rent		
					Under \$100	\$100-149	\$150-199
Weston City	110,938	49,426	2.2	31,447	158	1,967	6,282
Smithville	21,970	7,261	3.1	2,492	17	90	766
Junction	17,152	5,494	2.7	822	11	29	238

PUBLIC-USE MICRODATA

- Basic unit is an unidentified housing unit and its occupants
- Unaggregated data to be summarized by the user
- Allows detailed study of relationships among characteristics
- Not available for small areas

ILLUSTRATIVE MICRODATA*

	State of residence	PUMA	Persons in household	Telephone	Complete plumbing	Monthly rent	Vehicles	Household type
Housing unit #1	Virginia	Area name or code	3	Yes	Yes	\$525-549	2	Married-couple family
	Housing unit no.	Relationship	Sex	Age	Race	Place of birth	Occupation	Earnings
Person a	1	Householder	M	37	W	Kansas	Plumber	\$28,100
Person b	1	Spouse	F	35	W	Virginia	NA	0
Person c	1	Child	M	6	W	Virginia	NA	0
Housing unit #2	Virginia	Area name or code	1	Yes	Yes	\$650-699	1	Nonfamily householder
Person a	2	Householder	F	62	B	Alabama	Postsecondary economics teacher	\$45,300
Housing unit #3	Virginia	Area name or code	0	N/A	Yes	\$300-324	N/A	Vacant

* Public-use microdata samples do not actually contain alphabetic information. Such information is converted to numeric codes; for example, the State of Virginia has a numeric code of 51.

GEOGRAPHIC IDENTIFICATION

The 5% and 1% Samples each feature a different geographic scheme: We call the geographic areas PUMAs for Public Use Microdata Areas. We use the term to apply to each of the areas identified on these files. A 5-digit number, unique within State, identifies each PUMA. The first three digits is the PUMA code and the last two are the sub-PUMA. The sub-PUMA is used when counties or metropolitan areas are subdivided by groupings of census tracts. For example, the PUMAs for Bronx County, New York consist of several groups of census tracts numbered from 05101 through 05111, whereas the PUMA numbered 03500 is made up of 3 counties: Courtland, Tioga and Tompkins Co.

The State Data Center provided the PUMAs for most states. For the states of Georgia, Indiana, and Oregon, the Census Bureau developed the PUMAs with input from the respective State Data Center.

- o The 5% Sample identifies every State, most individual counties or county equivalents with 100,000 or more inhabitants, many individual cities or groups of places with 100,000 or more inhabitants, and for counties with at least 200,000 inhabitants groupings of Census tracts are also identified.

Areas with populations under 100,000 have been grouped into reasonable analytic units often equivalent to State planning district boundaries. In New England, areas are defined in terms of cities and towns rather than counties.

The 1% Sample identifies MAs of 100,000 or more inhabitants. The remaining MAs are paired together so that metropolitan and nonmetropolitan territory can be separately analyzed.

Many large cities, groups of cities, and counties are identified within large MAs. Outside MAs, counties are grouped according to State planning districts or into other reasonable analytic units with populations of 100,000 or more.

On the 1% sample, when PUMAs cross state boundaries, states are not separately identified. All of these records appear on a separate file where the state is identified as "99". (See Appendix G).

The characteristics of the different geographic schemes are compared in the maps and charts which follow in figures 2, 3, and 4.

Purchasers of the 1% Sample for any of the States which include area in a county group crossing State lines may want to request that the "State Code 99" file be stacked onto a tape being purchased. Estimates of the number of tapes required for specified groups of files at a given density and blocking factor are available on request from Customer Services.

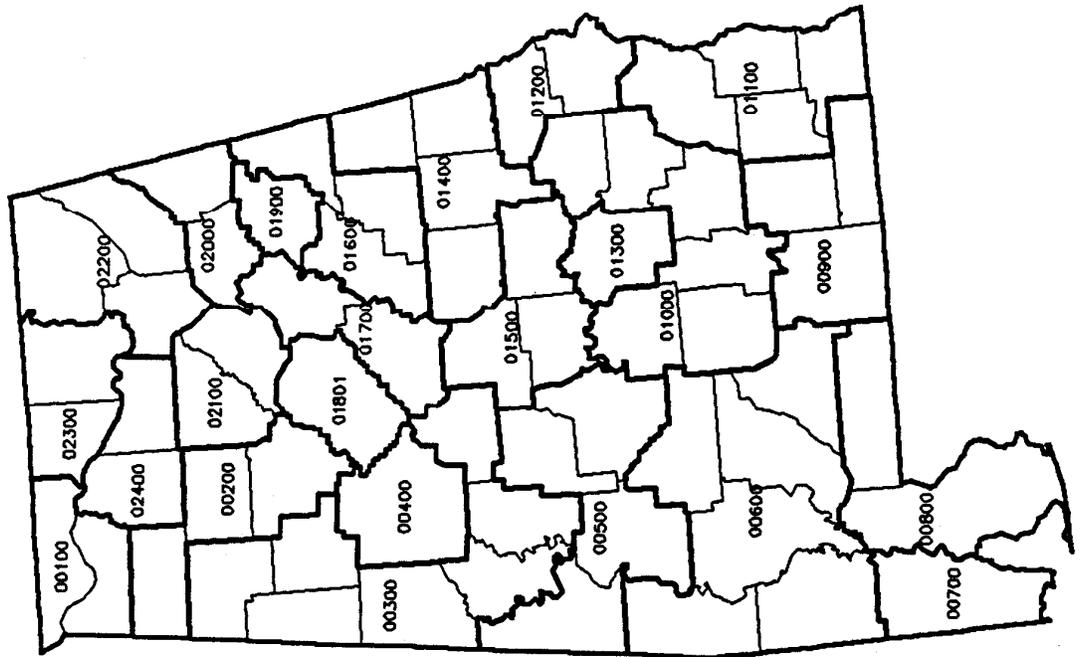
At the time of this printing, we have not produced files for all States, and estimates of the number of tapes required for specified groups of files at a given density and blocking factor are available on request from Customer Services. We will issue a user note updating this information when all files are produced.

CORRESPONDING MICRODATA FROM EARLIER CENSUSES

PUMS files exist for the 1960, 1970 and 1980 censuses. Very little comparability exists between geographic identifiers on each of the previous files, but housing and population characteristics are similar. And because of this similarity, microdata files from the most recent censuses are a rich resource for analysis of trends. Items which were added, dropped, or substantially changed between 1980 and 1990 are listed in figure 5. Appendix B discusses historical comparability of items in greater detail.

FIGURE 2

ALABAMA (5% PUMA BOUNDARIES)



ALABAMA 5% PUMA Boundaries

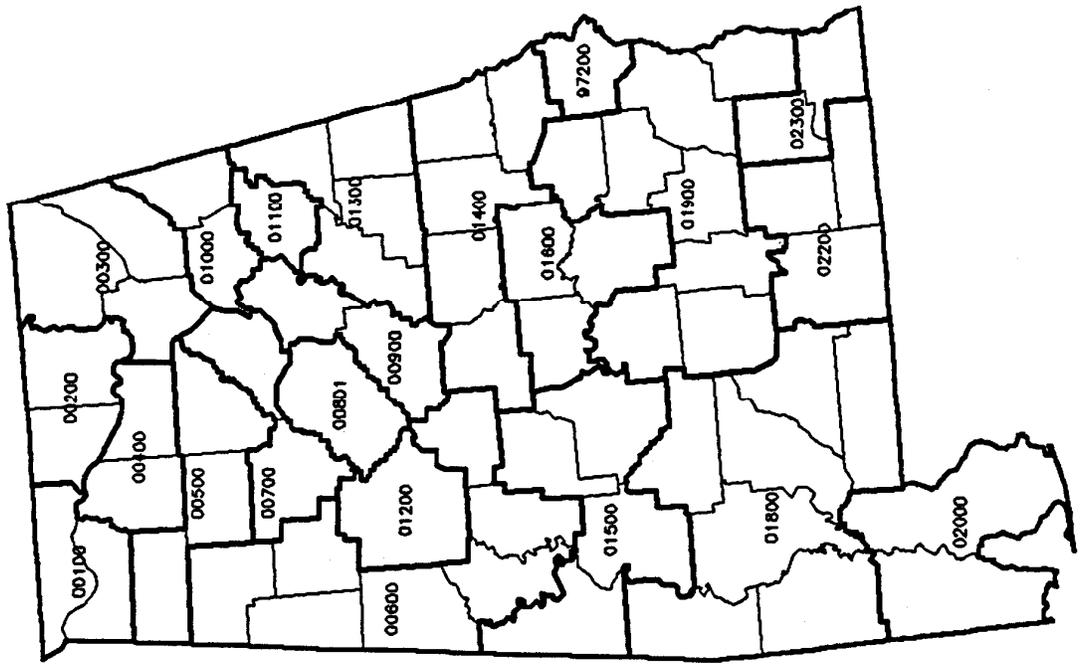
- Counties
- PUMA
- States

JEFFERSON COUNTY PUMAs: 01801-01806



FIGURE 3

ALABAMA (1% PUMA BOUNDARIES)



ALABAMA 1% PUMA Boundaries

Counties



PUMA



States



JEFFERSON COUNTY PUMAs: 00801-00806

MONTGOMERY CITY 01700

MOBILE CITY 02100

Miles



FIGURE: 4

COMPONENTS OF 5% SAMPLE PUMA_s

STATE: 06 FUMA: 06901 MSA/PMSA: 6780 TOTAL POPULATION: 193688
 TYPE OF AREA: COUNTY/INDEPENDENT CITY (PART)

NAME	POPULATION	ST	COU	MCD	PLACE	TRACT	MSA/PMSA
CATHEDRAL CITY	30085	06	065		0465		6780
COACHELLA	16896	06	065		0555		6780
DESERT HOT SPRINGS	11668	06	065		0765		6780
INDIAN WELLS	2647	06	065		1327		6780
INDIO	36793	06	065		1330		6780
LA QUINTA	11215	06	065		1482		6780
PALM DESERT	23252	06	065		2080		6780
PALM SPRINGS	40181	06	065		2085		6780
RANCHO MIRAGE	9778	06	065		2281		6780
RIVERSIDE COUNTY (PART)	3869	06	065	010	9999	044903	6780
RIVERSIDE COUNTY (PART)	13	06	065	010	9999	044901	6780
RIVERSIDE COUNTY (PART)	1719	06	065	020	9999	045201	6780
RIVERSIDE COUNTY (PART)	1951	06	065	020	9999	045202	6780
RIVERSIDE COUNTY (PART)	3533	06	065	030	9999	044502	6780
RIVERSIDE COUNTY (PART)	88	06	065	075	9999	044803	6780

STATE: 01 FUMA: 00300 MSA/PMSA: 9999. TOTAL POPULATION: 126433
 TYPE OF AREA: COUNTIES/INDEPENDENT CITIES (2 OR MORE)

NAME	POPULATION	ST	COU	MCD	PLACE	TRACT	MSA/PMSA
BIBB COUNTY	16576	01	007				9999
FAYETTE COUNTY	17962	01	057				9999
GREENE COUNTY	10153	01	063				9999
HALE COUNTY	15498	01	065				9999
LAMAR COUNTY	15715	01	075				9999
MARION COUNTY	29830	01	093				9999
PICKENS COUNTY	20699	01	107				9999

COMPONENTS OF 1% SAMPLE PUMA_s

STATE: 06 FUMA: 01802 MSA/PMSA: 5775 TOTAL POPULATION: 122246
 TYPE OF AREA: MSA/PMSA-OUTSIDE CENTRAL CITY (PART)

NAME	POPULATION	ST	COU	MCD	PLACE	TRACT	MSA/PMSA
CLAYTON	7317	06	013		0537		5775
CONCORD	111348	06	013		0595		5775
CONTRA COSTA COUNTY (PART)	1061	06	013	028	9999	315099	5775
CONTRA COSTA COUNTY (PART)	655	06	013	028	9999	333100	5775
CONTRA COSTA COUNTY (PART)	126	06	013	028	9999	338100	5775
CONTRA COSTA COUNTY (PART)	7	06	013	028	9999	355200	5775
CONTRA COSTA COUNTY (PART)	517	06	013	028	9999	315000	5775
CONTRA COSTA COUNTY (PART)	114	06	013	028	9999	355305	5775
CONTRA COSTA COUNTY (PART)	81	06	013	028	9999	355304	5775
CONTRA COSTA COUNTY (PART)	238	06	013	028	9999	355303	5775
CONTRA COSTA COUNTY (PART)	6	06	013	028	9999	355301	5775
CONTRA COSTA COUNTY (PART)	68	06	013	028	9999	355302	5775
CONTRA COSTA COUNTY (PART)	708	06	013	107	9999	355102	5775

CHAPTER 2. HOW TO USE THIS FILE

This chapter serves as a guide for data users to both the tape and the technical documentation. Novice users trying to understand how to use the documentation and the file should read this chapter first.

DOCUMENTATION CHAPTERS

The Abstract chapter in this documentation provides a quick overview of the file, including the formal title, geographic coverage, subject coverage, and file availability. Also shown are citations for related reference materials and printed reports. Their titles and geography are included in this section, along with purchasing information.

Chapter 1 describes microdata, chapter 3 describes accuracy of the data, and chapter 4 describes the sample design and estimation for PUMS.

USER NOTES

Information about file or documentation changes sometimes becomes available after the documentation has been printed. User notes inform the user community about these changes. These are issued in a numbered series. If there are technical documentation changes, revised pages usually accompany them. The revised pages should be inserted in their proper location, but the user note cover sheet should be filed in the User Notes chapter. Technical notes, which contain file errata, are also issued by the Census Bureau. We suggest filing these following appendix I.

DATA DICTIONARY

The data dictionary (code book) describes the file and provides character locations for each variable.

The components include a short mnemonic or field name for use with software packages; field size; starting position; and a description of field contents with possible values.

There also is a machine-readable data dictionary file on the data tape. This dictionary is designed to be converted for use with various software packages.

APPENDIXES

Detailed information on geographic areas is in appendix A followed by subject-matter definitions in

appendix B. Appendix C provides information about the data changes on PUMS while appendix D outlines the data collection and processing procedures. Facsimiles of both the respondent instructions and 1990 census long-form questionnaire are in appendix E.

Appendix F furnishes detailed information on all the data products of the 1990 census, as well as suggested sources of information and assistance. Map information is included in appendix G (to be supplied as user notes). The record layout for the machine-readable data dictionary file that accompanies each tape order is in appendix H.

Appendix I contains the code lists used in processing the data for most sample products. These are especially helpful in determining the components included in categories such as race, and group quarters. On the PUMS, the information on these lists may be changed for disclosure protection purposes. Those changes are indicated in the data dictionary and further explained in appendix C.

INTERNAL FILE LABELS

System Labels

Tape orders which specify labeled tapes will have a standard American National Standards Institute (ANSI) label. The system label consists of 17 characters, but only the first 12 are active. The remaining five characters will be 'x' filled. The 1990 PUMS files have a Data Set Name (DSN) of PUMStXss.Fnnxxxx where t is A, B, or Q depending on the file, ss is the United States Postal Service (USPS) State abbreviation, and nn is a two-digit number with leading zeroes identifying the tape volume sequence. (The "X", "F", and "x" in the DSN remain constant).

User Labels

Each user tape will have two user header labels and two user trailer labels. These labels combine information from the system label and the identification portion of the first and last record. These labels enable the user to quickly identify the beginning and ending records on each tape.

User Header Labels

The user header labels are designated UHL1 and UHL2. UHL1 and UHL2 repeat information from the system label in HDR1 and HDR2.

User Trailer Labels

The user trailer labels are designated UTL1 and UTL2. UTL1 and UTL2 contain information from the system trailer label.

STATE-SPECIFIC FILE INFORMATION

State-specific file information, such as record counts, is not provided in the technical documentation. However, each tape order is accompanied by a tape creation sheet. This sheet provides the file name, file label (HDR1), record size, block size, and record count.

The tape creation sheet received with the tape should be filed in the technical documentation notebook or with other tape information maintained by the user.

File Structure

Each file consists of a series of 231-character logical records of two types; housing and persons. Each housing unit record is followed by a variable number of person records, one for each member of the housing unit or none if vacant, as illustrated in figure 1. Each person in group quarters has two records--a dummy "housing unit" record (most nongeographic fields are not applicable), as well as a person record. For 1990, we made several improvements to the file to aid in processing the data. Two improvements allowing users more processing flexibility are the inclusion of the housing unit serial number on both record types and the inclusion of individual weights on each record. Including the housing unit serial number on both records affords the user an option as to how to process the data--either rectangularly or hierarchically. With the introduction of individual weights, users can more closely approximate published data. Another improvement for 1990 is providing many of the recodes (data transformations) which appear on the summary tape file (STF 3A). While the changes increase the file size, we should see an associative increase in file utility.

In the text of this document, the numeric identification of a particular data item is the same as its character location within a record. Items on the housing record are prefixed with an *H*, items on the person record with a *P*. For instance, Race, item P12-14, is a two-digit code beginning in character 12 of the person record. We continue to provide in the data dictionary, or record layout, mnemonic identifiers, many of which are the same as those used in 1980. Geographic identifiers and subsample identifiers

appear only on the housing unit record. Thus, most tabulations of person characteristics require manipulation of both housing and person records. An item on the housing record indicates the exact number of person records following before the next housing record (PERSONS). This feature allows a program to anticipate what type of record will appear next, if necessary.

In today's data manipulation environment, users have many options for processing data and are limited only by the amount and type of resources. Most statistical software packages (e.g. BMDP, SAS, SPSS, to name a few) are capable of handling the data either hierarchically or rectangularly. Many users may still want to create extract files with any desired household data repeated with each person's record. Users with limited resources (funds, personnel, software/hardware) may want to create or obtain extracts containing only those variables of interest.

All fields are numeric, except for the Record Type which are "H" and "P."

File Size

Every file purchased from the Census Bureau includes a printout showing the total record count. Estimated file sizes are not shown now, but in a future user note record counts for each state will be identified.

Record Sequence

We release these files on a state-by-state basis. Records on these files are sorted by geographic area within state. On the 5% and 1% Samples, all households sampled within a particular PUMA appear together. PUMAs are sequenced in ascending order within State. On the 1% Sample, this means that all PUMAs with State code suppressed (i.e., shown as 99) appear on a separate file. In order to provide an extra measure of protection from disclosure of individual households within each geographic area, we scramble the records to avoid any implication of geographic information beyond that which meets Census Bureau disclosure rules for the 1990 PUMS. Person records within household are sequenced by relationship code (P2). The householder record always immediately follows the housing unit record for an occupied unit. This feature simplifies tabulation of households or families by race of householder, ancestry of householder, and even poverty status--since the desired indicators are always on the first person record. Where the household contains more than one person of a given relationship, person records appear in sequence of decreasing age (P8-9).

Persons sampled from within the same group quarters are not identifiable as such, since each has an independent dummy housing unit record.

Machine-Readable Documentation

Every file includes a machine readable "data dictionary" or record layout. Irrespective of the PUMS sample used, the record layout is the same. A user can produce hard copy documentation for extract files or labels for tabulations created; or with minor modifications, can use the data dictionary file with software packages or user programs to automatically specify the layout of the microdata files. Also available in machine-readable form is the PUMA Equivalency File, which lists the geographic components (counties or MCDs, places, tracts where available) and their assigned PUMA codes for the 5% and 1% samples.

Handling Invalid Codes

The data dictionary shows each category as having a unique representation. Although we reviewed test files for several states, we may have a small number of cases outside the specified range for a variable. We will correct these errors when found, but users may follow the standard census practice to assign invalid codes to the next lower numbered valid category. For example, on an allocation flag with valid codes 0, 2 and 3, a 1 would be counted with code 0, and a code of 4 or more would be counted with 3. Exceptions to this rule occur in occupation and industry codes, where invalid codes are assigned to the next higher valid category.

Preparing and Verifying Tabulations

Estimation of totals - Estimates of complete-count census figures may be made from tabulations of public use microdata samples by using a simple inflation estimate - that is, summing the weights associated with that variable; (e.g. for housing characteristics, use the housing unit weight; for persons characteristics, use the person weight.) Those users using subsample numbers to vary the sample size must apply an appropriate factor, or, otherwise adjust the weights to derive an appropriate estimation of totals. We further explain the use of weights and subsample numbers in Chapter 4.

Estimation of percentages - a user can estimate percentages by simply dividing the weighted estimate of persons or housing units with a given characteristic by the weighted sample estimate for the base. Normally, this yields the same as would be obtained if one made the computation using

sample tallies rather than weighted estimates. For example, the percentage of housing units with air conditioning in a one-in-one-hundred sample can be obtained by simply dividing the tally of sample housing units with air conditioning by the total number of sample housing units.

Verifying tabulations - Producing desired estimates from the public-use microdata samples is relatively easy. File structure and coding of items is straightforward. There are no missing data (see the section on allocations, page 3-38). Records not applicable for each item are assigned to specific "NA" categories, and it is frequently not necessary to determine in a separate operation whether a record is in the universe or not. PUMs "universe" and "variable" definitions may differ from other products produced from sample data primarily because of concerns about disclosure risks (e.g. PUMs files may have different topcodes from STF 3A, or the recodes may vary because the components were topcoded). A user must, however, anticipate the possibility of errors in his or her own processing. Thus, user tabulations should be verified against other available tallies. Two ways for the user to verify estimates follow:

1. Using control tabulations from the samples. As each public-use microdata sample was produced, counts of persons, housing units, vacant housing units, and group quarters persons selected into the sample were tallied within each identified geographic area. These control counts will be published as a supplement to this documentation. (In the interim, counts for specific areas may be requested from Customer Services.) If users cannot replicate these exact counts, review of the user's programs, and the shipping advices accompanying the files are in order.
2. Using published data from the 1990 censuses. Tabulations from the 1990 census data base are available in the printed census publications and on summary tape files. Users may check the reasonableness of statistics derived from public-use microdata samples against these sources. A familiarity with summary data already available may also facilitate planning of tabulations to be made from microdata. Those publications series likely to be of greatest use for this purpose are listed in Figure 5. In comparing sample tabulations with published data one must carefully note

the universe of the published tabulation. For instance, on microdata records, Industry (P87-89) is reported for the civilian labor force and for persons not in the labor force who reported having worked in 1985 or later. Industry tabulations in 1990 census publications are presented only for the employed population or the experienced civilian labor force. Thus, a tally of Industry for all persons from whom industry is reported in microdata records would not correspond directly to any published tabulation. **"A user should always pay particular attention to concept definitions as presented in the glossary."** One cannot, of course, expect exact agreement between census publications which are based on the complete census count, full sample estimates, or a subsample of the census sample and user estimates based on tallies of a 5-percent or smaller sample. They will inevitably differ to some extent due to chance in selection of actual cases for Public Use Microdata Samples. Since the amount of likely chance variation for a given statistic can be measured, any discrepancy beyond a certain level can be identified as a likely error in programming. Chapter 3 discusses sampling variability and its measurement. User experience has indicated that careful verification of sample tabulations is essential -- so important that it may frequently be advisable to include additional cells in a tabulation for no other reason than to provide counts or to yield marginal totals, not otherwise available, which may be verified against available tabulations.

Figure 5. 1980-1990 Subject Comparability

Most of the items for 1990 are comparable to 1980. Several items found in 1980 PUMS are not in the 1990 file primarily because the inquiries were not asked or because we are providing a measure of protection for respondents. Full descriptions of item comparability are given in appendix B. However, users should read appendix C for differences in PUMS definitions and those of other census products.

1990 Items not on 1980 Files

Condominium fees
Employment status of parents recode
Flag indicating all 100% person's data substituted
Flag indication all 100% housing unit data substituted
Gross rent as a percentage of 1989 Household Income
Household language recode
Housing unit/GQ person serial number
Housing unit weight
Time of departure for work
Linguistic isolation recode
Married, spouse present/absent recode
Mobile home costs
Number of related children in household recode
Number of stepchildren in household recode
Number of persons in family recode
Person's weight
Presence of subfamilies in household
Presence of person under 65 years in household
Presence of person under 60 years in household
Presence of nonrelatives in household
Presence of person under 18 years in household
Rental unit recode
Selected monthly owner costs as a percentage of 1989 household income
Value unit recode
Workers in family recode
Years of active military duty

1980 Items Not on 1990 Files

Access to unit
Age at first marriage
Bathrooms
Cooking Fuel
Heating equipment
Passenger elevator
Place of work SMSA recode
Place of work place size recode
Place of work central city recode
Quarter of birth
Spanish surname
Stories in structure

Concepts Substantially changed

Grade & Finished Highest Grade - now combined and grouped to show highest level completed
Race - Several categories added including 25 American Indian tribes
Spanish origin - Now Hispanic origin showing an expanded list of countries

CHAPTER 3 - ACCURACY OF THE MICRODATA SAMPLE ESTIMATES

INTRODUCTION

The tabulations prepared from a public use microdata sample are based on a subset of the 1990 Census sample. The data summarized from this file are estimates of the actual figures that would have been obtained from a 100-percent enumeration. Estimates derived from this sample are expected to be different from the 100-percent figures because they are subject to sampling and nonsampling errors. Sampling error in data arises from the selection of persons and housing units to be included in the sample. Nonsampling error affects both sample and 100 percent data. Errors are introduced during the collection and processing phases of the census. A more detailed discussion of both sampling and nonsampling error is given below.

In microdata samples, the basic unit is an individual housing unit and the persons who live in occupied housing units or group quarters. However, microdata records in these samples do not contain names or addresses. A more detailed discussion of methods to protect confidentiality of individual responses follows.

CONFIDENTIALITY OF THE DATA

To maintain the confidentiality required by law (Title 13, United States Code), the Bureau of the Census applies a confidentiality edit to the 1990 census data to assure that published data do not disclose information about specific individuals, households, or housing units. As a result, a small amount of uncertainty is introduced into the estimates of census characteristics. The sample itself provides adequate protection for most areas for which sample data are published since the resulting data are estimates of the actual counts; however, small areas require more protection. The edit is controlled so that the basic structure of the data are preserved.

The confidentiality edit is implemented by selecting a small subset of individual households from the internal sample data files and blanking a subset of the data items on these household records. Responses to those data items were then imputed using the same imputation procedures that were used for nonresponse. A larger subset of households is

selected for the confidentiality edit for small areas to provide greater protection for these areas.

The editing process is implemented in such a way that the quality and usefulness of the data were preserved.

Since microdata records are the actual housing unit and person records, the Bureau of the Census takes further steps to prevent the identification of specific individuals, households, or housing units.

The main disclosure avoidance method used is to limit the geographic detail shown in the files. A geographic area must have a minimum of 100,000 population to be fully identified. Furthermore, certain variables are topcoded, or the actual value of the characteristics is replaced by a descriptive statistic, such as the median.

SOURCES OF ERRORS IN THE DATA

Since the estimates that users produce are based on a sample, they may differ somewhat from 100-percent figures that would have been obtained if all housing units, persons within those housing units, and persons living in group quarters had been enumerated using the same questionnaires, instructions, enumerators, and so forth. The sample estimate also would differ from other samples of housing units, persons within those housing units, and persons living in group quarters. The deviation of a sample estimate from the average of all possible samples is called the sampling error. The standard error of a sample estimate is a measure of the variation among the estimates from all the possible samples, and thus, is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. The sample estimate and its estimated standard error permit the construction of interval estimates with prescribed confidence that the interval includes the average result of all samples. The method of calculating standard errors and confidence intervals for the data in the microdata samples, is described in the next section.

In addition to the variability which arises from the sampling procedures, both sample data and 100-percent data are subject to nonsampling error.

Nonsampling error may be introduced during any of the various complex operations used to collect and process census data. For example, operations such as editing, reviewing, or handling questionnaires may introduce error into the data.

A detailed discussion of the sources of nonsampling error is given in the section on "Control of Nonsampling Error" in this chapter.

Nonsampling error may affect the data in two ways. Errors that are introduced randomly will increase the variability of the data and should, therefore, be reflected in the standard error. Errors that tend to be consistent in one direction will make both sample and 100-percent data biased in that direction. For example, if respondents consistently tend to under report their income, then the resulting counts of households or families by income category will tend to be understated for the higher income categories and overstated for the lower income categories. Such biases are not reflected in the standard error.

CALCULATIONS OF STANDARD ERRORS USING TABLES

A standard sampling theory text should be helpful if the user needs more information about confidence intervals and nonsampling errors.

Two methods for estimating standard errors of estimated totals and percentages are described in this section. The first method is very simple. This method uses already calculated standard errors for specific sizes of estimated totals and percentages given in tables A through F, shown later in this section. The estimated standard errors shown in tables A through F were calculated assuming simple random sampling while the microdata sample (and the census sample) were selected using a systematic sampling procedure. The numbers shown in table G, referred to as design factors, are defined as the ratio of the standard error from the actual sample design to the standard error from a simple random sample.

The standard errors in tables A through F used in conjunction with the appropriate design factors from table G produce a reasonable measure of reliability for microdata sample estimates. Public use microdata sample data users will receive table G, the Table of Design Factors, as a supplement to the technical documentation. An alternative methodology by which more precise standard errors can be

obtained requires additional data processing and file manipulation. The trade off is more precision for more data processing. However, with the technology available today, the second method is preferable and strongly recommended. However, the standard error tables could be very useful. For instance, they would be useful when one is trying to determine, prior to purchase, whether a 1-percent sample will yield estimates of adequate precision for a given study, or whether it is necessary to use the 5-percent sample instead. For these purposes the method described in this section should produce an acceptable approximation. On the other hand, for many statistics, particularly from detailed cross-tabulations, standard errors using the second method are also applicable to a wider variety of statistics, e.g., means and ratios.

To produce standard error estimates, one obtains (1) the unadjusted standard error for the characteristic that would result from a simple random sample design (of persons, families, or housing units) and estimation technique; and (2) a design factor, which partially reflects the effects of the actual sample design and estimation procedure used for the 1990 census public use microdata sample, for the particular characteristic estimated. The design factors provided in this chapter are based on computations from the full census sample and, as such, do not reflect the additional stratification used in the selection of the public use microdata samples (see Chapter 4). In general, these factors will provide conservative estimates of the standard error. In addition, these factors only pertain to individual data items (e.g., educational attainment, employment status) and are not entirely appropriate for use with detailed cross-tabulated data. To calculate the approximate standard error of a 5-percent or 1-percent sample estimate follow the steps given below.

1. Obtain the unadjusted standard error for the sampling rate to be used from table A, C, or E, for estimated totals or from tables B, D, or F for estimated percentages. Alternately, the formula given at the bottom of each table may be used to calculate the unadjusted standard error (for sample sizes other than 5 or 1-percent see the subsampling section).

In using tables A, C, or E, or corresponding formulas for estimated totals, use weighted figures rather than unweighted sample counts

to select the appropriate row. To select the applicable column for person characteristics, use the total population in the area being tabulated (not just the total of the universe being examined), or use the total count of housing units if the estimated total is a housing unit characteristic. Similarly in using table B, D, or F, or the corresponding formula for estimated percentages, use weighted figures to select the appropriate column.

2. Use table G to obtain the design factor for the characteristic (e.g., place of work or educational attainment). If the estimate is a cross-tabulation of more than one characteristic, scan table G for each characteristic, scan table G for each appropriate factor and use the largest factor. Multiply the unadjusted standard error from step 1 by the factor obtained in step 2.

Example 1: Standard Error of a Total - Suppose we tally a 5-percent public use microdata sample for state A. Further, suppose that for county A, the sum of the PUMS weights for all persons is 131,220. The sum of the PUMS weights for those persons who are age 16 years and over and in the civilian labor force is 59,948.

The basic standard error for the estimated total is obtained from table A or from the formula given below table A. To avoid interpolation, the use of the formula will be demonstrated here. The formula for the basic standard error, SE, is:

$$SE(59,948) = \sqrt{19(59,948) (1-59,948/131,220)}$$

$$= 787 \text{ persons}$$

The standard error of the estimated 59,948 persons 16 years and over who were in the civilian labor force is found by multiplying the basic standard error 787 by the appropriate design factor (Employment Status) from table G. Suppose the design factor for Employment Status is 1.2, then the standard error is

$$SE(59,948) = 787(1.2) = 945 \text{ persons}$$

Note that in this example the total weighted count of persons in county A of 131,220 was used.

Example 2: Standard Error of a Percent - Suppose there are 95,763 persons in county A in state A aged 16 years and over. The estimated percent of persons 16 years and over who were in the civilian labor force is 62.6. Using the formula given in table B, the unadjusted standard error is found to be approximately 0.68 percent. The standard error for the estimated 62.6 percent of persons 16 years and over who were in the civilian labor force is $0.68 (1.2) = 0.82$ percentage points. Note that in this example the base is defined as the weighted count of persons 16 years old and over.

A note of caution concerning numerical values is necessary. Standard errors of percentages derived in this manner are approximate. Calculations can be expressed to several decimal places, but to do so would indicate more precision in the data than is justifiable. Final results should contain no more than two decimal places.

Sums and Differences - The standard errors estimated from these tables are not directly applicable to sums of and differences between two sample estimates. To estimate the standard error of a sum or difference, the tables are to be used somewhat differently in the following three situations:

1. For the sum of or difference between a sample estimate and a 100-percent value, use the standard error of the sample estimate. The complete count value is not subject to sampling error.
2. For the sum of or difference between two sample estimates, the appropriate standard error is approximately the square root of the sum of the two individual standard errors squared, that is, for standard errors:

SE_x and SE_y of estimates \hat{X} and \hat{Y}

$$SE_{(\hat{x} - \hat{y})} = SE_{(\hat{x} + \hat{y})} = \sqrt{(SE_{\hat{x}})^2 + (SE_{\hat{y}})^2}$$

This method, however, will underestimate (overestimate) the standard error if the two

items in a sum are highly positively (negatively) correlated or if the two items in a difference are highly negatively (positively) correlated. This method may also be used for the difference between (or sum of) sample estimates from two censuses or from a census sample and another survey. The standard error for estimates not based on the 1990 census sample must be obtained from an appropriate source outside of this appendix.

3. For the differences between two estimates, one of which is a subclass of the other, use the tables directly where the calculated difference is the estimate of interest.

For example, to determine the estimate of non-Black teachers, one may subtract the estimate of Black teachers from the estimate of total teachers. To determine the standard error of the estimate of non-Black teachers apply the above formula directly.

Ratios - Frequently, the statistic of interest is the ratio of two variables, where the numerator is not a subset of the denominator. For example, the ratio of teachers to students in public elementary schools. The standard error of the ratio between two sample estimates is estimated as follows:

1. If the ratio is a proportion, then follow the procedure outlined for "Totals and Percentages."
2. If the ratio is not a proportion, then approximate the standard error using the formula below.

$$SE_{(X/Y)} = \frac{X}{Y} \sqrt{\frac{(SE_X)^2}{X^2} + \frac{(SE_Y)^2}{Y^2}}$$

Medians - For the standard error of the median of a characteristic, it is necessary to examine the distribution from which the median is derived, as the size of the base and the distribution itself affect the standard error. An approximate method is given here. As the first step, compute one-half of the number on which the median is based (refer to this result as N/2). Treat N/2 as if it were an ordinary estimate

and obtain its standard error as instructed above. Compute the desired confidence interval about N/2. Starting with the lowest value of the characteristic, compute the frequencies in each category of the characteristic until the sum equals or first exceeds the lower limit of the confidence interval about N/2. By linear interpolation, obtain a value of the characteristic corresponding to this sum. This is the lower limit of the confidence interval of the median. In a similar manner, continue cumulating frequencies until the sum equals or exceeds the count in excess of the upper limit of the interval about N/2. Interpolate as before to obtain the upper limit of the confidence interval for the estimated median.

When interpolation is required in the upper open-ended interval of a distribution to obtain a confidence bound, use 1.5 times the lower limit of the open-ended confidence interval as the upper limit of the open-ended interval.

CONFIDENCE INTERVALS AND INFERENCES BASED ON THE SAMPLE

A sample estimate and its estimated standard error may be used to construct confidence intervals about the estimate. These intervals are ranges that will contain the average value of the estimated characteristic that results over all possible samples, with a known probability. For example, if all possible samples that could result under the 1990 census sample design were independently selected and surveyed under the same conditions, and if the estimate and its estimated standard error were calculated for each of these samples, then:

1. Approximately 68 percent of the intervals from one estimated standard error below the estimate to one estimated standard error above the estimate would contain the average result from all possible samples.
2. Approximately 90 percent of the intervals from 1.645 times the estimated standard error below the estimate to 1.645 times the estimated standard error above the estimate would contain the average result from all possible samples.
3. Approximately 95 percent of the intervals from two estimated standard errors below the estimate to two estimated standard errors

Table A: Unadjusted Standard Errors for Estimated Totals, 5 Percent Sample

Estimated Total ¹	Size of Geographic area Tabulated ²							
	100,000	250,000	500,000	750,000	1 M	5 M	10 M	25 M
1,000	140	140	140	140	140	140	140	140
2,500	220	220	220	220	220	220	220	220
5,000	300	310	310	310	310	310	310	310
10,000	410	430	430	430	430	440	440	440
15,000	490	520	530	530	530	530	530	530
25,000	600	650	670	680	680	690	690	690
75,000	600	1,000	1,100	1,130	1,150	1,180	1,190	1,190
100,000	-	1,070	1,230	1,280	1,310	1,360	1,370	1,380
250,000	-	-	-	1,280	1,890	2,120	2,150	2,170
500,000	-	-	-	1,780	2,180	2,920	3,000	3,050
750,000	-	-	-	-	968	3,480	3,630	3,717
1,000,000	-	-	-	-	-	3,900	4,140	4,270
5,000,000	-	-	-	-	-	-	6,980	8,720
10,000,000	-	-	-	-	-	-	-	10,680

¹For estimated totals larger than 10,000,000, the standard error is somewhat large than the table values. The formula given below should be used to calculate the standard error.

$$SE(\hat{Y}) = \sqrt{19\hat{Y} \left(1 - \frac{\hat{Y}}{N}\right)}$$

Where: N = Size of area
 \hat{Y} = Estimate of characteristic total

²Total count of persons, housing units, or families in area if the estimated total is a person, housing unit, or family characteristic, respectively.

Table B: Unadjusted Standard Error for Estimated Percentages, 5 Percent Sample (Standard errors expressed in percentage points)

Estimated Percent	Base (weighted total) of percentage ¹										
	1000	1500	2500	5000	7500	10000	25000	50000	100000	250000	500000
2 or 98	1.9	1.6	1.2	0.9	0.7	0.6	0.4	0.3	0.2	0.1	0.1
5 or 95	3.0	2.4	1.9	1.3	1.1	1.0	0.6	0.4	0.3	0.2	0.1
10 or 90	4.1	3.4	2.6	1.8	1.5	1.3	0.8	0.6	0.4	0.3	0.2
15 or 85	4.9	4.0	3.1	2.2	1.8	1.6	1.0	0.7	0.5	0.3	0.2
20 or 80	5.5	4.5	3.5	2.5	2.0	1.7	1.1	0.8	0.6	0.3	0.2
25 or 75	6.0	4.9	3.8	2.7	2.2	1.9	1.2	0.8	0.6	0.4	0.3
30 or 70	6.3	5.2	4.0	2.8	2.3	2.0	1.3	0.9	0.6	0.4	0.3
35 or 65	6.6	5.4	4.2	2.9	2.4	2.1	1.3	0.9	0.7	0.4	0.3
50	6.9	5.6	4.4	3.1	2.5	2.2	1.4	1.0	0.7	0.4	0.3

¹For a percentage and/or base of percent age not shown in the table, the formula given below may be used to calculate the standard error.

$$SE(\hat{p}) = \sqrt{\frac{19}{B} \hat{p}(100 - \hat{p})}$$

Where: B = Base of estimated percentage (weighted total)
 \hat{p} = Estimated percentage

Table C: Unadjusted Standard Errors for Estimated Totals, 1 Percent Sample

Estimated Total ¹	Size of Geographic area Tabulated ²							
	100,000	250,000	500,000	750,000	1 M	5 M	10 M	25 M
1,000	310	310	310	310	310	310	310	310
2,500	490	500	500	500	500	500	500	500
5,000	690	700	700	700	700	700	700	700
10,000	940	970	980	990	990	990	990	990
15,000	1,120	1,180	1,200	1,210	1,210	1,220	1,220	1,220
25,000	1,360	1,490	1,530	1,550	1,550	1,570	1,570	1,570
75,000	1,360	2,280	2,510	2,590	2,620	2,700	2,710	2,720
100,000	-	2,440	2,810	2,930	2,980	3,110	3,130	3,140
250,000	-	-	3,520	4,060	4,310	4,850	4,910	4,950
500,000	-	-	-	4,060	4,970	6,670	6,860	6,960
750,000	-	-	-	-	7,462	7,944	8,287	8,787
1,000,000	-	-	-	-	-	8,900	9,440	9,750
5,000,000	-	-	-	-	-	-	15,730	19,900
10,000,000	-	-	-	-	-	-	-	24,370

¹For estimated totals larger than 10,000,000, the standard error is somewhat larger than the table values. The formula given below should be used to calculate the standard error.

$$SE(\hat{Y}) = \sqrt{99\hat{Y} \left(1 - \frac{\hat{Y}}{N}\right)}$$

Where: N = Size of area
 \hat{Y} = Estimate of characteristic total

²Total count of persons, housing units, or families in area if the estimated total is a person, housing unit, or family characteristic, respectively.

Table D: Unadjusted Standard Error for Estimated Percentages, 1 Percent Sample (Standard errors expressed in percentage points)

Estimated Percent	Base (weighted total) of percentage ¹										
	1000	1500	2500	5000	7500	10000	25000	50000	100000	250000	500000
2 or 98	4.4	3.6	2.8	2.0	1.6	1.4	0.9	0.6	0.4	0.3	0.2
5 or 95	6.9	5.6	4.3	3.1	2.5	2.2	1.4	1.0	0.7	0.4	0.3
10 or 90	9.4	7.7	6.0	4.2	3.4	3.0	1.9	1.3	0.9	0.6	0.4
15 or 85	11.2	9.2	7.1	5.0	4.1	3.6	2.2	1.6	1.1	0.7	0.5
20 or 80	12.6	10.3	8.0	5.6	4.6	4.0	2.5	1.8	1.3	0.8	0.6
25 or 75	13.6	11.1	8.6	6.1	5.0	4.3	2.7	1.9	1.4	0.9	0.6
30 or 70	14.4	11.8	9.1	6.4	5.3	4.6	2.9	2.0	1.4	0.9	0.6
35 or 65	15.0	12.8	9.5	6.7	5.5	4.7	3.0	2.1	1.5	0.9	0.7
50	15.8	12.8	9.9	7.0	5.7	5.0	3.1	2.2	1.6	1.0	0.7

¹For a percentage and/or base of percentage not shown in the table, the formula given below may be used to calculate the standard error.

$$SE(\hat{p}) = \sqrt{\frac{99}{B} \hat{p}(100 - \hat{p})}$$

Where: B = Base of estimated percentage (weighted total)
 \hat{p} = Estimated percentage

Table E: Unadjusted Standard Errors for Estimated Totals, 3 Percent Sample

Estimated Total ¹	Size of Geographic area Tabulated ²							
	50K	100K	250K	500K	1,000K	5,000K	10,000K	25,000K
1,000	180	180	180	180	180	180	180	180
2,500	280	280	290	290	290	290	290	290
5,000	390	390	400	400	410	410	410	410
10,000	510	540	560	570	570	570	570	570
15,000	590	650	680	690	700	700	700	700
25,000	640	780	860	880	890	900	900	900
75,000	-	780	1,310	1,440	1,500	1,550	1,560	1,560
100,000	-	-	1,400	1,610	1,710	1,780	1,790	1,800
250,000	-	-	-	2,010	2,470	2,780	2,810	2,830
500,000	-	-	-	-	2,850	3,820	3,920	3,980
750,000	-	-	-	-	2,460	4,540	4,736	4,850
1,000,000	-	-	-	-	-	5,090	5,400	5,580
5,000,000	-	-	-	-	-	-	8,990	11,380
10,000,000	-	-	-	-	-	-	-	13,930

¹For estimated totals larger than 10,000,000, the standard error is somewhat larger than the table values. The formula given below should be used to calculate the standard error.

$$SE(\hat{Y}) = \sqrt{\frac{97}{3} \hat{Y} \left(1 - \frac{\hat{Y}}{N}\right)}$$

Where: N = Size of area
 \hat{Y} = Estimate of characteristic total

Table F: Unadjusted Standard Error for Estimated Percentages, 3 Percent Sample (Standard errors expressed in percentage points)

Estimated Percent	Base (weighted total) of percentage ¹										
	1000	1500	2500	5000	7500	10000	25000	50000	100000	250000	500000
2 or 98	2.5	2.0	1.6	1.1	.9	.8	.5	.6	.2	.1	.1
5 or 95	3.9	3.2	2.4	1.7	1.4	1.2	.8	.0	.4	.2	.2
10 or 90	5.4	4.4	3.4	2.4	2.0	1.7	1.1	.3	.5	.3	.2
15 or 85	6.4	5.2	4.1	2.9	2.3	2.1	1.3	.6	.6	.4	.3
20 or 80	7.2	5.9	4.5	3.2	2.6	2.3	1.4	1.0	.7	.5	.3
25 or 75	7.8	6.4	4.9	3.5	2.8	2.5	1.6	1.1	.8	.5	.3
30 or 70	8.2	6.7	5.2	3.7	3.0	2.6	1.6	1.1	.8	.5	.3
35 or 65	8.6	7.0	5.4	3.8	3.1	2.7	1.7	1.2	.9	.5	.4
50	9.0	7.3	5.7	4.0	3.3	2.8	1.8	1.3	.9	.6	.4

¹For a percentage and/or base of percentage not shown in the table, the formula given below may be used to calculate the standard error.

$$SE(\hat{p}) = \sqrt{\frac{97}{3B} \hat{p}(100 - \hat{p})}$$

Where: B = Base (Weighted total) of estimated percentage
 \hat{p} = Estimated percentage.

Table G. Standard Error Design Factors-United States
 [Percent of persons or housing units in sample]

Characteristic	Design factors
POPULATION	
Age.....	1.2
Sex.....	1.2
Race.....	1.2
Hispanic origin (of any race).....	1.2
Marital status.....	1.2
Household type and relationship.....	1.3
Children ever born.....	2.6
Work disability and mobility limitation status.....	1.2
Ancestry.....	2.1
Place of birth.....	2.2
Citizenship.....	1.8
Migration (Residence in 1985).....	2.1
Year of entry.....	1.5
Language spoken at home and ability to speak English.....	1.7
Educational attainment.....	1.3
School enrollment.....	1.8
Type of residence (urban/rural).....	2.2
Household type.....	1.3
Family type.....	1.2
Group quarters.....	1.0
Subfamily type and presence of children.....	1.2
Employment status.....	1.2
Industry.....	1.3
Occupation.....	1.2
Class of worker.....	1.5
Hours per week and weeks worked in 1989.....	1.2
Number of workers in family.....	1.3
Place of work.....	1.5
Means of transportation to work.....	1.5
Travel time to work.....	1.3
Vehicle occupancy.....	1.5
Time of departure for work.....	1.3
Type of income in 1989.....	1.4
Household Income in 1989.....	1.2
Family income in 1989.....	1.2
Poverty status in 1989 (persons).....	1.6
Poverty status in 1989 families.....	1.2
Armed Forces and veteran status.....	1.5

Table G Con't.

HOUSING

Age of householder.....	1.2
Race of householder.....	1.2
Hispanic origin of householder.....	1.2
Type of residence (urban/rural).....	1.1
Condominium status.....	1.2
Units in structure.....	1.2
Tenure.....	1.2
Occupancy status.....	1.2
Value.....	1.2
Gross rent.....	1.2
Household income in 1989.....	1.2
Year structure built.....	1.2
Rooms, bedrooms.....	1.2
Kitchen facilities.....	1.3
Source of water, plumbing facilities.....	1.3
Sewage disposal.....	1.2
House heating fuel.....	1.3
Telephone in housing unit.....	1.2
Vehicles available.....	1.3
Year householder moved into structure.....	1.2
Mortgage status and monthly mortgage costs.....	1.2
Mortgage status and selected monthly owner costs.....	1.2
Gross rent as a percentage of household income in 1989.....	1.3
Household income in 1989 by selected owner costs as a percentage of household income.....	1.2

above the estimate would contain the average result from all possible samples.

The intervals are referred to as 68 percent, 90 percent, and 95 percent confidence intervals, respectively.

The average value of the estimated characteristic that could be derived from all possible samples is or is not contained in any particular computed interval. Thus, we cannot make the statement that the average value has a certain probability of falling between the limits of the calculated confidence interval. Rather, one can say with a specified probability of confidence, that the calculated confidence interval includes the average estimate from all possible samples (approximately the 100-percent value).

Confidence intervals also may be constructed for the ratio, sum of, or difference between two sample figures. This is done by first computing the ratio, sum, or difference, then obtaining the standard error of the ratio, sum, or difference (using the formulas given earlier), and finally forming a confidence interval for this estimated ratio, sum, or difference as above. One can then say with specified confidence that this interval includes the ratio, sum, or difference that would have been obtained by averaging the results from all possible samples.

The estimated standard errors given in this chapter do not include all portions of the variability due to nonsampling error that may be present in the data. The standard errors reflect the effect of simple response variance, but not the effect of correlated errors introduced by enumerators, coders, or other field or processing personnel. Thus, the standard errors calculated represent a lower bound of that total error. As a result, confidence intervals formed using these estimated standard errors may not meet the stated levels of confidence (i.e., 68, 90, or 95 percent).

Thus, some care must be exercised in the interpretation of the data in this data product based on the estimated standard errors.

In example 1, the standard error of the 59,948 persons 16 years and over in county A in state A who were in the civilian labor force was found to be 945. Thus, a 90 percent confidence interval for this estimated total is found to be:

$$[59,948 - 1.645(945)] \text{ to } [59,948 + 1.645(945)]$$

or

$$58,393 \text{ to } 61,502$$

One can say, with about 90 percent confidence, that this interval includes the value that would have been obtained by averaging the results from all possible samples.

The following is an illustration of the calculation of standard errors and confidence intervals when a difference between two sample estimates is obtained. For example, suppose the number of persons in county B age 16 years and over who were in the civilian labor force was 69,314 and the total number of persons 16 years and over was 116,666. Further, suppose the population of county B was 225,225. Thus, the estimated percentage of persons 16 years and over who were in the civilian labor force is 59.4 percent. The unadjusted standard error from table B is 0.63 percentage points. The design factors table (table G) shows the design factor to be 1.1 for "Employment Status." Thus, the approximate standard error of the percentage (59.4 percent) is $0.63 \times 1.2 = 0.76$ percentage points.

Now suppose that one wished to obtain the standard error of the difference between county A and county B of the percentage of persons who were 16 years and over and who were in the civilian labor force. The difference in the percentages of interest for the two cities is:

$$62.6 - 59.4 = 3.2 \text{ percent.}$$

Using the results of the previous example:

$$SE(3.2) = \sqrt{(SE(62.6))^2 - (SE(59.4))^2} = \sqrt{(0.82)^2 + (.76)^2}$$

$$= 1.12 \text{ percentage points}$$

The 90 percent confidence interval for the difference is formed as before:

$$[3.20 - 1.645(1.12)] \text{ to } [3.20 + 1.645(1.12)]$$

or

$$1.36 \text{ to } 5.04$$

One can say with 90 percent confidence that the interval includes the difference that would have been obtained by averaging the results from all possible samples. When, as in this example, the interval does not include zero, one can conclude, again with 90 percent confidence, that the difference observed between the two counties on this characteristic is greater than can be attributed to sampling error.

For reasonably large samples, ratio estimates are normally distributed, particularly for the census population. Therefore, if we can calculate the standard error of a ratio estimate, then we can form a confidence interval around the ratio. Suppose that one wished to obtain the standard error of the ratio of the estimate of persons who were 16 years and over and who were in the civilian labor force in county A to the estimate of persons who were 16 years and over and who were in the civilian labor force in county B. The ratio of the two estimates of interest is:

$$59,948 / 69,314 = .86$$

$$SE(.86) = \left(\frac{59948}{69314} \right) \sqrt{\frac{945^2}{(59948)^2} + \frac{1145^2}{(69314)^2}}$$

$$= .02$$

Using the results above, the 90 percent confidence interval for this ratio would be:

$$[.86 - 1.645(.02)] \text{ to } [.86 + 1.645(.02)]$$

or

$$.83 \text{ to } .89$$

Selecting an Appropriate Sample Size - One virtue in the use of the tables A through F for calculating standard errors and confidence intervals is that this method can be employed prior to making any sample tabulation, and thus, can help the user decide prior to purchase whether a 5-percent or 1-percent sample size is most appropriate for a proposed study.

Suppose that in the foregoing example, the 59,948 figure was a guess, perhaps based on published data. The confidence interval could be calculated as above. In this case, tabulating a 5-percent sample for this particular characteristic would result in a 90 percent confidence interval 58,393 to 61,502. The width of this interval is 3,109. Tabulating from a 1-percent sample

for the same characteristic would result in a confidence interval of 56,403 to 63,492. The width of the interval from the 1-percent sample is 7,089 (over two times the width of the confidence interval from the 5-percent sample). Another criterion used in making this type of decision is the coefficient of variation (CV). The CV is a measure of reliability and is defined as the ratio of the standard error of the estimate and the absolute value of the expected value of the estimate. To get an estimate of the CV, substitute the estimate itself for the expected value in the CV formula. In this example, if the 59,948 estimate is obtained from the 5-percent sample, the CV would be 1.4 percent. If the 1-percent sample is tallied to get the estimate then the CV would be 3 percent. The smaller the CV, the more reliable the estimate. There is no particular rule of thumb that dictates how large a confidence interval or CV is acceptable. This depends on the relative precision necessary for a particular application as balanced against the relative cost of tabulating microdata samples of the various sizes.

USING TABLE A THROUGH F FOR OTHER SAMPLE SIZES

Tables A through F may also be used to approximate the unadjusted standard errors for other sample sizes by adjusting for the sample size desired. The adjustment for sample size is obtained as follows:

Let

f_1 be the sampling rate in any of the tables A through F, and

f_2 be the sampling rate for the sample size to be used. The adjustment for sample size can be read from the following table:

f_2	Sample Size Adjustment Factor
.11	.65 Multiply the standard errors
.10	.69 in tables A or B (where $f_1 = .05$)
.06	.91 by this factor.
.04	1.12
.03	1.30
.02	1.61
.009	1.05 Multiply the standard errors
.007	1.20 in table C or D (where $f_1 = .01$)
.005	1.42 by this factor.
.003	1.83
.002	2.25

For example, if the user were to select a subsample of one half of a 1-percent sample, i.e., $f_2 = .005$, then the standard errors shown in tables C or D for a 1-percent sample must be multiplied by 1.42 to obtain the standard errors for a .005 sample. The factor of 1.42 shows that the standard errors increase by 42 percent when the sample size is halved.

The principle is also applicable when combining microdata samples to achieve a sample size larger than 5 percent. If, for example, all three samples are combined for the same area to obtain an estimate of a characteristic for the elderly population, the standard errors for this sample size (i.e., 11 percent) can be obtained by multiplying those shown in tables A and B by .65. Thus, the increase from a 5-percent to a 11-percent sample reduces the standard error by 35 percent.

Alternatively, the user may wish to use the following formulas to directly calculate the unadjusted standard errors. For estimated totals, calculate as

$$s_e(\hat{Y})$$

$$s_e(\hat{Y}) = \sqrt{\left(\frac{1}{f_2} - 1\right) \hat{Y}^2 (1 - \hat{Y}/N)}$$

where
N = size of area tabulated

\hat{Y} = estimate (weighted) of characteristic total.

Example 1 shows the unadjusted standard error for the figure 59,948 to be 787. Using the above formula with $f_2 = .11$ yields an unadjusted standard error $SE(\hat{Y}) = 513$ for a 35 percent reduction in the standard error as shown in the above table.

For an estimated percentage, calculate

$$s_e(\hat{P}) = \sqrt{\left(\frac{1}{f_2} - 1\right) \frac{\hat{P}^2(100 - \hat{P})}{B}}$$

where \hat{P} = estimated percentage and
B = base of estimated percentage (weighted estimate)

ESTIMATION OF STANDARD ERRORS DIRECTLY FROM THE MICRODATA SAMPLES

Use of tables or formulas to derive approximate standard error as discussed above is simple and does not complicate processing. Nonetheless, a more accurate estimate of the standard error can be obtained from the samples themselves, using the random group method. Using this method it is also possible to compute standard errors for mean ratios, indexes, correlation coefficients, or other statistics for which the tables or formulas presented earlier do not apply.

The random group method does increase processing time somewhat since it requires that the statistic of interest, for example a total, be computed separately for each of up to 100 random groups. The variability of that statistic for the sample as a whole is estimated from the variability of the statistic among the various random groups within the sample. The procedure for calculating a standard error by the random group method for various statistics is given below.

Totals - to obtain the standard errors of estimated totals the following method should be used. The random groups estimate of variance of \hat{X} is given by

$$\text{var}(\hat{X}) = \left(\frac{t}{t-1} \right) \sum_{g=1}^t \left[x_g - \frac{1}{t} \left(\sum_{g=1}^t x_g \right) \right]^2$$

or the computational formula

$$\text{var}(\hat{X}) = \left(\frac{t}{t-1} \right) \sum_{g=1}^t x_g^2 - t \bar{x}_g^2$$

where

t = number of random groups

X_g = the weighted microdata sample total of the characteristic of interest from the g-th random group.

$$\bar{x}_g = \sum_{g=1}^t x_g / t, \text{ the average random group total}$$

The standard error of the estimated total is the square root of $\text{var}(\hat{X})$.

It is suggested that $t=100$ for estimating the standard error of a total since, as it is discussed in the next chapter, each of the sample records was assigned a two-digit subsample number sequentially from 00 to 99. The two-digit number can be used to form 100 random groups.

For example, a sample case with 01 as the two-digit number will be in random group 1. All sample cases with 02 as the two digit number will be in random group 2, etc., up to 00 as the one-hundredth random group. The reliability of the random group variance estimator is a function of both the kurtosis of the estimator and the number of groups t. If t is small, the coefficient of variation (CV) will be large, and therefore, the variance estimator will be of low precision. In general, the larger t is, the more reliable the variance estimator will be.¹

Percentages, Ratios, and Means - To obtain the estimated standard error of a percent, ratio, or mean,

the following method should be used. Let $\hat{f} = \frac{\hat{x}}{\hat{y}}$ be

the estimated percent, ratio, or mean

where

and \hat{y} = the estimated totals as defined above for the X and Y characteristics.

For the case where both numerator and denominator are obtained from the full microdata sample then the variance of \hat{f} is given by

$$\text{var}(\hat{f}) = \left(\frac{t}{t-1} \right) \left(\frac{1}{\hat{y}} \right)^2 \sum_{g=1}^t (x_g - \hat{f}y_g)^2$$

where t and x_g are defined above,

\hat{y} = the weighted full microdata sample total for the y characteristic, and

y_g = the corresponding weighted total for the g-th random group.

Correlation Coefficients, and Regression Coefficients and Complex Statistics - The random group method for computing the variance of correlation coefficients, regression coefficients, and other complex nonlinear statistics may be expressed as:

$$\text{Var}(\hat{\theta}) = \frac{t}{(t-1)} \sum_{g=1}^t (\hat{\theta}_g - \hat{\theta})^2$$

where

$\hat{\theta}_g$ = the weighted estimate (at the tabulation area level) of the statistic of interest computed from the g-th random group, and
 $\hat{\theta}$ = corresponding weighted estimate computed from the full microdata sample.

Care must be exercised when using this variance estimator for complex nonlinear statistics as its properties have not been fully explored for such statistics. In particular, the choice of the number of random groups must be considered more carefully. When using the 5-percent sample, use of $t=100$ for all areas tabulated is recommended. When using the 1-percent sample or samples having a smaller sampling fraction, the user should consider using a smaller number of random groups to insure that each random group contains at least 25 records. Fewer than 100 random groups can be formed by appropriate combination of the two-digit subsample numbers. For example, to construct 50 random groups assign all records in which the subsample number is 01 or 50 to the first random group; all records in which the subsample number is 02 or 52 to the second random group, etc. Finally, assign all records in which the subsample number is 00 or 50 to random group 50. Ten random groups can be constructed by including all records having subsample numbers with the same "units" digit in a particular random group. For example, subsample numbers 00,10,...,90 would form one random group; subsample numbers 01,11,...,91 would form a second random group, etc.

STANDARD ERRORS FOR SMALL ESTIMATES

Percentage estimates of zero and estimated totals of zero are subject to both sampling and nonsampling error. While the magnitude of the error is difficult to quantify, users should be aware that such estimates are nevertheless subject to both sampling and nonsampling error even though in the case of zero estimates the corresponding random groups estimate of variance will be zero.

A second point concerning standard errors, the standard error estimates obtained using the random groups method do not include all components of the variability due to nonsampling error that may be present in the data. Therefore, the standard error calculated using the methods described in this section

represent a lower bound for the total error. Data users should be aware that in general confidence intervals formed using these estimated standard errors do not meet the stated levels of confidence. Data users are advised to be conservative when making inferences from the data provided in this data product.

CONTROL OF NONSAMPLING ERROR

As mentioned earlier, both sample and 100-percent data are subject to nonsampling error. This component of error could introduce serious bias into the data, and the total error could increase dramatically over that which would result purely from sampling. While it is impossible to eliminate completely nonsampling error from an operation as large and complex as the decennial census, the Bureau of the Census attempted to control the sources of such error during the collection and processing operations. Described below are the primary sources of nonsampling error and the programs instituted for control of this error. The success of these programs, however, was contingent upon how well the instructions actually were carried out during the census. As part of the 1990 census evaluation program, both the effects of these programs and the amount of error remaining after their application will be evaluated.

Undercoverage--It is possible for some households or persons to be missed entirely by the census. The undercoverage of persons and housing units can introduce biases into the data.

Several coverage improvement programs were implemented during the development of the census address list and census enumeration and processing to minimize undercoverage of the population and housing units. These programs were developed based on experience from the 1980 census and results from the 1990 census testing cycle. In developing and updating the census address list, the Census Bureau used a variety of specialized procedures in different parts of the country.

- In the large urban areas, the Census Bureau purchased and geocoded address lists. Concurrent with geocoding, the United States Postal Service (USPS) reviewed and updated this list. After the postal check, census enumerators conducted a dependent canvass and update operation. Prior to mailout, in the fall of 1989, local officials were given the opportunity to examine block counts of address listings (local review) and identify possible errors, and the USPS conducted a final review.

- In small cities, suburban areas, and selected rural parts of the country, the Census Bureau created the address list through a listing operation. The USPS reviewed and updated this list, and the Census Bureau reconciled USPS corrections and updated through a field operation. In the fall of 1989, local officials participated in reviewing block counts of address listings. Prior to mailout, the USPS conducted a final review.
- The Census Bureau (rather than the USPS) conducted a listing operation in the fall of 1989 and delivered census questionnaires in selected rural and seasonal housing areas in March of 1990. In some inner-city public housing developments, whose addresses had been obtained via the purchased address list noted above, census questionnaires were also delivered by Census Bureau enumerators.

Coverage improvement programs continued during and after mailout. A recheck of units initially classified as vacant or nonexistent further improved the coverage of persons and housing units. All local officials were given the opportunity to participate in a post-census local review, and census enumerators conducted an additional canvass. In addition, efforts were made to improve the coverage of unique population groups, such as the homeless and parolees/probationers. Computer and clerical edits and telephone and personal visit followup also contributed to improved coverage.

More extensive discussion of the programs implemented to improve coverage will be published by the Census Bureau when the evaluation of the coverage improvement program is completed.

Respondent and Enumerator Error--The persons answering the questionnaire or responding to the questions posed by an enumerator could serve as a source of error, although the questions were phrased as clearly as possible based on precensus tests, and detailed instructions for completing the questionnaire were provided to each household. In addition, respondents' answers were edited for completeness and consistency, and problems were followed up as necessary.

The enumerator may misinterpret or otherwise incorrectly record information given by a respondent; may fail to collect some of the information for a person or household; or may collect data for households that were not designated as part

of the sample. To control these problems, the work of enumerators was monitored carefully. Field staff were prepared for their tasks by using standardized training packages that included hands-on experience in using census materials. A sample of the households interviewed by enumerators for nonresponse were reinterviewed to control for the possibility of data for fabricated persons being submitted by enumerators. Also, the estimation procedure was designed to control for biases that would result from the collection of data from households not designated for the sample.

Processing Error--The many phases involved in processing the census data represent potential sources for the introduction of nonsampling error. The processing of the census questionnaires includes the field editing, followup, and transmittal of completed questionnaires; the manual coding of write-in responses; and the electronic data processing. The various field, coding and computer operations undergo a number of quality control checks to insure their accurate application.

Nonresponse--Nonresponse to particular questions on the census questionnaire allows for the introduction of bias into the data, since the characteristics of the nonrespondents have not been observed and may differ from those reported by respondents. As a result, any imputation procedure using respondent data may not completely reflect this difference either at the elemental level (individual person or housing unit) or on the average. Some protection against the introduction of large biases is afforded by minimizing nonresponse. In the census, nonresponse was reduced substantially during the field operations by the various edit and followup operations aimed at obtaining a response for every question. Characteristics for the nonresponses remaining after this operation were imputed by the computer by using reported data for a person or housing unit with similar characteristics.

EDITING OF UNACCEPTABLE DATA

The objective of the processing operation is to produce a set of data that describes the population as accurately and clearly as possible. To meet this objective, questionnaires were edited during field data collection operations for consistency, completeness, and acceptability. Questionnaires also were reviewed by census clerks for omissions, certain specific inconsistencies, and population coverage. For example, write-in entries such as "Don't know" or "NA" were considered unacceptable. For some district offices, the initial edit was automated; however, for

the majority of the district offices, it was performed by clerks. As a result of this operation, a telephone or personal visit followup was made to obtain missing information. Potential coverage errors were included in the followup, as well as a sample of questionnaires with omissions and/or inconsistencies.

Subsequent to field operations, remaining incomplete or inconsistent information on the questionnaire was assigned using imputation procedures during the final automated edit of the collected data. Imputations, or computer assignments of acceptable codes in place of unacceptable entries or blanks, are needed most often when an entry for a given item is lacking or when the information reported for a person or housing unit on that item is inconsistent with other information for that same person or housing unit. As in previous censuses, the general procedure for changing unacceptable entries was to assign an entry for a person or housing unit that was consistent with entries for persons or housing units with similar characteristics. The assignment of acceptable codes in place of blanks or unacceptable entries enhances the usefulness of the data.

Another way in which corrections were made during the computer editing process was through substitution; that is, the assignment of a full set of characteristics for a person or housing unit. When there was an indication that a housing unit was occupied but the questionnaire contained no information for the people within the household or the occupants were not listed on the questionnaire, a previously accepted household was selected as a substitute, and the full set of characteristics for the substitute was duplicated. The assignment of the full set of housing characteristics occurred when there was no housing information available. If the housing unit was determined to be occupied, the housing characteristics were assigned from a previously processed occupied unit. If the housing unit was vacant, the housing characteristics were assigned from a previously processed vacant unit.

USE OF ALLOCATION FLAGS IN THESE FILES

As a result of the editing there are no blank fields or missing data in public use microdata sample files. Each field contains a data value or a "not applicable" indicator, except for the few items where allocation was not appropriate and a "not reported" indicator is included. For every subject item it is possible for the user to differentiate between entries which were allocated, by means of "allocation flags" in items H161 through H198, and P186 through P233 in

the microdata files. For all items it is possible to compute the allocation rate and, if the rate is appreciable, compute the distribution of actually observed values (with allocated data omitted) and compare it with the overall distribution including allocated values. The flags indicate the changes in values between input and output.

These flags may indicate up to four possible types of allocations:

- A. Pre-edit - When the original entry was rejected because it fell outside the range of acceptable values.
- B. Consistency - Imputed missing characteristics based on other information recorded for the person or housing unit.
- C. Hot Deck - Supplied the missing information from the record of another person or housing unit.
- D. Cold Deck - Supplied missing information from a predetermined distribution.

In general, the allocation procedures provide better data than could be obtained by simply weighting up the observed distribution to account for missing values. The procedures reflect local variations in characteristics as well as variations among the strata used in imputation. There are, however, certain circumstances where allocated data may introduce undesirable bias. It may be particularly important to analyze allocations of data in detailed studies of subpopulations or in statistics derived from cross-classification of variables, such as correlation coefficients or measures of regression. The degree of editing required was greater for some subjects than for others. While the allocation procedure was designed to yield appropriate statistics for the overall distribution or for specific subpopulations (the strata used in the allocation process), allocated characteristics will not necessarily observe a valid relationship with other observed variables for the same individual. For example, consider a tabulation of persons 80 years old and over by income. Income allocations were made separately for different age groupings, including the category 65 years old and over, but not separately for persons 80 years old and over.

Since persons 65 to 70 or 75 are more likely to have significant earnings than persons 80 or over, allocated income data for the latter group might be

biased upward. Thus, if the rate of allocations for the group is appreciably large, and a bias in the allocated value is evident, it may be desirable to exclude allocated data from the analysis.

It should also be apparent from this illustration that knowledge of the specific allocation procedures is valuable in detailed subject analysis. Descriptions of the editing and allocation procedures for each item are being incorporated in the History of the 1990 Census of Population and Housing to be published later. A user may contact either the Population Division or Housing and Households Economic Statistics Division, Bureau of the Census, if more information is desired on the allocation scheme for a specific subject item.

CHAPTER 4 - SAMPLE DESIGN AND ESTIMATION

SAMPLE DESIGN AND ESTIMATION FOR THE PUBLIC USE MICRODATA SAMPLES

This chapter discusses the selection procedure for the public use microdata samples in terms of four major operations, (1) the selection of the full 1990 census sample, (2) the estimation procedure for the full census sample, and (3) the selection of the public use microdata samples from the persons and housing units included in the full 1990 census sample, and (4) estimation for the PUMS samples.

PRODUCING ESTIMATES OR TABULATIONS

Estimation of totals and percentages - The 1980 Public Use Microdata Samples (PUMS) were self-weighted. It is very important to note that the 1990 PUMS samples are not self-weighted. To produce estimates on tabulations of 100 percent characteristics from the PUMS files simply add the weights of all persons or housing units that possess the characteristic of interest. For instance, if the characteristic of interest is total number of Hispanic males aged 5-17, simply determine the sex, age, and Hispanic origin of all persons and cumulate the weights of those who match the characteristic of interest. The PUMS weight is a function of the full census sample weight and the PUMS sample design.

To get estimates of proportions simply divide the weighted estimate of persons or housing units with a given characteristic by the base sample estimate. For example, the proportion of owner occupied housing units with plumbing facilities is obtained by dividing the PUMS estimate of owner occupied housing units with plumbing facilities by the PUMS estimates of total housing units.

To get estimates of characteristics such as the total number of related children in households for (housing unit level aggregates), simply multiply the PUMS weight by the value of the characteristic and sum across all household records. If the desired estimate is the number of households with at least one related child in household add the PUMS householder weight for all households with a value not equal to zero for the characteristic.

SAMPLE DESIGN

Every person and housing unit in the United States was asked certain basic demographic questions (for example, race, age, relationship, housing value, or rent). A sample of

these persons and housing units was asked more detailed questions about such items as income, occupation, and housing costs in addition to the basic demographic and housing information. The primary sampling unit for the 1990 census was the housing unit, including all occupants. For persons living in group quarters, the sampling unit was the person. Persons in group quarters were sampled at a 1-in-6 rate.

The sample designation method depended on the data collection procedures. Approximately 95 percent of the population was enumerated by the mailback procedure. In these areas, the Bureau of the Census either purchased a commercial mailing list, which was updated by the United States Postal Service and Census Bureau field staff, or prepared a mailing by canvassing and listing each address in the area prior to Census Day. These lists were computerized and the appropriate units were electronically designated as sample units. The questionnaires were either mailed or hand delivered to the addresses with instructions on how to complete and mail back the form. Housing units in governmental units with a precensus (1988) estimated population of fewer than 2,500 persons were sampled at 1-in-2. Governmental units were defined for sampling purposes as all incorporated places, all counties, all county equivalents such as parishes in Louisiana, and all minor civil divisions in Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin. Housing units in tracts and block numbering areas (BNAs) with a precensus housing unit count below 2,000 housing units were sampled at 1-in-6 for those portions not in small governmental units. Housing units within census tracts and BNAs with 2,000 or more housing units were sampled at 1-in-8 for those portions not in small governmental units.

In list/enumerate areas (about 5 percent of the population) each enumerator was given a blank address register with designated sample lines. Beginning about Census Day, the enumerator systematically canvassed the area and listed all housing units in the address register in the order they were encountered. Completed questionnaires, including sample information for any housing unit listed on a designated sample line, were collected. For all governmental units with fewer than 2,500 persons in list/enumerate areas, a 1-in-2 sampling rate was used. All other list/enumerate areas were sampled at 1-in-6.

Housing units in American Indian reservations, Tribal Jurisdiction Statistical areas, and Alaska Native villages were sampled according to the same criteria as other governmental units, except the sampling rates were based on the size of the American Indian and Alaska native population in those areas as measured in the 1980 census. Trust lands were sampled at the same rate as their associated American Indian reservations. Census designated places in Hawaii were sampled at the same rate as governmental units because the Census Bureau does not recognize incorporated places in Hawaii.

The purpose of using variable sampling rates was to provide relatively more reliable estimates for small areas and decrease respondent burden in more densely populated areas while maintaining data reliability. When all sampling rates were taken into account across the nation, approximately one out of every six housing units in the nation was included in the 1990 census sample.

ESTIMATION PROCEDURE

Estimates from the census sample were obtained from an iterative ratio estimation procedure (iterative proportional fitting) resulting in the assignment of a weight to each sample person or housing unit record. For any given tabulation area, a characteristic total was estimated by summing the weights assigned to the persons or housing units possessing the characteristic in the tabulation area. Estimates of family or household characteristics were based on the weight assigned to the person designated as householder. Each sample person or housing unit record was assigned exactly one weight to be used to produce estimates of all characteristics. For example, if the weight given to a sample person or housing unit had the value 6, all characteristics of that person or housing unit would be tabulated with the weight of 6. The estimation procedure, however, did assign weights varying from person to person or housing unit to housing unit. The estimation procedure used to assign the weight was performed in geographically defined "weighting areas". Weighting areas were generally formed of contiguous portions of geography which closely agreed with census tabulation areas within counties. Weighting areas were never allowed to cross state or county boundaries. In small counties with a sample unit below 400 persons, the minimum required sample condition was relaxed to permit the entire county to become a weighting area.

Within a weighting area, the ratio estimation procedure for persons was performed in four stages. For persons, the first stage applied 17 household-type groups. The second stage used two groups: sampling rate of 1-in-2

and sampling rate below 1-in-2. The third stage used the dichotomy householder/nonhouseholders. The fourth stage applied 180 aggregate age/sex/Hispanic origin/race categories.

The stages were as follows:

Stage I: Type of Household

Group	Persons in Housing Units With a Family With Own Children Under 18
1	2 persons in housing unit
2	3 persons in housing unit
3	4 persons in housing unit
4	5 to 7 persons in housing unit
5	8 or more in housing unit

Persons in Housing Units With a Family Without Own Children Under 18

6-10	2 through 8 or more persons in housing unit
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Persons in All Other Housing Units

11	1 person in housing unit
12-16	2 through 8 or more persons in housing unit

Persons in Group Quarters

17	Persons in Group Quarters
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Stage II: Sampling Rates

1	Sampling rate of 1-in-2
2	Sampling rate less than 1-in-2

Stage III: Householder/Nonhouseholder

1	Householder
2	Nonhouseholder

Stage IV:	Age/Sex/Hispanic origin/Race
	White
	Persons of Hispanic origin
	Male
1	0 to 4 years of age
2	5 to 14 years of age
3	15 to 19 years of age
4	20 to 24 years of age
5	25 to 34 years of age
6	35 to 54 years of age
7	55 to 64 years of age
8	65 to 74 years of age
9	75 years of age or older
	Female
10-18	Same age categories as groups 1 through 9.
	Persons Not of Hispanic origin
19-36	Same age and sex categories as groups 1 through 18.
	Black
37-72	Same age/sex/Hispanic origin categories as groups 1 through 36
	Asian or Pacific Islander
73-108	Same age/sex/Hispanic origin categories as groups 1 through 36
	American Indian, Eskimo or Aleut
109-144	Same age/sex/Hispanic origin categories as groups 1 through 36
	Other Race (includes those races not listed above)
145-180	Same age/sex/Hispanic origin categories as groups 1 through 36

Within a weighting area, the first step in the estimation procedure was to assign an initial weight to each sample person record. This weight was approximately equal to the inverse of the probability of selecting a person for the census sample.

The next step in the estimation procedure, prior to iterative proportional fitting, was to combine categories in each of the four estimation stages, when needed, to increase the reliability of the ratio estimation procedure. For each

stage, any group that did not meet certain criteria for the unweighted sample count or for the ratio of the 100 percent to the initially weighted sample count, was combined, or collapsed, with another group in the same stage according to a specified collapsing pattern. At the fourth stage, an additional criterion concerning the number of 100-percent persons in each race/Hispanic origin category was applied.

As the final step, the initial weights underwent four stages of ratio adjustment applying the grouping procedures described above. At the first stage, the ratio of the 100-percent to the sum of the initial weights for each sample person was computed for each stage I group. The initial weight assigned to each person in a group was then multiplied by the stage I group ratio to produce an adjusted weight.

In stage II, the stage I adjusted weights were again adjusted by the ratio of the 100-percent to the sum of the stage I weights for sample persons in each stage II group. Next, at stage III, the stage II weights were adjusted by the ratio of the 100-percent to the sum of the stage II weights for sample persons in each stage III group. Finally, at stage IV, the stage III weights were adjusted by the ratio of the 100-percent to the sum of the stage III weights for sample persons in each stage IV group. The four stages of ratio adjustment were performed two times (two iterations) in the order given above. The weights obtained from the second iteration for stage IV were assigned to the sample person records. However, to avoid complications in rounding for tabulated data, only whole number weights were assigned. For example, if the final weight of the persons in a particular group was 7.25 then 1/4 of the sample persons in this group were randomly assigned a weight of 8, while the remaining 3/4 received a weight of 7.

The ratio estimation procedure for housing units was essentially the same as that for persons, except that vacant units were treated differently. The occupied housing unit ratio estimation procedure was done in four stages, and the vacant housing unit ratio estimation procedure was done in a single stage. The first stage for occupied housing units applied 16 household type categories, while the second stage used the two sampling categories described above for persons. The third stage applied three units-in-building categories, i.e. single units, multiunit less than 10 and multiunit 10 or more. The fourth stage could potentially use 200 tenure/race/Hispanic origin/rent value groups. The stages for ratio estimation for housing units were as follows:

OCCUPIED HOUSING UNITS

		4	\$60,000 to \$79,999
		5	\$80,000 to \$99,999
Stage I: Type of Household		6	\$100,000 to \$149,999
		7	\$150,000 to \$249,999
Group Housing Units With a Family With Own Children Under 18.		8	\$250,000 to \$299,999
		9	\$300,000+
		10	Other
1	2 persons in housing unit		
2	3 persons in housing unit		Householder Not of Hispanic origin
3	4 persons in housing unit		
4	5 to 7 persons in housing unit	11-20	Same value categories as groups 1 through 10
5	9 or more persons in housing unit		
			Black Householder
	Housing Units With a Family Without Own Children Under 18.	21-40	Same Hispanic origin/value categories as groups 1 through 20
6-10	2 through 8 or more persons in housing unit		Asian or Pacific Islander Householder
	All Other Housing Units	41-60	Same Hispanic origin/value categories as groups 1 through 20
11	1 person in housing unit		American Indian, Eskimo, or Aleut Householder
12-16	2 persons in housing unit through 8 or more persons in housing unit		
Stage II: Sampling Rate Category		61-80	Same Hispanic origin/value categories as groups 1 through 20
1	Sampling rate of 1-in-2		
2	Sampling rate less than 1-in-2		Other Race Householder
		81-100	Same Hispanic origin/value categories as groups 1 through 20
Stage III: Units in Building			Renter
1	Single unit structure		White Householder
2	Multiunit consisting of fewer than 10 individual units		Householder of Hispanic origin
3	Multiunit consisting of 10 or more individual units	Group	Rent categories
		101	Less than \$100
Stage IV: Tenure/Race and origin of Householder/ Value of Rent		102	\$100 to \$199
		103	\$200 to \$299
		104	\$300 to \$399
Group Owner		105	\$400 to \$499
	White Householder	106	\$500 to \$599
	Hispanic origin (Householder)	107	\$600 to \$749
	Value of Housing Unit	108	\$750 to \$999
1	Less than \$20,000	109	\$1000+
2	\$20,000 to \$39,999	110	No cash rent
3	\$40,000 to \$59,999		

	Householder Not of Hispanic origin
111-120	Same rent categories as groups 101 through 112
	Black Householder
121-140	Same Hispanic origin/rent categories as groups 101 through 120
	Asian or Pacific Islander Householder
141-160	Same Hispanic origin/rent origin categories as groups 101 through 120
	American Indian, Eskimo, or Aleut Householder
161-180	Same Hispanic origin/rent categories as groups 101 through 120
	Other Race Householder
181-200	Same Hispanic origin/rent categories as groups 101 through 120

VACANT HOUSING UNIT

Group	
1	Vacant for Rent
2	Vacant for Sale
3	Other Vacant

The estimates produced by this procedure realize some of the gains in sampling efficiency that would have resulted if the population had been stratified into the ratio-estimation group before sampling, and the sampling rate had been applied independently to each group. The net effect is a reduction in both the standard error and the possible bias of most estimated characteristic to levels below what would have resulted from simply using the initial (unadjusted) weight. A by-product of this estimation procedure is that the estimates from the sample will for the most part be consistent with the 100-percent figures for the population and housing unit groups used in the estimation procedure.

SELECTION OF THE PUBLIC USE MICRODATA SAMPLES

A stratified systematic selection procedure with equal probability was used to select each of the public use

microdata samples. The sampling universe was defined as all occupied housing units including all occupants, vacant housing units, and GQ persons in the census sample. The sample units were stratified during the selection process. The stratification was intended to improve the reliability of estimates derived from the public use microdata samples by defining strata within which there is a high degree of homogeneity among the census sample households with respect to characteristics of major interest.

A total of 1,049 strata were defined; 936 household strata, 104 strata for GQ persons, and 9 strata for vacant housing units. First, the units were divided into three major groups; households, vacant housing units, and GQ population. The household universe was stratified by family type and non-family, race/Hispanic origin of the householder, tenure, and age within sampling stratum. For the census sample selection the population was stratified by geographic size into three sampling strata, i.e., units in small governmental units were sampled at 1-in-2, units in small tract/BNAs were sampled at 1-in-6, and the remainder of the units were sampled at 1-in-8.

The vacant housing units universe was stratified by vacancy status and sampling rate. Finally, the GQ population was stratified by GQ type (institutions, non-institutions), race, Hispanic origin, and age. The stratification matrices are defined in tables A, B, and C.

SUBSAMPLING THE PUMS FILES

The sample selection procedures were as follows. The number of 1-percent public use microdata samples for a given state was determined by the full census sample size for that state. For instance, if the full census sample for a state was 20 percent, then the census sample was divided into 20 subsamples of equal size. The 1-percent public use microdata sample was designated at random from the 20 subsamples. From the remaining 19 subsamples, five 1 percent subsamples were designated at random and merged to produce the 5-percent public use microdata sample. The 3-percent elderly public use microdata sample was produced in the same way as the 5-percent but required an extra step. The 3 subsamples were merged and the elderly household and person records, households with at least one person age 60 years or more, or GQ persons 60 years and older, were selected and designated as the elderly PUMS file.

During the sample selection operation, consecutive two-digit subsample numbers from 00 to 99 were assigned to each sample case in the 5-percent and 1-percent samples to allow for the designation of various size subsamples and, as

discussed in the preceding chapter, to allow for the calculation of standard error. As an example, for a 1-percent public use microdata sample, the choice of records having subsample numbers with the same "units" digit (e.g., the two "units" digit includes subsample numbers (2,12,22,.....,92) will provide a 1-in-1000 subsample.

Samples of any size between 1/20 and 1/10000 may be selected in a similar manner by using appropriate two-digit subsample numbers assigned to either of the microdata samples. Care must be exercised when selecting such samples. If only one "units" digit is required, the units digit should be randomly selected. If two "units" digits are required, the first should be randomly selected and the second should be either 5 more or 5 less than the first. Failure to use this procedure, e.g., selection of records with the same "tens" digit instead of records with the same "units" digit, would provide a 1-in-10 subsample but one that would be somewhat more clustered and as a result subject to larger sampling error.

¹Wolter, Kirk M., Introduction to Variance Estimation, 1985, pp. 55-71.

²Value of units in this category results from other factors besides housing value alone, for example, inclusion of more than 10 acres of land, or presence of a business establishment on the premises.

Table A PUMS Stratification Matrix - Households

Race & Origin Household Type	Age	White/Other		CH	FI	HA	KO	VI	JA	AI	SA	GU	OT	Black/ American Indian/ Alaskan or Aleut												
		Hispanic Origin	Non-Hispanic Origin												O	R	O	R	O	R	O	R	O	R	O	R
Family with own children under 18	0-99														O	R										
	00-74																									
	75-89																									
	90+																									
Family without children under 18																										
Other households (Non-family)																										

Repeat for 1-in-6 and 1-in-8

CH - Chinese KO - Korean AI - Asian Indian OT - Other, Asian
 FI - Filipino VI - Vietnamese SA - Samoan and Pacific
 HA - Hawaiian JA - Japanese GU - Guamanian Islander

O - Owner
 R - Renter

Table B: PUMS Stratification Matrix - Vacant Housing Units

Sampling Rate	1-in-2	1-in-6	1-in-8
Vacant, for sale			
Vacant, for rent			
Vacant, Other			

Table C: PUMS Stratification Matrix - Group Quarters

Race/ Hispanic Origin/ Age	Institutional/Military													Non-Inst./Non-Military
	White/Other		Black/American Indian/Alaskan or Aleut	CH	FI	HA	KO	VI	JA	AI	SA	GU	OT	Repeat Race/Origin Group
	Hispanic	Non- Hispanic												
0-59														
60-74														
75-89														
90+														

CH - Chinese KO - Korean AI - Asian Indian OT - Other, Asian
 FI - Filipino VI - Vietnamese SA - Samoan and Pacific
 HA - Hawaiian JA - Japanese GU - Guamanian Islander

CHAPTER 5: RECORD CONTENTS

This chapter, in conjunction with several appendices, defines the record layout and applicable codes for the public-use microdata samples. The detailed data dictionary begins on page 5-10 for the housing record and page 5-18 for the person record, with explanatory notes on page C-1 in appendix C.

For user convenience, we are providing several indexes which can be used for either PUMS file. Again, the only difference between the files is the PUMA. Note the variable PSA is only applicable to the 3% elderly file--a file which was sponsored by agencies outside the Census Bureau. It contains "Planning Services Areas" identified by the states' health planning agencies. Purchasers of that file will receive a geographic database which equates PSAs to 5% PUMAs if and only if the PSAs match the PUMAs. There is no additional geography.

Below is an index to the basic data items. The index by character location of the items on the housing and person records follows. In these introductory pages, data fields are specified in the form "H9" or "P12-14," where the letter indicates the Housing or Person record and the numbers indicate the character positions occupied on that record. For example, "P12-14" is a three-character field beginning in character 12 of the person record. In the data dictionary, itself, the "P" or "H" designation appears only at the top of the page, and location is expressed in terms of two separate elements, the beginning location and the size for each mnemonic. The mnemonic is a name for a variable or item.

INDEX TO HOUSING ITEMS (BY DESCRIPTION)

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>DESCRIPTION</u>
AGSALES	H68	1989 sales of agricultural products
AAGSALES	H189	1989 sales of agricultural products allocation
HUSFLAG	H41	All 100% housing unit data substituted
PDSFLAG	H42	All 100% person data substituted
AREATYPE	H18-19	Area type
BEDROOMS	H57	Bedrooms
VACANCY3	H54	Boarded up status
AVACNCY3	H175	Boarded up status allocation
COMMUSE	H46	Business or medical office on property
ACOMMUSE	H170	Business or medical office on property allocation
KITCHEN	H59	Complete kitchen facilities
AKITCHEN	H180	Complete kitchen facilities allocation
PLUMBING	H58	Complete plumbing facilities
APLUMBNG	H179	Complete plumbing facilities allocation
ACNDOFEE	H202	Condominium fee allocation
CONDOFEE	H108-111	Condominium fee (monthly amount)
DIVISION	H10	Division code
ELECCOST	H69-72	Electricity (yearly cost)
AELECCST	H190	Electricity (yearly cost) allocation
RFAMINC	H134-140	Family income
RFARM	H116	Farm/nonfarm status
HFILLER1	H36-38	Filler1
HFILLER2	H87-89	Filler2
HFILLER3	H123	Filler3
AINSAMT	H195	Fire, hazard, flood insurance allocation
INSAMT	H90-93	Fire/hazard/flood insurance (yearly amount)
GASCOST	H73-76	Gas (yearly cost)
AGASCST	H191	Gas (yearly cost) allocation
RGRENT	H117-120	Gross rent
RGRAPI	H121-122	Gross rent as a percentage of household income in 1989
GQINST	H35	Group quarters institution code
FUELHEAT	H62	House heating fuel
AFUEL	H183	House heating fuel allocation
FUELCOST	H81-84	House heating fuel (yearly cost)
ONEACRE	H67	House on less than 1 acre
AONEACRE	H188	House on less than 1 acre allocation
CONDO	H66	House or apartment part of condominium
ACONDO	H187	House or apartment part of condominium allocation
AFUELCST	H193	Household heating fuel (yearly cost) allocation
RHHINC	H141-147	Household income
RHHLANG	H149	Household language
RHHFAMTP	H151-152	Household/family type
SERIALNO	H2-8	Housing unit/GQ person serial number
HOUSWGT	H29-32	Housing weight

INDEX TO HOUSING ITEMS (BY DESCRIPTION) CON.

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>DESCRIPTION</u>
RLINGISO	H150	Linguistic isolation
MEALS	H51	Meals included in rent
AMEALS	H173	Meals included in rent allocation
AMOBHME	H203	Mobile home costs allocation
MOBLHOME	H112-115	Mobile home costs (yearly amount)
RENT1	H49-50	Monthly rent
ARENT1	H172	Monthly rent allocation
VACANCY4	H55	Months vacant
AVACANCY4	H176	Months vacant allocation
MORTGAG3	H95-99	Mortgage payment (monthly amount)
MORTGAG	H94	Mortgage status
AMORTG	H196	Mortgage status allocation
MSAPMSA	H20-23	MSA/PMSA
ABEDROOM	H178	Number of bedrooms allocation
RNATADPT	H153-154	Number of own natural born/adopted children in household (unweighted)
RSTPCHLD	H155-156	Number of own stepchildren in household (unweighted)
RFAMPERS	H157-158	Number of persons in family (unweighted)
PERSONS	H33-34	Number of persons records following this housing record
RRELCHLD	H159-160	Number of related children in household (unweighted)
ACRE10	H45	On ten acres or more
AACRES1	H169	On ten acres or more allocation
INSINCL	H101	Payment include fire, hazard, flood insurance
AINSINCL	H199	Payment include fire, hazard, flood insurance allocation
TAXINCL	H100	Payment include real estate taxes
ATAXINCL	H198	Payment include real estate taxes allocation
PSA	H24-26	Planning service area (elderly sample only - state dependent)
RNONREL	H161	Presence of nonrelatives in household
R60OVER	H163	Presence of person 60 years and over in household
R65OVER	H164	Presence of person 65 years and over in household
R18UNDR	H162	Presence of person under 18 years in household
RSUBFAM	H165	Presence of subfamilies in household
RTAXAMT	H85-86	Property taxes (yearly amount)
VALUE	H47-48	Property value
PUMA	H13-17	Public Use Microdata Area (state dependent)
RECTYPE	H1	Record type
AMORTG3	H197	Regular mortgage payment allocation
ROOMS	H43	Rooms
AROOMS	H167	Rooms allocation
SAMPLE	H9	Sample identifier
MORTGAG2	H102	Second mortgage or home equity loan status
AMRTAMT2	H201	Second mortgage payment allocation
MORTAMT2	H103-107	Second mortgage payment (monthly amount)
AMORTG2	H200	Second mortgage status allocation
ROWNRCS	H124-128	Selected monthly owner costs
RNSMOCP1	H129-131	Selected monthly owner costs as a percentage of household income in 1989
SEWAGE	H64	Sewage disposal
ASEWER	H185	Sewage disposal allocation
WATER	H63	Source of water
AWATER	H184	Source of water allocation
RRENTUNT	H132	Specified rent unit
RVALUNT	H133	Specified value unit
STATE	H11-12	State code
SUBSAMPL	H27-28	Subsample number (use to pull extracts - 1/1000/etc.)
ATAXAMT	H194	Taxes on property allocation
TELEPHON	H60	Telephone in unit
APHONE	H181	Telephones in unit allocation
TENURE	H44	Tenure
ATENURE	H168	Tenure allocation
UNITS1	H39-40	Units in structure
AUNITS1	H166	Units in structure allocation
VACANCY2	H53	Vacancy status
AVACANCY2	H174	Vacancy status allocation
VACANCY1	H52	Vacant usual home elsewhere (UHE)

INDEX TO HOUSING ITEMS (BY DESCRIPTION) CON.

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>DESCRIPTION</u>
AVALUE	H171	Value allocation
AVEHICLE	H182	Vehicles available by household allocation
AUTOS	H61	Vehicles (1 ton or less) available
WATRCOST	H77-80	Water (yearly cost)
AWATRCST	H192	Water (yearly cost) allocation
YRMOVED	H56	When moved into this house or apartment
AYRMOVED	H177	When moved into this house or apartment allocation
YRBUILT	H65	When structure first built
AYRBUILT	H186	When structure first built allocation
RWRKR89	H148	Workers in family in 1989

INDEX TO POPULATION ITEMS (BY DESCRIPTION)

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>DESCRIPTION</u>
ENGLISH	P71	Ability to speak English
AENGLISH	P201	Ability to speak English allocation flag
AGE	P15-16	Age
AAGE	P187	Age allocation flag
AINCOME8	P231	All other income allocation flag
INCOME8	P178-182	All other income in 1989
ANCSTRY1	P53-55	Ancestry first entry
ANCSTRY2	P56-58	Ancestry second entry
AAUGMENT	P183	Augmented person
AVAIL	P113	Available for work
AFERTIL	P209	Children ever born allocation flag
CITIZEN	P47	Citizenship
ACITIZEN	P191	Citizenship allocation flag
CLASS	P121	Class of worker
ACLASS	P220	Class of worker allocation
AHISPAN	P189	Detailed Hispanic origin allocation flag
HISPANIC	P38-40	Detailed Hispanic origin code
ARACE	P186	Detailed race allocation flag
RACE	P12-14	Detailed race code
RELAT2	P35	Detailed relationship (other relative)
YEARSCH	P51-52	Educational attainment
REMPAR	P26-28	Employment status of parents
RLABOR	P91	Employment status recode
ALABOR	P210	Employment status recode allocation flag
AINCOME3	P226	Farm self-employment income allocation flag
INCOME3	P151-156	Farm self-employment income in 1989 (signed)
PFILLER2	P81	Filler
PFILLER1	P22-25	Filler
AANCSTR1	P195	First ancestry allocation flag
AYEARSCH	P194	Highest education allocation flag
HOURS	P93-94	Hours worked last week
AHOURS	P211	Hours worked last week allocation flag
SERIALNO	P2-8	Housing unit/GQ person serial number
INDUSTRY	P115-117	Industry
AINDUSTR	P218	Industry allocation flag
INCOME4	P157-162	Interest, dividend, and net rental income
AINCOME4	P227	Interest, dividend, and net rental income allocation flag (signed)
ALANG1	P199	Language other than English allocation flag
LANG1	P67	Language other than English at home
LANG2	P68-70	Language spoken at home
ALANG2	P200	Language spoken at home allocation flag
LOOKING	P112	Looking for work
MARITAL	P17	Marital status
AMARITAL	P188	Marital status allocation flag
RSPOUSE	P31	Married, spouse present/spouse absent
MEANS	P102-103	Means of transportation to work
AMEANS	P213	Means of transportation to work allocation flag
MIGPUMA	P62-66	Migration PUMA (State dependent)
AMIGSTATE	P198	Migration State allocation flag
MIGSTATE	P60-61	Migration State or foreign country code
ASERVPER	P203	Military periods of service allocation flag
MILITARY	P72	Military service
AVETS1	P202	Military service allocation flag
MOBILLIM	P87	Mobility limitation
AMOBLLIM	P207	Mobility limitation status allocation flag
AMOBLTY	P197	Mobility status allocation flag
MOBILITY	P59	Mobility status (lived here on April 1, 1985)
AINCOME2	P225	Nonfarm self-employment income allocation flag
INCOME2	P145-150	Nonfarm self-employment income in 1989 signed
FERTIL	P89-90	Number of children ever born
OCCUP	P118-120	Occupation
AOCCUP	P219	Occupation allocation flag
ROWNCHLD	P32	Own child
POVERTY	P41-43	Person poverty status recode

INDEX TO POPULATION ITEMS (BY DESCRIPTION) CON.

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>DESCRIPTION</u>
PERSCARE	P88	Personal care limitation
APERCARE	P208	Personal care limitation allocation flag
PWGT1	P18-21	Person's weight
POB	P44-46	Place of birth
ABIRTHPL	P190	Place of birth allocation flag
RPOB	P29-30	Place of birth recode
POWSTATE	P95-96	Place of work - State
POWPUMA	P97-101	Place of work PUMA (state dependent)
APOWST	P212	Place of work State allocation flag
RAGECHLD	P33	Presence and age of own children
AINCOME6	P229	Public assistance income allocation flag
INCOME6	P168-172	Public assistance income in 1989
RECTYPE	P1	Record type
RRELCHLD	P34	Related child
RELAT1	P9-10	Relationship
ARELAT1	P184	Relationship allocation flag
AINCOME7	P230	Retirement income allocation flag
INCOME7	P173-177	Retirement income in 1989
SCHOOL	P50	School enrollment
ASCHOOL	P193	School enrollment allocation flag
AANCSTR2	P196	Second ancestry allocation flag
OTHRSERV	P82	Served any other time
FEB55	P78	Served February 1955 - July 1964
KOREAN	P79	Served Korean conflict (June 1950 - January 1955)
MAY75880	P76	Served May 1975 to August 1980
SEPT80	P75	Served September 1980 or later
VIETNAM	P77	Served Vietnam ERA (August 1964 - April 1975)
WWII	P80	Served World War II (September 1940 - July 1947)
SEX	P11	Sex
ASEX	P185	Sex allocation flag
AINCOMES	P228	Social security income allocation flag
INCOMES	P163-167	Social security income in 1989
SUBFAM2	P36	Subfamily number
SUBFAM1	P37	Subfamily relationship
TMPABST	P111	Temporary absence from work
DEPART	P105-108	Time of departure for work - hour and minute
ADEPART	P215	Time of departure for work allocation flag
REARNING	P127-132	Total person's earnings (signed)
RPINCOME	P133-138	Total person's income (signed)
TRAVTIME	P109-110	Travel time to work
ATRANTME	P216	Travel time to work allocation flag
AHOUR89	P223	Usual hours worked per week in 1989 allocation
HOUR89	P125-126	Usual hours worked per week last year (1989)
RIDERS	P104	Vehicle occupancy
ARIDERS	P214	Vehicle occupancy allocation flag
RVETSERV	P73-74	Veteran period of service
AINCOME1	P224	Wages and salary income allocation flag
INCOME1	P139-144	Wages or salary income in 1989 (signed)
AWKS89	P222	Weeks worked in 1989 allocation flag
WEEK89	P123-124	Weeks worked last year (1989)
DISABL1	P85	Work limitation status
ADISABL1	P205	Work limitation status allocation flag
DISABL2	P86	Work prevented status
ADISABL2	P206	Work prevention status allocation flag
WORKLWK	P92	Worked last week
AWORK89	P221	Worked last year allocation flag
WORK89	P122	Worked last year (1989)
YEARWRK	P114	Year last worked
ALSTWRK	P217	Year last worked allocation flag
IMMIGR	P48-49	Year of entry
AIMMIGR	P192	Year of entry allocation flag
YRSSERV	P83-84	Years of active duty military service
AYRSSERV	P204	Years of military service allocation flag

INDEX TO HOUSING ITEMS (BY CHARACTER LOCATION)

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>SIZE</u>	<u>DESCRIPTION</u>
RECTYPE	H1	1	Record type
SERIALNO	H2-8	7	Housing unit/GQ person serial number
SAMPLE	H9	1	Sample identifier
DIVISION	H10	1	Division code
STATE	H11-12	2	State code
PLUMA	H13-17	5	Public use microdata area (state dependent)
AREATYPE	H18-19	2	Area type
MSAPMSA	H20-23	4	MSA/PMSA
PSA	H24-26	3	Planning service area (elderly sample only state dependent)
SUBSAMPL	H27-28	2	Subsample number (use to pull extracts - 1/1000/etc.
HOUSWGT	H29-32	4	Housing weight
PERSONS	H33-34	2	Number of persons records following this housing record
GQINST	H35	1	Group quarters institution code
HFILLER1	H36-38	3	Filler1
UNITS1	H39-40	2	Units in structure
HUSFLAG	H41	1	All 100% housing unit data substituted
PDSFLAG	H42	1	All 100% person data substituted
ROOMS	H43	1	Rooms
TENURE	H44	1	Tenure
ACRE10	H45	1	On ten acres or more
COMMUSE	H46	1	Business or medical office on property
VALUE	H47-48	2	Property value
RENT1	H49-50	2	Monthly rent
MEALS	H51	1	Meals included in rent
VACANCY1	H52	1	Vacant usual home elsewhere (UHE)
VACANCY2	H53	1	Vacancy status
VACANCY3	H54	1	Boarded up status
VACANCY4	H55	1	Months vacant
YRMOVED	H56	1	When moved into this house or apartment
BEDROOMS	H57	1	Bedrooms
PLUMBING	H58	1	Complete plumbing facilities
KITCHEN	H59	1	Complete kitchen facilities
TELEPHON	H60	1	Telephone in unit
AUTOS	H61	1	Vehicles (1 ton or less) available
FUELHEAT	H62	1	House heating fuel
WATER	H63	1	Source of water
SEWAGE	H64	1	Sewage disposal
YRBUILT	H65	1	When structure first built
CONDO	H66	1	House or apartment part of condominium
ONEACRE	H67	1	House on less than 1 acre
AGSALES	H68	1	1989 sales of agriculture products
ELECCOST	H69-72	4	Electricity (yearly cost)
GASCOST	H73-76	4	Gas (yearly cost)
WATRCOST	H77-80	4	Water (yearly cost)
FUELCOST	H81-84	4	House heating fuel (yearly cost)
RTAXAMT	H85-86	2	Property taxes (yearly amount)
HFILLER2	H87-89	3	Filler2
INSAMT	H90-93	4	Fire/hazard/flood insurance (yearly amount)
MORTGAG	H94	1	Mortgage status
MORTGAG3	H95-99	5	Mortgage payment (monthly amount)
TAXINCL	H100	1	Payment include real estate taxes
INSINCL	H101	1	Payment include fire/hazard/flood insurance
MORTGAG2	H102	1	Second mortgage or home equity loan status
MORTAMT2	H103-107	5	Second mortgage payment (monthly amount)
CONDOFEE	H108-111	4	Condominium fee (monthly amount)
MOBLHOME	H112-115	4	Mobile home costs (yearly amount)
RFARM	H116	1	Farm/nonfarm status
RGRENT	H117-120	4	Gross rent
RGRAP1	H121-122	2	Gross rent as a percentage of household income in 1989
HFILLER3	H123	1	Filler3
ROWNCST	H124-128	5	Selected monthly owner costs
RSMOCP1	H129-131	3	Selected monthly owner costs as a percentage of household income in 1989
RRENTUNT	H132	1	Specified rent unit
RVALUNT	H133	1	Specified value unit

INDEX TO HOUSING ITEMS (BY CHARACTER LOCATION) CON.

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>SIZE</u>	<u>DESCRIPTION</u>
RFAMINC	H134-140	7	Family income
RHHINC	H141-147	7	Household income
RWRKR89	H148	1	Workers in family in 1989
RHHLANG	H149	1	Household language
RLINGISO	H150	2	Linguistic isolation
RHHFAMTP	H151-152	2	Household/family type
RNATADPT	H153-154	2	Number of own natural born/adopted children in household (unweighted)
RSTPCHLD	H155-156	2	Number of own stepchildren in household (unweighted)
RFAMPERS	H157-158	2	Number of persons in family (unweighted)
RRELCHLD	H159-160	2	Number of related children in household (unweighted)
RNONREL	H161	1	Presence of nonrelatives in household
R18UNDR	H162	1	Presence of person under 18 years in household
R60OVER	H163	1	Presence of person 60 years and over in household
R65OVER	H164	1	Presence of person 65 years and over in household
RSUBFAM	H165	1	Presence of subfamilies in household
AUNITS1	H166	1	Units in structure allocation
AROOMS	H167	1	Rooms allocation
ATENURE	H168	1	Tenure allocation
AACRES1	H169	1	On ten acres or more allocation
ACOMMUSE	H170	1	Business or medical office on property allocation
AVALUE	H171	1	Value allocation
ARENT1	H172	1	Monthly rent allocation
AMEALS	H173	1	Meals included in rent allocation
AVACNCY2	H174	1	Vacancy status allocation
AVACNCY3	H175	1	Boarded up status allocation
AVACNCY4	H176	1	Months vacant allocation
AYRMOVED	H177	1	When moved into this house or apartment allocation
ABEDROOM	H178	1	Number of bedrooms allocation
APLUMBNG	H179	1	Complete plumbing facilities allocation
AKITCHEN	H180	1	Complete kitchen facilities allocation
APHONE	H181	1	Telephones in unit allocation
AVEHICLE	H182	1	Vehicles available by household allocation
AFUEL	H183	1	House heating fuel allocation
AWATER	H184	1	Source of water allocation
ASEWER	H185	1	Sewage disposal allocation
AYRBUILT	H186	1	When structure first built allocation
ACONDO	H187	1	House or apartment part of condominium allocation
AONEACRE	H188	1	House on less than 1 acre allocation
AAGSALES	H189	1	1989 sales of agricultural products allocation
AEECCST	H190	1	Electricity (yearly cost) allocation
AGASCST	H191	1	Gas (yearly cost) allocation
AWATRCST	H192	1	Water (yearly cost) allocation
AFUELCST	H193	1	Household heating fuel (yearly cost) allocation
ATAXAMT	H194	1	Taxes on property allocation
AINSAMT	H195	1	Fire, hazard, flood insurance allocation
AMORTG	H196	1	Mortgage status allocation
MORTG3	H197	1	Regular mortgage payment allocation
ATAXINCL	H198	1	Payment include real estate taxes allocation
AINSINCL	H199	1	Payment include fire, hazard, flood insurance
AMORTG2	H200	1	Second mortgage status allocation
AMRTAMT2	H201	1	Second mortgage payment allocation
ACNDOFEE	H202	1	Condominium fee allocation
AMOBLHME	H203	1	Mobile home costs allocation
FILLER	H204-H231	28	Filler

INDEX TO POPULATION ITEMS (BY CHARACTER LOCATION)

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>SIZE</u>	<u>DESCRIPTION</u>
RECTYPE	P1	1	Record type
SERIALNO	P2-8	7	Housing unit/GQ person serial number
RELAT1	P9-10	2	Relationship
SEX	P11	1	Sex
RACE	P12-14	3	Detailed race code
AGE	P15-16	2	Age
MARITAL	P17	1	Marital status
PWT1	P18-21	4	Person's weight
PFILLER1	P22-25	4	Filler
REMP1PAR	P26-28	3	Employment status of parents
RPOB	P29-30	2	Place of birth (recode)
RSPOUSE	P31	1	Married, spouse present/spouse absent
ROWNCHLD	P32	1	Own child
RAGECHLD	P33	1	Presence and age of own children
RRELCHLD	P34	1	Related child
RELAT2	P35	1	Detailed relationship (other relative)
SUBFAM2	P36	1	Subfamily number
SUBFAM1	P37	1	Subfamily relationship
HISPANIC	P38-40	3	Detailed hispanic origin code
POVERTY	P41-43	3	Person poverty status recode
POB	P44-46	3	Place of birth
CITIZEN	P47	1	Citizenship
IMMIGR	P48-49	2	Year of entry
SCHOOL	P50	1	School enrollment
YEARSCH	P51-52	2	Educational attainment
ANCSTRY1	P53-55	3	Ancestry first entry
ANCSTRY2	P56-58	3	Ancestry second entry
MOBILITY	P59	1	Mobility status (lived here on April 1, 1985)
MIGSTATE	P60-61	2	Migration State or foreign country code
MIGPUMA	P62-66	5	Migration PUMA (State dependent)
LANG1	P67	1	Language other than English at home
LANG2	P68-70	3	Language spoken at home
ENGLISH	P71	1	Ability to speak English
MILITARY	P72	1	Military service
RVETSERV	P73-74	2	Veteran period of service
SEPT80	P75	1	Served September 1980 or later
MAY75880	P76	1	Served May 1975 to August 1980
VIETNAM	P77	1	Served Vietnam ERA (August 1964 - April 1975)
FEB55	P78	1	Served February 1955 - July 1964
KOREAN	P79	1	Served Korean conflict (June 1950 - January 1955)
WWII	P80	1	Served World War II (September 1940 - July 1947)
PFILLER2	P81	1	Filler
OTHRSERV	P82	1	Served any other time
YRSSERV	P83-84	2	Years of active duty military service
DISABL1	P85	1	Work limitation status
DISABL2	P86	1	Work prevented status
MOBILIM	P87	1	Mobility limitation
PERSCARE	P88	1	Personal care limitation
FERTIL	P89-90	2	Number of children ever born
RLABOR	P91	1	Employment status recode
WORKLWK	P92	1	Worked last week
HOURS	P93-94	2	Hours worked last week
POWSTATE	P95-96	2	Place of work - State
POWPUMA	P97-101	5	Place of work PUMA (State dependent)
MEANS	P102-103	2	Means of transportation to work
RIDERS	P104	1	Vehicle occupancy
DEPART	P105-108	4	Time of departure for work - hour and minute
TRAVTIME	P109-110	2	Travel time to work
TMPABSNT	P111	1	Temporary absence from work
LOOKING	P112	1	Looking for work
AVAIL	P113	1	Available for work
YEARWRK	P114	1	Year last worked
INDUSTRY	P115-117	3	Industry
OCCUP	P118-120	3	Occupation

INDEX TO POPULATION ITEMS (BY CHARACTER LOCATION) CON.

<u>MNEMONIC</u>	<u>CHARACTER LOCATION</u>	<u>SIZE</u>	<u>DESCRIPTION</u>
CLASS	P121	1	Class of worker
WORK89	P122	1	Worked last year (1989)
WEEK89	P123-124	2	Weeks worked last year (1989)
HOUR89	P125-126	2	Usual hours worked per week last year (1989)
REARNING	P127-132	6	Total person's earnings (signed)
RPINCOME	P133-138	6	Total person's income (signed)
INCOME1	P139-144	6	Wages or salary income in 1989 (signed)
INCOME2	P145-150	6	Nonfarm self-employment income in 1989
INCOME3	P151-156	6	Farm self-employment income in 1989 (signed)
INCOME4	P157-162	6	Interest, dividends, and net rental income in 1989 (signed)
INCOME5	P163-167	5	Social security income in 1989
INCOME6	P168-172	5	Public assistance income in 1989
INCOME7	P173-177	5	Retirement income in 1989
INCOME8	P178-182	5	All other income in 1989
AAUGMENT	P183	1	Augmented person
ARELAT1	P184	1	Relationship allocation flag
ASEX	P185	1	Sex allocation flag
ARACE	P186	1	Detailed race allocation flag
AAGE	P187	1	Age allocation flag
AMARITAL	P188	1	Marital status allocation flag
AHISPAN	P189	1	Detailed hispanic origin allocation flag
ABIRTHPL	P190	1	Place of birth allocation flag
ACITIZEN	P191	1	Citizenship allocation flag
AIMNIGR	P192	1	Year of entry allocation flag
ASCHOOL	P193	1	School enrollment allocation flag
AYEARSC	P194	1	Highest education allocation flag
AANCSTR1	P195	1	First ancestry allocation flag
AANCSTR2	P196	1	Second ancestry allocation flag
AMOBLTY	P197	1	Mobility status allocation flag
AMIGSTATE	P198	1	Migration state allocation flag
ALANG1	P199	1	Language other than english allocation flag
ALANG2	P200	1	Language spoken at home allocation flag
AENGLISH	P201	1	Ability to speak english allocation flag
AVETS1	P202	1	Military service allocation flag
ASERVPER	P203	1	Military periods of service allocation flag
AYRSSERV	P204	1	Years of military service allocation flag
ADISABL1	P205	1	Work limitation status allocation flag
ADISABL2	P206	1	Work prevention status allocation flag
AMOBL LIM	P207	1	Mobility limitation status allocation flag
APERECARE	P208	1	Personal care limitation allocation flag
AFERTIL	P209	1	Children ever born allocation flag
ALABOR	P210	1	Employment status recode allocation flag
AHOURS	P211	1	Hours worked last week allocation flag
APOWST	P212	1	Place of work state allocation flag
AMEANS	P213	1	Means of transportation to work allocation flag
ARIDERS	P214	1	Vehicle occupancy allocation flag
ADEPART	P215	1	Time of departure to work allocation flag
ATRAMTME	P216	1	Travel time to work allocation flag
ALSTWRK	P217	1	Year last worked allocation flag
AINDUSTR	P218	1	Industry allocation flag
AOCCUP	P219	1	Occupation allocation flag
AClass	P220	1	Class of worker allocation
AWORK89	P221	1	Worked last year allocation flag
AWKS89	P222	1	Weeks worked in 1989 allocation flag
AHOUR89	P223	1	Usual hours worked per week in 1989 allocation flag
AINCOME1	P224	1	Wages and salary income allocation flag
AINCOME2	P225	1	Nonfarm self-employment income allocation flag
AINCOME3	P226	1	Farm self-employment income allocation flag
AINCOME4	P227	1	Interest, dividend, and net rental income allocation flag
AINCOME5	P228	1	Social security income allocation flag
AINCOME6	P229	1	Public assistance allocation flag
AINCOME7	P230	1	Retirement income allocation flag
AINCOME8	P231	1	All other income allocation flag

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D RECTYPE	1	1	D MSAPMSA	4	20
Record Type			MSA/PMSA		
V H			V 0040..		
.Housing Record			V 9340		
D SERIALNO	7	2	.FIPS/MSA/PMSA code, selected MSA/PMSA		
V 0000000..			.(See appendix G)		
9999999			V 9997		
.Housing unit/GQ person serial number unique			.Mixed MSA/PMSA NONMSA/PMSA area		
.identifier assigned within state or state group			V 9998		
			.2 or more MSAs		
			V 9999		
			.Not in MA		
D SAMPLE	1	9	D PSA	3	24
Sample Identifier			Planning service area (elderly sample only -		
V 1			state dependent)		
.5% sample			V 000		
V 2			.N/A (Elderly PUMS only)		
.1% sample			V 1A..18B		
V 3			.Planning service area codes (See appendix G)		
.Elderly			D SUBSAMPL	2	27
D DIVISION	1	10	subsample number (Use to pull extracts - 1/1000/etc.)		
Division code			V 00..99		
V 0			.See text. pp 4-45.		
.Region/division not identifiable			D HOUSWGT	4	29
V 1			Housing Weight		
.(Selected MSA/PMSAs on 1% sample)			V 0000..		
V 2			1152		
.New England (Northeast region)			.Integer weight of housing unit		
V 3			D PERSONS	2	33
.Middle Atlantic (Northeast region)			Number of person records following this housing		
V 4			record		
.East North Central (Midwest region)			V 00		
V 5			.Vacant unit		
.West North Central (Midwest region)			V 01		
V 6			.One person record (one person in household		
.South Atlantic (South region)			.or any person in group quarters)		
V 7			V 02..29		
.East South Central (South region)			.Number of person records (number of persons		
V 8			.in household)		
.West South Central (South Region)			D GQINST	1	35
V 9			Group quarters institution		
.Mountain (West region)			V 0		
V 9			.N/A (housing unit)		
.Pacific (West region)			V 1		
D STATE	2	11	.Institutionalized		
State Code			V 2		
V 01..56			.Not institutionalized		
.FIPS state code (See appendix I)			D HFILLER	3	36
V 99			Filler		
.PUMA boundaries cross state lines - 1% file			D UNITS1	2	39
D PUMA	5	13	Units in structure		
Public use microdata area (state dependent)			V 00		
V 00100..			.N/A (GQ)		
.PUMA code (Includes tract groups) 1st 3			V 01		
.Digits = main PUMA - generally county place			.Mobile home or trailer		
V 99999			V 02		
.Last 2 digits = groups of tracts, BNA, etc.			.One-family house detached		
D AREATYPE	2	18	V 03		
Area type revised for PUMS equivalency file			.One-family house attached		
V 10			V 04		
.Central city			.2 Apartments		
V 11			V 05		
.Central city part			.3-4 Apartments		
V 20			V 06		
.MSA/PMSA - Outside central city			.5-9 Apartments		
V 21			V 07		
.MSA/PMSA - Outside central city (part)			.10-19 Apartments		
V 22			V 08		
.Central City (part) & outside central city			.20-49 Apartments		
.(part)			V 09		
V 30			.50 or more apartments		
.Entire MSA			V 10		
V 31			.Other		
.2 or more MSAs/PMSAs			D HUSFLAG	1	41
V 40			All 100% housing unit data substituted		
.Mixed MSA/PMSA/NON-MSA/PMSA area			V 0		
V 50			.No		
.Outside MSA/PMSA			V 1		
V 60			.Yes		
.Place					
V 61					
.Place - part					
V 70					
.MCDs/Towns (New England only)					
V 80					
.Counties/independent Cities (2 or more)					
V 81					
.County/independent city - part					
V 82					
.County/independent city					

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D PDSFLAG	1	42	V 20	\$.150000 - \$174999	
	All 100% person data substituted		V 21	\$.175000 - \$199999	
V 0	.No		V 22	\$.200000 - \$249999	
V 1	.Yes		V 23	\$.250000 - \$299999	
D ROOMS	1	43	V 24	\$.300000 - \$399999	
	Rooms		V 25	\$.400000 or more	
V 0	.N/A (GQ)		D RENT1	2	49
V 1	.1 Room			Monthly rent	
V 2	.2 Rooms		V 00	.N/A (GQ/not a rental unit)	
V 3	.3 Rooms		V 01	.Less than \$ 80	
V 4	.4 Rooms		V 02	.\$ 80 - \$ 99	
V 5	.5 Rooms		V 03	.\$ 100 - \$124	
V 6	.6 Rooms		V 04	.\$ 125 - \$149	
V 7	.7 Rooms		V 05	.\$ 150 - \$174	
V 8	.8 Rooms		V 06	.\$ 175 - \$199	
V 9	.9 or more rooms		V 07	.\$ 200 - \$224	
D TENURE	1	44	V 08	.\$ 225 - \$249	
	Tenure		V 09	.\$ 250 - \$274	
V 0	.N/A (GQ/vacant)		V 10	.\$ 275 - \$299	
V 1	.Owned with mortgage or loan		V 11	.\$ 300 - \$324	
V 2	.Owned free and clear		V 12	.\$ 325 - \$349	
V 3	.Rented for cash rent		V 13	.\$ 350 - \$374	
V 4	.No cash rent		V 14	.\$ 375 - \$399	
D ACRE10	1	45	V 15	.\$ 400 - \$424	
	On ten acres or more		V 16	.\$ 425 - \$449	
V 0	.N/A (GQ/not a one-family house or mobile home)		V 17	.\$ 450 - \$474	
V 1	.House on ten or more acres		V 18	.\$ 475 - \$499	
V 2	.House on less than ten acres		V 19	.\$ 500 - \$524	
D COMMUSE	1	46	V 20	.\$ 525 - \$549	
	Business or medical office on property		V 21	.\$ 550 - \$599	
V 0	.N/A (GQ/not a one-family house or mobile home)		V 22	.\$ 600 - \$649	
V 1	.Yes		V 23	.\$ 650 - \$699	
V 2	.No		V 24	.\$ 700 - \$749	
D VALUE	2	47	V 25	.\$ 750 - \$999	
	Property value		V 26	.\$1000 or more	
V 00	.N/A (GQ/rental unit/vacant, not for sale only)		V 27	.No cash rent (NCR)	
V 01	.Less than \$ 10000		D MEALS	1	51
V 02	.\$ 10000 - \$ 14999			Meals included in rent	
V 03	.\$ 15000 - \$ 19999		V 0	.N/A (GQ/not a rental unit/rental-NCR)	
V 04	.\$ 20000 - \$ 24999		V 1	.Yes	
V 05	.\$ 25000 - \$ 29999		V 2	.No	
V 06	.\$ 30000 - \$ 34999		D VACANCY1	1	52
V 07	.\$ 35000 - \$ 39999			Vacant usual home elsewhere (UHE)	
V 08	.\$ 40000 - \$ 44999		V 0	.N/A (occupied or regular vacant/GQ)	
V 09	.\$ 45000 - \$ 49999		V 1	.Vacant UHE-owner	
V 10	.\$ 50000 - \$ 54999		V 2	.Vacant UHE-renter	
V 11	.\$ 55000 - \$ 59999		V 3	.Vacant UHE-undetermined	
V 12	.\$ 60000 - \$ 64999		D VACANCY2	1	53
V 13	.\$ 65000 - \$ 69999			Vacancy status	
V 14	.\$ 70000 - \$ 74999		V 0	.N/A (occupied/GQ)	
V 15	.\$ 75000 - \$ 79999		V 1	.For rent	
V 16	.\$ 80000 - \$ 89999		V 2	.For sale only	
V 17	.\$ 90000 - \$ 99999		V 3	.Rented or sold, not occupied	
V 18	.\$100000 - \$124999		V 4	.For seasonal/recreational/occasional use	
V 19	.\$125000 - \$149999		V 5	.For migratory workers	
			V 6	.Other-vacant	

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD**

DATA SIZE BEGIN

D VACANCY3 1 54
 Boarded up status
V 0 .N/A (occupied/GQ)
V 1 .Yes
V 2 .No

D VACANCY4 1 55
 Months vacant
V 0 .N/A (occupied/GQ)
V 1 .Less than 1 month
V 2 .1 up to 2 months
V 3 .2 up to 6 months
V 4 .6 up to 12 months
V 5 .12 up to 24 months
V 6 .24 or more months

D YRMOVED 1 56
 When moved into this house or apartment
V 0 .N/A (GQ/vacant)
V 1 .1989 or 1990
V 2 .1985 to 1988
V 3 .1980 to 1984
V 4 .1970 to 1979
V 5 .1960 to 1969
V 6 .1959 or earlier

D BEDROOMS 1 57
 Bedrooms
V 0 .N/A (GQ)
V 1 .No bedrooms
V 2 .1 Bedroom
V 3 .2 Bedrooms
V 4 .3 Bedrooms
V 5 .4 Bedrooms
V 6 .5 or more bedrooms

D PLUMBING 1 58
 Complete plumbing facilities
V 0 .N/A (GQ)
V 1 .Yes, all three facilities
V 2 .No

D KITCHEN 1 59
 Complete kitchen facilities
V 0 .N/A (GQ)
V 1 .Yes
V 2 .No

D TELEPHON 1 60
 Telephone in Unit
V 0 .N/A (GQ/vacant)
V 1 .Yes
V 2 .No

D AUTOS 1 61
 Vehicles (1 ton or less) available
V 0 .N/A (GQ/vacant)
V 1 .No vehicles
V 2 .1 vehicle
V 3 .2 vehicles
V 4 .3 vehicles

DATA SIZE BEGIN

V 5 .4 Vehicles
V 6 .5 Vehicles
V 7 .6 Vehicles
V 8 .7 or more vehicles

D FUELHEAT 1 62
 House heating fuel
V 0 .N/A (GQ/vacant)
V 1 .Gas: Underground pipes
V 2 .Gas: Bottled, tank, or LP
V 3 .Electricity
V 4 .Fuel oil, kerosene, etc.
V 5 .Coal or coke
V 6 .Wood
V 7 .Solar energy
V 8 .Other fuel
V 9 .No fuel used

D WATER 1 63
 Source of water
V 0 .N/A (GQ)
V 1 .Public system or private company
V 2 .Individual drilled well
V 3 .Individual dug well
V 4 .Other source such as a spring, creek, etc.

D SEWAGE 1 64
 Sewage disposal
V 0 .N/A (GQ)
V 1 .Public sewer
V 2 .Septic tank or cesspool
V 3 .Other means

D YRBUILT 1 65
 When structure first built
V 0 .N/A (GQ)
V 1 .1989 or 1990
V 2 .1985 to 1988
V 3 .1980 to 1984
V 4 .1970 to 1979
V 5 .1960 to 1969
V 6 .1950 to 1959
V 7 .1940 to 1949
V 8 .1939 or earlier

D CONDO 1 66
 House or apartment part of condominium
V 0 .N/A (GQ)
V 1 .Yes
V 2 .No

D ONEACRE 1 67
 House on less than 1 acre
V 0 .N/A (GQ, two or more units in structure)
V 1 .Yes
V 2 .No

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D AGSALES	1	68			
1989 Sales of Agriculture Products			V	05	.\$ 150 - \$ 199
V 0 .N/A (less than 1 acre/GQ/vacant/ .2 or more units in structure)			V	06	.\$ 200 - \$ 249
V 1 .None			V	07	.\$ 250 - \$ 299
V 2 .\$.1 to \$999			V	08	.\$ 300 - \$ 349
V 3 .\$.1,000 to \$2,499			V	09	.\$ 350 - \$ 399
V 4 .\$.2,500 to \$4,999			V	10	.\$ 400 - \$ 449
V 5 .\$.5,000 to \$9,999			V	11	.\$ 450 - \$ 499
V 6 .\$.10,000 or more			V	12	.\$ 500 - \$ 549
			V	13	.\$ 550 - \$ 599
			V	14	.\$ 600 - \$ 649
D ELECCOST	4	69	V	15	.\$ 650 - \$ 699
Electricity (yearly cost)*			V	16	.\$ 700 - \$ 749
V 0000 .N/A (GQ/vacant)			V	17	.\$ 750 - \$ 799
V 0001 .Included in rent or in condo fee			V	18	.\$ 800 - \$ 849
V 0002 .No charge or electricity not used			V	19	.\$ 850 - \$ 899
V 0003..			V	20	.\$ 900 - \$ 949
3099 .\$.3 to \$3,099			V	21	.\$ 950 - \$ 999
V 3100 .Topcode			V	22	.\$1000 - \$1099
V 3101+ .\$.3101 or more = state median of topcoded .values			V	23	.\$1100 - \$1199
			V	24	.\$1200 - \$1299
			V	25	.\$1300 - \$1399
D GASCOST	4	73	V	26	.\$1400 - \$1499
Gas (yearly cost)*			V	27	.\$1500 - \$1599
V 0000 .N/A (GQ/vacant)			V	28	.\$1600 - \$1699
V 0001 .Included in rent or in condo fee			V	29	.\$1700 - \$1799
V 0002 .No charge or gas not used			V	30	.\$1800 - \$1899
V 0003..			V	31	.\$1900 - \$1999
2099 .\$.3 to \$2,099			V	32	.\$2000 - \$2099
V 2100 .Topcode			V	33	.\$2100 - \$2199
V 2101+ .\$.2101 or more = state median of topcoded .values			V	34	.\$2200 - \$2299
			V	35	.\$2300 - \$2399
			V	36	.\$2400 - \$2499
D WATRCOST	4	77	V	37	.\$2500 - \$2599
Water (yearly cost)			V	38	.\$2600 - \$2699
V 000 .N/A (GQ/vacant)			V	39	.\$2700 - \$2799
V 001 .Included in rent or in condo fee			V	40	.\$2800 - \$2899
V 002 .No charge			V	41	.\$2900 - \$2999
V 003..999 .\$.3 to \$999			V	42	.\$3000 - \$3099
V 1000 .Topcode			V	43	.\$3100 - \$3199
V 1000+ .\$.1001+ or more = state median of topcoded .values			V	44	.\$3200 - \$3299
			V	45	.\$3300 - \$3399
			V	46	.\$3400 - \$3499
D FUELCOST	4	81	V	47	.\$3500 - \$3599
House heating fuel (yearly cost)			V	48	.\$3600 - \$3699
V 0000 .N/A (GQ/vacant)			V	49	.\$3700 - \$3799
V 0001 .Included in rent or in condo fee			V	50	.\$3800 - \$3899
V 0002 .No charge or these fuels not used			V	51	.\$3900 - \$3999
V 0003..			V	52	.\$4000 - \$4099
1899 .\$.3 to \$1,899			V	53	.\$4100 - \$4199
V 1900 .Topcode			V	54	.\$4200 - \$4299
V 1,901+ .\$.1,901 or more = state median of topcoded .value			V	55	.\$4300 - \$4399
			V	56	.\$4400 - \$4499
			V	57	.\$4500 = Topcode
D RTAXAMT	2	85	V	58	.\$4501 - \$5499
Property taxes (yearly amount)			V	59	.\$5500 - \$7499
V 00 .N/A (GQ/vacant/not owned or being bought/not a .one-family house, mobile home or trailer or .condo)			V	60	.\$7500 or more
V 01 .None					
V 02 .\$. 2 - \$ 49					
V 03 .\$. 50 - \$ 99					
V 04 .\$. 100 - \$ 149					
			D HFILLER2	3	87

RANGE
FOR
MEDIAN

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D INSAMT	4	90	V 01000	.Topcode	
		Fire/hazard/flood insurance (yearly amount)	V 01001+	\$.1001 or more = state median of topcoded values	
V 0000		.N/A (not owned or being bought/not a one family house, mobile home, or condo/GQ/vacant)	D CONDOFEE	4	108
V 0001		.None			Condo fee (monthly amount)
V 0002..			V 0000		.N/A (not owned or being bought/not condo/GQ/vacant/no condo fee)
1299		\$.2 to \$1,299	V 0001..		
V 1300		.Topcode	V 0599		\$.1 - \$599
V 1301+		\$.1,301 or more=state median of topcoded values	V 0600		.Topcode
D MORTGAG	1	94	V 0601+		\$.601 or more = state median of topcoded values
		Mortgage status	D MOBLHOME	4	112
V 0		.N/A (not owned or being bought/not a one family house, mobile home, or condo/GQ/vacant)			Mobile home costs (yearly amount)
V 1		.Mortgage deed of trust, or similar debt	V 0000		.N/A (GQ/vacant/not owned or being bought/not mobile home/no costs)
V 2		.Contract to purchase	V 0001..		
V 3		.None	V 3399		\$.1 - \$3,399 (cost in dollars)
D MORTGAG3	5	95	V 3400		.Topcode
		Mortgage payment (monthly amount)	V 3401+		\$.3401 or more = state median of topcoded values
V 00000		.N/A (not owned or being bought/not a one family house, mobile home, or condo/GQ/vacant)	D RFARM	1	116
V 00001		.No regular payment required			Farm/nonfarm status
V 00002..			V 0		.N/A (urban)
01999		\$.2 to \$1,999	V 1		.Rural farm
V 02000		.Topcode	V 2		.Rural nonfarm
V 02001+		\$.2,001 or more = state median of topcoded values	D RGRENT	4	117
D TAXINCL	1	100			Gross rent
		Payment include real estate taxes	V 0000		.N/A (GQ/vacant, not rented for cash rent)
V 0		.N/A (GQ/vacant/not owned or being bought/not a one family house or condo/not mortgaged/.No regular mortgage payment)	V 0001..		
V 1		.Yes, taxes included in payment	1499		.Gross rent (dollars)
V 2		.No, taxes paid separately or taxes not required	V 1500		.Topcode
D INSINCL	1	101	V 1501+		\$.1501 or more = state median of topcoded values
		Payment include fire/hazard/flood insurance	D RGRAPI	2	121
V 0		.N/A (GQ/vacant/not owned or being bought/.Not a one family house, MHT or condo/not mortgaged/no regular mortgage payment)			Gross rent as a percentage of household income in 1989
V 1		.Yes, insurance included in payment	V 00		.N/A (GQ/vacant/not rented for cash rent/owner occupied/no household income)
V 2		.No, insurance paid separately or no insurance	V 01		.1% to 9%
D MORTGAG2	1	102	V 02		.10% to 14%
		Second mortgage or home equity loan status	V 03		.15% to 19%
V 0		.N/A (GQ/vacant/not owned or being bought/.not a one family house, mobile home, trailer or condo/not mortgaged/no second mortgage)	V 04		.20% to 24%
V 1		.Yes	V 05		.25% to 29%
V 2		.No	V 06		.30% to 34%
D MORTAMT2	5	103	V 07		.35% to 39%
		Second mortgage payment (monthly amount)	V 08		.40% to 49%
V 00000		.N/A (GQ/vacant/condo/not owned or being bought/not a one family house/not mortgaged/.no second mortgage)	V 09		.50% to 59%
V 00001		.No regular payment required	V 10		.60% to 69%
V 00002..			V 11		.70% to 79%
00999		\$.2 to \$999	V 12		.80% to 89%
			V 13		.90% to 99%
			V 14		.100% or more
			D HFILLER3	1	123
					Filler

1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D ROWRCST	5	124	D RLINGISO	1	150
V	00000	Selected monthly owner costs	V	0	Linguistic isolation
V		.N/A (not owned or being bought/not a one	V	1	.N/A (GQ/vacant)
V		family house, mobile home, or	V	2	.Not linguistically isolated
V	00001..	.condo/GQ/vacant/no costs)	V		.Linguistically isolated
V	20299	.Monthly owner costs in dollars	D RHHFAMTP	2	151
V	20300	.Topcode	V	00	Household/family type
D RNSMOCPI	3	129	V	01	.N/A (GQ/vacant)
V	000	Selected monthly owner costs as a percentage of	V	02	.Married-couple family household
V	001..100	household income in 1989	V	03	Other family household:
V	101	.N/A (not owned or being bought/not a one family	V	11	.Male householder
		house, mobile home, or condo/GQ/vacant/no HH	V	12	.Female householder
		income)	V	21	Nonfamily household:
			V	22	Male householder:
D RRENTUNT	1	132	V	11	.Living alone
V	0	Specified rent unit	V	12	.Not living alone
V	1	.Not specified rent unit	V	21	Female householder:
		.Specified rent unit	V	22	.Living alone
			V		.Not living alone
D RVALUNT	1	133	D RNATADPT	2	153
V	0	Specified value unit	V	00	Number of own natural born/adopted children in
V	1	.Not specified value unit	V	01..28	household (unweighted)
		.Specified value unit	V		.N/A(GQ/vacant/no own natural born/adopted
D RFAMINC	7	134	V		children)
V	0000000	Family income	V	01..28	.Number of own children natural born/adopted
V	-999999..	.N/A(GQ/vacant/no income)			children in household
V	9999999	.Total family income in dollars (See user notes	D RSTPCHLD	2	155
		for state maximum and minimum values)	V	00	Number of own stepchildren in household (unweighted)
			V	01..28	.N/A(GQ/vacant/no own stepchildren)
			V		.Number of own stepchildren in household
D RHHINC	7	141	D RFAMPERS	2	157
V	0000000	Household income	V	00	Number of persons in family (unweighted)
V	-999999..	.N/A(GQ/vacant/no income)	V	01..29	.N/A (GQ/vacant/non-family household)
V	9999999	.Total household income in dollars (See user notes	V		.Number of persons in family
		for state maximum and minimum values)	D RRELCHLD	2	159
			V	00	Number of related children in household (unweighted)
			V	01..28	.N/A (GQ/vacant/no related children)
			V		.Number of related children in household
D RWRKR89	1	148	D RNONREL	1	161
V	0	Workers in family in 1989	V	0	Presence of nonrelatives in household
V	1	.N/A (GQ/vacant/non-family household)	V	1	.N/A (No nonrelatives in household/GQ/vacant)
V	2	.No workers	V		.1 or more nonrelatives in household
V	3	.1 worker	D R18UNDR	1	162
V	4	.2 workers	V	0	Presence of person under 18 years in household
V		.3 or more workers in family	V	1	.N/A (No person under 18 in household/GQ/vacant)
			V		.1 or more person under 18 in household
D RHHLANG	1	149	D R60OVER	1	163
V	0	Household language	V	0	Presence of persons 60 years and over in household
V	1	.N/A (GQ/vacant)	V	1	.N/A (No person 60 and over/GQ/vacant)
V	2	.English only	V	2	.1 person 60 and over (unweighted)
V	3	.Spanish	V		.2 or more person 60 and over (unweighted)
V	4	.Other Indo-European language			
V	5	.Asian or Pacific Island language			
V		.Other language			

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD**

DATA	SIZE	BEGIN
D R65OVER	1	164
	Presence of person 65 years and over in household	
V	0	.N/A (No person 65 and over/GQ/vacant)
V	1	.1 person 65 and over (unweighted)
V	2	.2 or more person 65 and over (unweighted)
D RSUBFAM	1	165
	Presence of subfamilies in Household	
V	0	.N/A (No subfamilies or not applicable/GQ/vacant)
V	1	.1 or more subfamilies
D AUNITS1	1	166
	Units in structure allocation	
V	0	.No
V	1	.Yes
D AROOMS	1	167
	Rooms allocation	
V	0	.No
V	1	.Yes
D ATENURE	1	168
	Tenure allocation	
V	0	.No
V	1	.Yes
D AACRES1	1	169
	On ten acres or more allocation	
V	0	.No
V	1	.Yes
D ACOMMUSE	1	170
	Business or medical office on property allocation	
V	0	.No
V	1	.Yes
D AVALUE	1	171
	Value allocation	
V	0	.No
V	1	.Yes
D ARENT1	1	172
	Monthly rent allocation	
V	0	.No
V	1	.Yes
D AMEALS	1	173
	Meals included in rent allocation	
V	0	.No
V	1	.Yes
D AVACNCY2	1	174
	Vacancy status allocation	
V	0	.No
V	1	.Yes
D AVACNCY3	1	175
	Boarded up status allocation	
V	0	.No
V	1	.Yes

DATA	SIZE	BEGIN
D AVACNCY4	1	176
	Months vacant allocation	
V	0	.No
V	1	.Yes
D AYRMOVED	1	177
	When moved into this house or apartment allocation	
V	0	.No
V	1	.Yes
D ABEDROOM	1	178
	Number of bedrooms allocation	
V	0	.No
V	1	.Yes
D APLUMBNG	1	179
	Complete plumbing facilities allocation	
V	0	.No
V	1	.Yes
D AKITCHEN	1	180
	Complete kitchen facilities allocation	
V	0	.No
V	1	.Yes
D APHONE	1	181
	Telephones in house allocation	
V	0	.No
V	1	.Yes
D AVEHICLE	1	182
	Vehicles available by household allocation	
V	0	.No
V	1	.Yes
D AFUEL	1	183
	House heating fuel allocation	
V	0	.No
V	1	.Yes
D AWATER	1	184
	Source of water allocation	
V	0	.No
V	1	.Yes
D ASEWER	1	185
	Sewage disposal allocation	
V	0	.No
V	1	.Yes
D AYRBUILT	1	186
	When structure first built allocation	
V	0	.No
V	1	.Yes from not answered
V	2	.Yes "don't know"
D ACONDO	1	187
	House or apartment part of condominium allocation	
V	0	.No
V	1	.Yes

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
HOUSING UNIT RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D AONEACRE	1	188	D AMORTG2	1	200
House on less than 1 acre allocation			Second mortgage status allocation		
V 0 .No			V 0 .No		
V 1 .Yes			V 1 .Yes		
D AAGSALES	1	189	D AMRTAMT2	1	201
1989 Sales of Agricultural Products allocation			Second mortgage payment allocation		
V 0 .No			V 0 .NO		
V 1 .Yes			V 1 .Yes		
D AELECCST	1	190	D ACNDOFEE	1	202
Electricity (yearly cost) allocation			Condominium fee allocation		
V 0 .No			V 0 .No		
V 1 .Yes			V 1 .Yes		
D AGASCST	1	191	D AMOBLHME	1	203
Gas (yearly cost) allocation			Mobile home costs allocation		
V 0 .No			V 0 .No		
V 1 .Yes			V 1 .Yes		
D AWATRCST	1	192	D FILLER	28	204
Water (yearly cost) allocation					
V 0 .No					
V 1 .Yes					
D FUELCST	1	193			
House heating fuel (yearly cost) allocation					
V 0 .No					
V 1 .Yes					
D ATAXAMT	1	194			
Taxes on property allocation					
V 0 .No					
V 1 .Yes					
D AINSAMT	1	195			
Fire, hazard, flood insurance allocation					
V 0 .No					
V 1 .Yes					
D AMORTG	1	196			
Mortgage status allocation					
V 0 .No					
V 1 .Yes no answer					
V 2 .Yes from junior mortgage					
D AMORTG3	1	197			
Regular mortgage payment allocation					
V 0 .No					
V 1 .Yes					
D ATAXINCL	1	198			
Payment include real estate taxes allocation					
V 0 .No					
V 1 .Yes					
D AINSINCL	1	199			
Payment include fire, hazard, flood insurance allocation					
V 0 .No					
V 1 .Yes					

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
PERSON RECORD**

DATA	SIZE	BEGIN
D RECTYPE	1	1
Record Type		
V P		.Person Record
D SERIALNO	7	2
V 0000000..		
V 9999999		.Housing unit/GQ person serial number unique
V		.identifier assigned within state or state group
D RELAT1	2	9
Relationship		
V 00		.Householder
V 01		.Husband/wife
V 02		.Son/daughter
V 03		.Stepson/stepdaughter
V 04		.Brother/sister
V 05		.Father/mother
V 06		.Grandchild
V 07		.Other relative
		Not related
V 08		.Roomer/boarder/foster child
V 09		.Housemate/roommate
V 10		.Unmarried partner
V 11		.Other nonrelative
		Group quarters
V 12		.Institutionalized person
V 13		.Other persons in group quarters
D SEX	1	11
Sex		
V 0		.Male
V 1		.Female
D RACE	3	12
Recoded detailed race code (Appendix C)		
V 001-037		.(See appendix C)
V 301-327		.American Indian Tribes
D AGE	2	15
Age		
V 00		.Less than 1 year
V 01..89		.Age in years
V 90		.90 or more years old
D MARITAL	1	17
Marital status		
V 0		.Now married, except separated
V 1		.Widowed
V 2		.Divorced
V 3		.Separated
V 4		.Never married or under 15 years old
D PWGT1	4	18
Person's weight		
V 0001..		
V 1152		.Person's weight
D PFILLER1	4	22
Filler		

DATA	SIZE	BEGIN
D REMPLPAR	3	26
Employment status of parents		
V 000		.N/A (not own child of householder, and not child in subfamily)
Living with two parents:		
Both parents in labor force:		
V 111		.Both parents at work 35 or more hours
V 112		.Father only at work 35 or more hours
V 113		.Mother only at work 35 or more hours
V 114		.Neither parent at work 35 or more hours
Father only in labor force:		
V 121		.Father at work 35 or more hours
V 122		.Father not at work 35 or more hours
Mother only in labor force:		
V 133		.Mother at work 35 or more hours
V 134		.Mother not at work 35 or more hours
V 141		Neither parent in labor force
Living with one parent:		
Living with father:		
V 211		.Father at work 35 or more hours
V 212		.Father not at work 35 or more hours
V 213		.Father not in labor force
Living with mother:		
V 221		.Mother at work 35 or more hours
V 222		.Mother not at work 35 or more hours
V 223		.Mother not in labor force
D RPOB	2	29
Place of birth (Recode)		
V 10		.Born in State of residence
Born in other State in the U.S.:		
V 21		.Northeast
V 22		.Midwest
V 23		.South
V 24		.West
U.S. outlying areas:		
V 31		.Puerto Rico
V 32		.American Samoa
V 33		.Guam
V 34		.Northern Marianas
V 35		.US Virgin Islands
V 36		.Elsewhere
V 40		.Born abroad of American parents
Foreign born:		
V 51		.Naturalized citizen
V 52		.Not a citizen
D RSPOUSE	1	31
Married, spouse present/spouse absent		
V 0		.N/A (less than 15 years old)
V 1		.Now married, spouse present
V 2		.Now married, spouse absent
V 3		.Widowed
V 4		.Divorced
V 5		.Separated
V 6		.Never married

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
PERSON RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D ROWNCHLD	1	32	D POVERTY	3	41
Own child			Person poverty status recode (See appendix B)		
V 0	.Own child		V 000	.N/A	
V 1	.Not own child		V 001..500	%. Below or above poverty status value	
			V 501	.501% or more of poverty value	
D RAGECHLD	1	33	D POB	3	44
Presence and age of own children			Place of birth (Appendix I)		
V 0	.N/A (male/female under 16 years old)		V 001..056	.FIPS State code (U.S. States and D.C.)	
V 1	.With own children under 6 years only		V 060..099	.Puerto Rico (072) or U.S. outlying area	
V 2	.With own children 6 to 17 years only		V 100..553	.Foreign country	
V 3	.With own children under 6 years and 6 to 17 years		V 554	.At sea	
V 4	.No own children		V 555	.Abroad, not specified	
D RRELCHLD	1	34	D CITIZEN	1	47
Related child			Citizenship		
V 0	.Related child		V 0	.Born in the U.S.	
V 1	.Not related child		V 1	.Born in Puerto Rico, Guam, and outlying areas	
D RELAT2	1	35	V 2	.Born abroad of American parents	
Detailed relationship (other relative)			V 3	.U.S. citizen by naturalization	
V 0	.N/A (GQ/not other relative)		V 4	.Not a citizen of the U.S.	
V 1	.Son-in-law/daughter-in-law		D IMMIGR	2	48
V 2	.Father-in-law/mother-in-law		Year of entry		
V 3	.Brother-in-law/sister-in-law		V 00	.Born in the U.S.	
V 4	.Nephew/niece		V 01	.1987 to 1990	
V 5	.Grandparent		V 02	.1985 to 1986	
V 6	.Uncle/aunt		V 03	.1982 to 1984	
V 7	.Cousin		V 04	.1980 or 1981	
V 8	.Other related by blood or marriage		V 05	.1975 to 1979	
V 9	.Other relative		V 06	.1970 to 1974	
D SUBFAM2	1	36	V 07	.1965 to 1969	
Subfamily number			V 08	.1960 to 1964	
V 0	.N/A (GQ/not in a subfamily)		V 09	.1950 to 1959	
V 1	.In subfamily 1		V 10	.Before 1950	
V 2	.In subfamily 2		D SCHOOL	1	50
V 3	.In subfamily 3		School enrollment		
D SUBFAM1	1	37	V 0	.N/A (less than 3 years old)	
Subfamily relationship			V 1	.Not attending school	
V 0	.N/A (GQ/not in a subfamily)		V 2	.Yes, public school, public college	
V 1	.Husband/wife		V 3	.Yes, private school, private college	
V 2	.Parent in a parent/child subfamily		D YEARSCH	2	51
V 3	.Child in subfamily		Educational attainment		
D HISPANIC	3	38	V 00	.N/A (less than 3 years old)	
Detailed Hispanic origin code (See appendix I)			V 01	.No school completed	
V 000,006..			V 02	.Nursery school	
199	. Not hispanic		V 03	.Kindergarten	
V 001,210..			V 04	.1st, 2nd, 3rd, or 4th grade	
220	.Mexican, mex-am		V 05	.5th, 6th, 7th, or 8th grade	
V 002,261..			V 06	.9th grade	
270	.Puerto Rican		V 07	.10th grade	
V 003,271..			V 08	.11th grade	
274	.Cuban		V 09	.12th grade, no diploma	
V 221..230	.Central American		V 10	.High school graduate, diploma or GED	
V 231..249	.South American		V 11	.Some college, but no degree	
V 275..289	.Dominican		V 12	.Associate degree in college, occupational program	
V 004,200..			V 13	.Associate degree in college, academic program	
209,250..					
260					
V 290..401	.Other Hispanic				

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
PERSON RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D OTHRSERV	1	82	D RLABOR	1	91
V	0	.Served any other time	V	0	Employment status recode
V	1	.Did not serve this period/less than 16 years old	V	1	.N/A (less than 16 years old)
V	1	.Served this period	V	2	.Civilian employed, at work
D YRSSERV	2	83	V	3	.Civilian employed, with a job but not at work
V	00	Years of active duty military service	V	4	.Unemployed
V	01	.N/A (less than 16 years/no active duty military service)	V	5	.Armed forces, at work
V	02..49	.1 Year or less of service	V	6	.Armed forces, with a job but not at work
V	50	.2 to 49 years of service	V	6	.Not in labor force
V	50	.50 or more years of service	D WORKLWK	1	92
D DISABL1	1	85	V	0	Worked last week
V	0	Work limitation status	V	1	.N/A (less than 16 years old/not at work/unemployed/NILF/Q21A not reported)
V	1	.N/A (less than 16 years, and selected persons in GQs - See appendix C)	V	1	.Worked
V	1	.Yes, limited in kind or amount of work	V	2	.Did not work
V	2	.No, not limited	D HOURS	2	93
D DISABL2	1	86	V	00	Hours worked last week
V	0	Work prevented status	V	01..98	.N/A (less than 16 years old/not at work/unemployed/NILF)
V	1	.N/A (less than 16 years, and selected persons in GQs - See appendix C)	V	99	.1 to 98 hours worked last week
V	1	.Yes, prevented from working	V	99	.99 or more hours worked last week
V	2	.No, not prevented from working	D POWSTATE	2	95
D MOBILIM	1	87	V	00	Place of work - state - (Appendix I)
V	0	Mobility limitation	V	01-56	.N/A (not a worker--not in the labor force, including persons under 16 years; unemployed; employed, with a job not at work; Armed Forces, with a job but not at work)
V	1	.N/A (less than 15 years/institutionalized person, and selected persons in GQs - See appendix C)	V	98	.FIPS state code (U.S. States and D.C.)
V	1	.Yes, has a mobility limitation	V	99	.Abroad
V	2	.No, does not have a mobility limitation	V	99	.State not identified
D PERSCARE	1	88	D POWPUMA	5	97
V	0	Personal care limitation	V	00000	Place of work PUMA (State dependent)
V	1	.N/A (less than 15 years/institutionalized person, and selected persons in GQs - See appendix C)	V	00000	.N/A (not a worker--not in the labor force, including persons under 16 years; unemployed; employed, with a job but not at work; Armed Forces, with a job but not at work)
V	1	.Yes, has a personal care limitation	V	00100..	.work)
V	2	.No, does not have a personal care limitation	V	99800	.PUMA of work
D FERTIL	2	89	V	99900	.Abroad
V	00	Number of children ever born	D MEANS	2	102
V	01	.N/A (less than 15 years/male)	V	00	Means of transportation to work
V	02	.No children	V	00	.N/A (not a worker--not in the labor force, including persons under 16 years; unemployed; employed, with a job but not at work; Armed Forces, with a job but not at work)
V	03	.1 Child	V	01	.Car, truck, or van
V	04	.2 Children	V	02	.Bus or trolley bus
V	05	.3 Children	V	03	.Streetcar or trolley car
V	06	.4 Children	V	04	.Subway or elevated
V	07	.5 Children	V	05	.Railroad
V	08	.6 Children	V	06	.Ferryboat
V	09	.7 Children	V	07	.Taxicab
V	10	.8 Children	V	08	.Motorcycle
V	11	.9 Children	V	09	.Bicycle
V	12	.10 Children	V	10	.Walked
V	13	.11 Children	V	11	.Worked at home
V	13	.12 or more children	V	12	.Other method

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
PERSON RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D RIDERS	1	104	D INDUSTRY	3	115
V	0	.N/A (not a worker or worker whose means of transportation to work was not car, truck, or van)	V	000	.N/A (less than 16 years old/unemployed who never worked/nilf who last worked prior to 1985)
V	1	.Drove alone	V 010..992		.specific industry codes (see appendix I)
V	2	.2 People	D OCCUP	3	118
V	3	.3 People	V	000	.N/A (less than 16 years old/unemployed who never worked/nilf who last worked prior to 1985)
V	4	.4 People	V 003..909		.specific occupation codes (see appendix I)
V	5	.5 People	D CLASS	1	121
V	6	.6 People	V	0	.N/A (less than 16 years old/unemployed who never worked/NILF who last worked prior to 1985)
V	7	.7 to 9 people	V	1	.employee of a private for profit company or business or of an individual, for wages, salary, or commissions
V	8	.10 or more people	V	2	.Employee of a private not-for-profit, tax-exempt, or charitable organization
D DEPART	4	105	V	3	.Local government employee (city, county, etc.)
V	0000	.N/A (not a worker or worker who worked at home)	V	4	.State government employee
V	0001..	.Time (hour and minute of departure for work) (2400 midnight)	V	5	.Federal government employee
D TRAVTIME	2	109	V	6	.Self-employed in own not incorporated business, professional practice, or farm
V	00	.N/A (not a worker or worker who worked at home)	V	7	.Self-employed in own incorporated business, professional practice or farm
V	01..98	.1 to 98 minutes to get to work	V	8	.Working without pay in family business or farm
V	99	.99 Minutes or more to get to work	V	9	.Unemployed, last worked in 1984 or earlier
D TMPABSNT	1	111	D WORK89	1	122
V	0	.N/A (less than 16 years old/at work/did not report Q25)	V	0	.N/A (less than 16 years old)
V	1	.Yes, on layoff	V	1	.Worked last year
V	2	.Yes, on vacation, temporary illness, labor dispute	V	2	.Did not work last year
V	3	.No	D WEEK89	2	123
D LOOKING	1	112	V	00	.N/A (less than 16 years old/did not work in 1989)
V	0	.N/A (less than 16 years old/at work/did not report Q26A)	V	01..52	.1 to 52 weeks worked last year
V	1	.Yes	D HOUR89	2	125
V	2	.No	V	00	.N/A (less than 16 years old/did not work in 1989)
D AVAIL	1	113	V	01..98	.1 To 98 usual hours
V	0	.N/A (less than 16 years/at work/not looking/ Q26A = 0/did not report Q26B)	V	99	.99 Or more usual hours
V	1	.No, already has a job	D REARNING	6	127
V	2	.No, temporarily ill	V	000000	.N/A (no earnings)
V	3	.No, other reasons (in school, etc.)	V	-19996	.Loss of \$19996 or more
V	4	.Yes, could have taken a job	V	-19995..	
D YEARWRK	1	114	V	283999	.Total person's earnings in dollars
V	0	.N/A (less than 16 years old)	V	284000	.\$284000 = Topcode
V	1	.1990	V	284001+	.State medians included
V	2	.1989			
V	3	.1988			
V	4	.1985 to 1987			
V	5	.1980 to 1984			
V	6	.1979 or earlier			
V	7	.Never worked			

1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
PERSON RECORD

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D RPINCOME	6	133	V 17000	.Topcode	
		Total person's income (signed)	V 17001+	.17001 or more = state median of topcoded values	
V 000000	.N/A (no income)				
V -29997	.Loss of \$29997 or more		D INCOME6	5	168
V -29996..					Public assistance income in 1989
400999	.Total person's income in dollars		V 00000	.N/A (less than 15 years/none)	
V 401000	.Topcode of total person's income		V 00001..		
V 401001+	.State medians included				9999 .\$.1 To \$9999
			V 10000	.Topcode	
D INCOME1	6	139	V 10001+	\$.10001 or more = state median	
		Wages or salary income in 1989			
V 000000	.N/A (less than 16 years old/none)		D INCOME7	5	173
V 000001..					Retirement income in 1989
V 139999	\$.1 - 139,999		V 00000	.N/A (less than 15 years/none)	
V 140000	.Topcode		V 00001..		
V 140001+	.140001 or more = state median of topcoded values				29999 .\$.1 to \$29999
			V 30000	.Topcode	
D INCOME2	6	145	V 30001+	\$.30001 or more = state median of topcoded values	
		Nonfarm self-employment income in 1989 (signed)			
V 000000	.N/A (less than 16 years/none)		D INCOME8	5	178
V -09999	.Loss of \$9,999 or more				All other income in 1989
V -00001..			V 00000	.N/A (less than 15 years/none)	
V -09998	.Loss \$1 to \$9,998		V 00001..		
V 000001	.Break even or \$1				19999 .\$.1 to \$19999
V 000002..			V 20000	.Topcode	
089999	\$.2 To \$89999		V 20001+	\$.20,001 or more = state median of topcoded values	
V 090000	.Topcode				
V 090001+	\$.90,001 or more = state median of topcoded values		D AAUGMENT	1	183
					Augmented person (see text pp. C-5)
D INCOME3	6	151	V 0	.No	
		Farm self-employment income in 1989 (signed)	V 1	.Yes	
V 000000	.N/A (less than 16 years/none)		D ARELAT1	1	184
V -09999	.Loss of \$9,999 or more				Relationship allocation flag
V -00001 to			V 0	.No	
-09998	.Loss \$1 to \$9,998		V 1	.Yes	
V 1	.Break even or \$1		D ASEX	1	185
V 000002..					Sex allocation flag
053999	\$.2 To \$53999		V 0	.No	
V 054000	.Topcode		V 1	.Yes	
V 054001+	\$.54001 or more = state median of topcoded values		D ARACE	1	186
					Detailed race allocation flag
D INCOME4	6	157	V 0	.No	
		Interest, dividends, and net rental income in 1989 (signed)	V 1	.Yes	
V 000000	.N/A (less than 15 years/none)		D AAGE	1	187
V -09999	.Loss of \$9,999 or more				Age allocation flag
V -00001 to			V 0	.No	
-09998	.Loss \$1 to \$9,998		V 1	.Yes	
V 1	.Break even or \$1		D AMARITAL	1	188
V 000002..					Marital status allocation flag
039999	\$.2 To \$39999		V 0	.No	
V 040000	.Topcode		V 1	.Yes	
V 040001+	\$.40001 or more = state median of topcoded values				
D INCOME5	5	163			
		Social security income in 1989			
V 000000	.N/A (less than 15 years/none)				
V 00001..					
16999	\$.1 to \$16999				

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
PERSON RECORD**

DATA	SIZE	BEGIN	DATA	SIZE	BEGIN
D AHISPAN	1	189	D AENGLISH	1	201
		Detailed Hispanic origin allocation flag			Ability to speak English allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D ABIRTHPL	1	190	D AVETS1	1	202
		Place of birth			Military service allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D ACITIZEN	1	191	D ASERVPER	1	203
		Citizenship allocation flag			Military periods of service allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D AIMMIGR	1	192	D AYRSSERV	1	204
		Year of entry allocation flag			Years of military service allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D ASCHOOL	1	193	D ADISABL1	1	205
		School enrollment allocation flag			Work limitation status allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D AYEARSCH	1	194	D ADISABL2	1	206
		Highest education allocation flag			Work prevention status allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D AANCSTR1	1	195	D AMOBLIM	1	207
		First ancestry allocation flag			Mobility limitation status allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D AANCSTR2	1	196	D APERCARE	1	208
		Second ancestry allocation flag			Personal care limitation status allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D AMOBLTY	1	197	D AFERTIL	1	209
		Mobility status allocation flag			Children ever born allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D AMIGSTATE	1	198	D ALABOR	1	210
		Migration state allocation flag			Employment status recode allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D ALANG1	1	199	D AHOURS	1	211
		Language other than English allocation flag			Hours worked last week allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes
D ALANG2	1	200	D APOWST	1	212
		Language spoken at home allocation flag			Place of work state allocation flag
V	0	.No	V	0	.No
V	1	.Yes	V	1	.Yes

**1990 PUBLIC USE MICRODATA SAMPLES, U.S. DATA DICTIONARY
PERSON RECORD**

DATA	SIZE	BEGIN
D AMEANS	1	213
	Means of transportation to work allocation flag	
V	0	.No
V	1	.Yes
D ARIDERS	1	214
	Vehicle occupancy allocation flag	
V	0	.No
V	1	.Yes
D ADEPART	1	215
	Time of departure to work allocation flag	
V	0	.No
V	1	.Yes
D ATRANTME	1	216
	Travel time to work allocation flag	
V	0	.No
V	1	.Yes
D ALSTWRK	1	217
	Year last worked allocation flag	
V	0	.No
V	1	.Yes
D AINDUSTR	1	218
	Industry allocation flag	
V	0	.No
V	1	.Yes
D AOCCUP	1	219
	Occupation allocation flag	
V	0	.No
V	1	.Yes
D ACLASS	1	220
	Class of worker allocation flag	
V	0	.No
V	1	.Yes
D AWORK89	1	221
	Worked last year allocation flag	
V	0	.No
V	1	.Yes
D AWKS89	1	222
	Weeks worked in 1989 allocation flag	
V	0	.No
V	1	.Yes
D AHOUR89	1	223
	Usual hours worked per week in 1989 allocation flag	
V	0	.No
V	1	.Yes
D AINCOME1	1	224
	Wages and salary income allocation flag	
V	0	.No
V	1	.Yes

DATA	SIZE	BEGIN
D AINCOME2	1	225
	Nonfarm self-employment income allocation flag	
V	0	.No
V	1	.No (derived)
V	2	.Yes
D AINCOME3	1	226
	Farm self-employment income allocation flag	
V	0	.No
V	1	.No (derived)
V	2	.Yes
D AINCOME4	1	227
	Interest, dividend, and net rental income allocation flag	
V	0	.No
V	1	.No (derived)
V	2	.Yes
D AINCOME5	1	228
	Social security income allocation flag	
V	0	.No
V	1	.No (derived)
V	2	.Yes
D AINCOME6	1	229
	Public assistance allocation flag	
V	0	.No
V	1	.No (derived)
V	2	.Yes
D AINCOME7	1	230
	Retirement income allocation flag	
V	0	.No
V	1	.No (derived)
V	2	.Yes
D AINCOME8	1	231
	All other income allocation flag	
V	0	.No
V	1	.No (derived)
V	2	.Yes

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APPENDIX A.

Area Classifications

This section contains definitions for geographic entities used in various census products. 1990 PUMS products include a non-standard census geographical entity called the Public Use Microdata Area (PUMA) of which the lowest level released on the file is "groups of census tracts." All geography on the PUMS must represent areas with 100,000 or more persons.

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These definitions are for all geographic entities and concepts that the Census Bureau will include in its standard 1990 census data products. Not all entities and concepts are shown in any one 1990 census data product. For a description of geographic areas included in each data product, see appendix F.

AMERICAN INDIAN AND ALASKA NATIVE AREA

Alaska Native Regional Corporation (ANRC)

Alaska Native Regional Corporations (ANRC's) are corporate entities established under the Alaska Native Claims Settlement Act of 1972, Public Law 92-203, as amended by Public Law 94-204, to conduct both business and nonprofit affairs of Alaska Natives. Alaska is divided into

12 ANRC's that cover the entire State, except for the Annette Islands Reserve. The boundaries of the 12 ANRC's were established by the Department of the Interior, in cooperation with Alaska Natives. Each ANRC was designed to include, as far as practicable, Alaska Natives with a common heritage and common interests. The ANRC boundaries for the 1990 census were identified by the Bureau of Land Management. A 13th region was established for Alaska Natives who are not permanent residents and who chose not to enroll in one of the 12 ANRC's; no census products are prepared for the 13th region. ANRC's were first identified for the 1980 census.

Each ANRC is assigned a two-digit census code ranging from 07 through 84. These census codes are assigned in alphabetical order of the ANRC's.

Alaska Native Village (ANV) Statistical Area

Alaska Native villages (ANV's) constitute tribes, bands, clans, groups, villages, communities, or associations in Alaska that are recognized pursuant to the Alaska Native Claims Settlement Act of 1972, Public Law 92-203. Because ANV's do not have legally designated boundaries, the Census Bureau has established Alaska Native village statistical areas (ANVSA's) for statistical purposes. For the 1990 census, the Census Bureau cooperated with officials of the nonprofit corporation within each participating Alaska Native Regional Corporation (ANRC), as well as other knowledgeable officials, to delineate boundaries that encompass the settled area associated with each ANV. ANVSA's are located within ANRC's and do not cross ANRC boundaries. ANVSA's for the 1990 census replace the ANV's that the Census Bureau recognized for the 1980 census.

Each ANVSA is assigned a four-digit census code ranging from 6001 through 8989. Each ANVSA also is assigned a five-digit FIPS code. Both the census and FIPS codes are assigned in alphabetical order of ANVSA's.

American Indian Reservation and Trust Land

American Indian Reservation—Federal American Indian reservations are areas with boundaries established by treaty, statute, and/or executive or court order, and recognized by the Federal Government as territory in which American Indian tribes have jurisdiction. State reservations are lands held in trust by State governments for the use and benefit of a given tribe. The reservations and their boundaries were identified for the 1990 census by the Bureau of Indian Affairs (BIA), Department of Interior (for Federal reservations), and State governments (for State reservations). The names of American Indian reservations recognized by State governments, but not by the Federal Government, are followed by "(State)." Areas composed of reservation lands that are administered jointly and/or are claimed

by two reservations, as identified by the BIA, are called "joint areas," and are treated as separate American Indian reservations for census purposes.

Federal reservations may cross State boundaries, and Federal and State reservations may cross county, county subdivision, and place boundaries. For reservations that cross State boundaries, only the portion of the reservations in a given State are shown in the data products for that State; the entire reservations are shown in data products for the United States.

Each American Indian reservation is assigned a four-digit census code ranging from 0001 through 4989. These census codes are assigned in alphabetical order of American Indian reservations nationwide, except that joint areas appear at the end of the code range. Each American Indian reservation also is assigned a five-digit FIPS code; because the FIPS codes are assigned in alphabetical sequence of American Indian reservations within each State, the FIPS code is different in each State for reservations in more than one State.

Trust Land—Trust lands are property associated with a particular American Indian reservation or tribe, held in trust by the Federal Government. Trust lands may be held in trust either for a tribe (tribal trust land) or for an individual member of a tribe (individual trust land). Trust lands recognized for the 1990 census comprise all tribal trust lands and inhabited individual trust lands located outside of a reservation boundary. As with other American Indian areas, trust lands may be located in more than one State. Only the trust lands in a given State are shown in the data products for that State; all trust lands associated with a reservation or tribe are shown in data products for the United States. The Census Bureau first reported data for tribal trust lands for the 1980 census.

Trust lands are assigned a four-digit census code and a five-digit FIPS code, the same as that for the reservation with which they are associated. Trust lands not associated with a reservation are presented by tribal name, interspersed alphabetically among the reservations.

Tribal Designated Statistical Area (TDSA)

Tribal designated statistical areas (TDSA's) are areas, delineated outside Oklahoma by federally- and State-recognized tribes without a land base or associated trust lands, to provide statistical areas for which the Census Bureau tabulates data. TDSA's represent areas generally containing the American Indian population over which federally-recognized tribes have jurisdiction and areas in which State tribes provide benefits and services to their members. The names of TDSA's delineated by State-recognized tribes are followed by "(State)." The Census Bureau did not recognize TDSA's before the 1990 census.

Each TDSA is assigned a four-digit census code ranging from 9001 through 9589. The census codes are

assigned in alphabetical order of TDSA's nationwide. Each TDSA also is assigned a five-digit FIPS code in alphabetical order within State.

Tribal Jurisdiction Statistical Area (TJSA)

Tribal jurisdiction statistical areas (TJSA's) are areas, delineated by federally-recognized tribes in Oklahoma without a reservation, for which the Census Bureau tabulates data. TJSA's represent areas generally containing the American Indian population over which one or more tribal governments have jurisdiction; if tribal officials delineated adjacent TJSA's so that they include some duplicate territory, the overlap area is called a "joint use area," which is treated as a separate TJSA for census purposes.

TJSA's replace the "Historic Areas of Oklahoma (excluding urbanized areas)" shown in 1980 census data products. The Historic Areas of Oklahoma comprised the territory located within reservations that had legally established boundaries from 1900 to 1907; these reservations were dissolved during the 2- to 3-year period preceding the statehood of Oklahoma in 1907. The Historic Areas of Oklahoma (excluding urbanized areas) were identified only for the 1980 census.

Each TJSA is assigned a four-digit census code ranging from 5001 through 5989. The census codes are assigned in alphabetical order of TJSA's, except that joint areas appear at the end of the code range. Each TJSA also is assigned a five-digit FIPS code in alphabetical order within Oklahoma.

AREA MEASUREMENT

Area measurements provide the size, in square kilometers (also in square miles in printed reports), recorded for each geographic entity for which the Census Bureau tabulates data in general-purpose data products (except crews-of-vessels entities and ZIP Codes). (Square kilometers may be divided by 2.59 to convert an area measurement to square miles.) Area was calculated from the specific set of boundaries recorded for the entity in the Census Bureau's geographic data base (see "TIGER"). On machine-readable files, area measurements are shown to three decimal places; the decimal point is implied. In printed reports and listings, area measurements are shown to one decimal.

The Census Bureau provides measurements for both land area and total water area for the 1990 census; the water figure includes inland, coastal, Great Lakes, and territorial water. (For the 1980 census, the Census Bureau provided area measurements for land and inland water.) The Census Bureau will provide measurements for the component types of water for the affected entities in a separate file. "Inland water" consists of any lake, reservoir, pond, or similar body of water that is recorded in the Census Bureau's geographic data base. It also includes any river, creek, canal, stream, or similar

feature that is recorded in that data base as a two-dimensional feature (rather than as a single line). The portions of the oceans and related large embayments (such as the Chesapeake Bay and Puget Sound), the Gulf of Mexico, and the Caribbean Sea that belong to the United States and its territories are considered to be "coastal" and "territorial" waters; the Great Lakes are treated as a separate water entity. Rivers and bays that empty into these bodies of water are treated as "inland water" from the point beyond which they are narrower than one nautical mile across. Identification of land and inland, coastal, and territorial waters is for statistical purposes, and does not necessarily reflect legal definitions thereof.

By definition, census blocks do not include water within their boundaries; therefore, the water area of a block is always zero. Land area measurements may disagree with the information displayed on census maps and in the TIGER file because, for area measurement purposes, features identified as "intermittent water" and "glacier" are reported as land area. For this reason, it may not be possible to derive the land area for an entity by summing the land area of its component census blocks. In addition, the water area measurement reported for some geographic entities includes water that is not included in any lower-level geographic entity. Therefore, because water is contained only in a higher-level geographic entity, summing the water measurements for all the component lower-level geographic entities will not yield the water area of that higher-level entity. This occurs, for example, where water is associated with a county but is not within the legal boundary of any minor civil division, or the water is associated with a State but is not within the legal boundary of any county. Crews-of-vessels entities (see "Census Tract and Block Numbering Area" and "Block") do not encompass territory and therefore have no area measurements. ZIP Codes do not have specific boundaries, and therefore, also do not have area measurements.

The accuracy of any area measurement figure is limited by the inaccuracy inherent in (1) the location and shape of the various boundary features in the data base, and (2) rounding affecting the last digit in all operations that compute and/or sum the area measurements.

BLOCK

Census blocks are small areas bounded on all sides by visible features such as streets, roads, streams, and railroad tracks, and by invisible boundaries such as city, town, township, and county limits, property lines, and short, imaginary extensions of streets and roads.

Tabulation blocks, used in census data products, are in most cases the same as collection blocks, used in the census enumeration. In some cases, collection blocks have been "split" into two or more parts required for data tabulations. Tabulation blocks do not cross the boundaries of counties, county subdivisions, places, census tracts or block numbering areas, American

Indian and Alaska Native areas, congressional districts, voting districts, urban or rural areas, or urbanized areas. The 1990 census is the first for which the entire United States and its possessions are block-numbered.

Blocks are numbered uniquely within each census tract or BNA. A block is identified by a three-digit number, sometimes with a single alphabetical suffix. Block numbers with suffixes generally represent collection blocks that were "split" in order to identify separate geographic entities that divide the original block. For example, when a city limit runs through data collection block 101, the data for the portion inside the city is tabulated in block 101A and the portion outside, in block 101B. A block number with the suffix "Z" represents a "crews-of-vessels" entity for which the Census Bureau tabulates data, but that does not represent a true geographic area; such a block is shown on census maps associated with an anchor symbol and a census tract or block numbering area with a .99 suffix.

BLOCK GROUP (BG)

Geographic Block Group

A geographic block group (BG) is a cluster of blocks having the same first digit of their three-digit identifying numbers within a census tract or block numbering area (BNA). For example, BG 3 within a census tract or BNA includes all blocks numbered between 301 and 397. In most cases, the numbering involves substantially fewer than 97 blocks. Geographic BG's never cross census tract or BNA boundaries, but may cross the boundaries of county subdivisions, places, American Indian and Alaska Native areas, urbanized areas, voting districts, and congressional districts. BG's generally contain between 250 and 550 housing units, with the ideal size being 400 housing units.

Tabulation Block Group

In the data tabulations, a geographic BG may be split to present data for every unique combination of county subdivision, place, American Indian and Alaska Native area, urbanized area, voting district, urban/rural and congressional district shown in the data product; for example, if BG 3 is partly in a city and partly outside the city, there will be separate tabulated records for each portion of BG 3. BG's are used in tabulating decennial census data nationwide in the 1990 census, in all block-numbered areas in the 1980 census, and in Tape Address Register (TAR) areas in the 1970 census. For purposes of data presentation, BG's are a substitute for the enumeration districts (ED's) used for reporting data in many parts of the United States for the 1970 and 1980 censuses, and in all areas for pre-1970 censuses.

BOUNDARY CHANGES

The boundaries of some counties, county subdivisions, American Indian and Alaska Native areas, and

many incorporated places, changed between those reported for the 1980 census and January 1, 1990. Boundary changes to legal entities result from:

1. Annexations to or detachments from legally established governmental units.
2. Mergers or consolidations of two or more governmental units.
3. Establishment of new governmental units.
4. Disincorporations or disorganizations of existing governmental units.
5. Changes in treaties and Executive Orders.

The historical counts shown for counties, county subdivisions, and places are not updated for such changes, and thus reflect the population and housing units in the area as delineated at each census. Information on boundary changes reported between the 1980 and 1990 censuses for counties, county subdivisions, and incorporated places is presented in the "User Notes" section of the technical documentation of Summary Tape Files 1 and 3, and in the 1990 CPH-2, *Population and Housing Unit Counts* printed reports. For information on boundary changes for such areas in the decade preceding other decennial censuses, see the *Number of Inhabitants* reports for each census. Boundary changes are not reported for some areas, such as census designated places and block groups.

CENSUS REGION AND CENSUS DIVISION

Census Division

Census divisions are groupings of States that are subdivisions of the four census regions. There are nine divisions, which the Census Bureau adopted in 1910 for the presentation of data. The regions, divisions, and their constituent States are:

Northeast Region

New England Division:

Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut

Middle Atlantic Division:

New York, New Jersey, Pennsylvania

Midwest Region

East North Central Division:

Ohio, Indiana, Illinois, Michigan, Wisconsin

West North Central Division:

Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South Region

South Atlantic Division:

Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida

East South Central Division:

Kentucky, Tennessee, Alabama, Mississippi

West South Central Division:

Arkansas, Louisiana, Oklahoma, Texas

West Region

Mountain Division:

Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada

Pacific Division:

Washington, Oregon, California, Alaska, Hawaii

Census Region

Census regions are groupings of States that subdivide the United States for the presentation of data. There are four regions—Northeast, Midwest, South, and West. Each of the four census regions is divided into two or more census divisions. Prior to 1984, the Midwest region was named the North Central region. From 1910, when census regions were established, through the 1940's, there were three regions—North, South, and West.

CENSUS TRACT AND BLOCK NUMBERING AREA

Block Numbering Area (BNA)

Block numbering areas (BNA's) are small statistical subdivisions of a county for grouping and numbering blocks in nonmetropolitan counties where local census statistical areas committees have not established census tracts. State agencies and the Census Bureau delineated BNA's for the 1990 census, using guidelines similar to those for the delineation of census tracts. BNA's do not cross county boundaries.

BNA's are identified by a four-digit basic number and may have a two-digit suffix; for example, 9901.07. The decimal point separating the four-digit basic BNA number from the two-digit suffix is shown in printed reports, in microfiche, and on census maps; in machine-readable files, the decimal point is implied. Many BNA's do not have a suffix; in such cases, the suffix field is left blank in all data products. BNA numbers range from 9501 through 9989.99, and are unique within a county (numbers in the range of 0001 through 9499.99 denote a census tract). The suffix .99 identifies a BNA that was

populated entirely by persons aboard one or more civilian or military ships. A "crews-of-vessels" BNA appears on census maps only as an anchor symbol with its BNA number (and block numbers on maps showing block numbers); the BNA relates to the ships associated with the onshore BNA's having the same four-digit basic number. Suffixes in the range .80 through .98 usually identify BNA's that either were revised or were created during the 1990 census data collection activities. Some of these revisions produced BNA's that have extremely small land area and may have little or no population or housing. For data analysis, such a BNA can be summarized with an adjacent BNA.

Census Tract

Census tracts are small, relatively permanent statistical subdivisions of a county. Census tracts are delineated for all metropolitan areas (MA's) and other densely populated counties by local census statistical areas committees following Census Bureau guidelines (more than 3,000 census tracts have been established in 221 counties outside MA's). Six States (California, Connecticut, Delaware, Hawaii, New Jersey, and Rhode Island) and the District of Columbia are covered entirely by census tracts. Census tracts usually have between 2,500 and 8,000 persons and, when first delineated, are designed to be homogeneous with respect to population characteristics, economic status, and living conditions. Census tracts do not cross county boundaries. The spatial size of census tracts varies widely depending on the density of settlement. Census tract boundaries are delineated with the intention of being maintained over a long time so that statistical comparisons can be made from census to census. However, physical changes in street patterns caused by highway construction, new development, etc., may require occasional revisions; census tracts occasionally are split due to large population growth, or combined as a result of substantial population decline. Census tracts are referred to as "tracts" in all 1990 data products.

Census tracts are identified by a four-digit basic number and may have a two-digit suffix; for example, 6059.02. The decimal point separating the four-digit basic tract number from the two-digit suffix is shown in printed reports, in microfiche, and on census maps; in machine-readable files, the decimal point is implied. Many census tracts do not have a suffix; in such cases, the suffix field is left blank in all data products. Leading zeros in a census tract number (for example, 002502) are shown only on machine-readable files.

Census tract numbers range from 0001 through 9499.99 and are unique within a county (numbers in the range of 9501 through 9989.99 denote a block numbering area). The suffix .99 identifies a census tract that was populated entirely by persons aboard one or more civilian or military ships. A "crews-of-vessels" census tract appears on census maps only as an anchor

symbol with its census tract number (and block numbers on maps showing block numbers). These census tracts relate to the ships associated with the onshore census tract having the same four-digit basic number. Suffixes in the range .80 through .98 usually identify census tracts that either were revised or were created during the 1990 census data collection activities. Some of these revisions may have resulted in census tracts that have extremely small land area and may have little or no population or housing. For data analysis, such a census tract can be summarized with an adjacent census tract.

CONGRESSIONAL DISTRICT (CD)

Congressional districts (CD's) are the 435 areas from which persons are elected to the U.S. House of Representatives. After the apportionment of congressional seats among the States, based on census population counts, each State is responsible for establishing CD's for the purpose of electing representatives. Each CD is to be as equal in population to all other CD's in the State as practicable, based on the decennial census counts.

The CD's that were in effect on January 1, 1990 were those of the 101st Congress. Data on the 101st Congress appear in an early 1990 census data product (Summary Tape File 1A). The CD's of the 101st Congress are the same as those in effect for the 102nd Congress. CD's of the 103rd Congress, reflecting redistricting based on the 1990 census, are summarized in later 1990 data products (STF's 1D and 3D, and 1990 CPH-4, *Population and Housing Characteristics for Congressional Districts of the 103rd Congress* printed reports).

COUNTY

The primary political divisions of most States are termed "counties." In Louisiana, these divisions are known as "parishes." In Alaska, which has no counties, the county equivalents are the organized "boroughs" and the "census areas" that are delineated for statistical purposes by the State of Alaska and the Census Bureau. In four States (Maryland, Missouri, Nevada, and Virginia), there are one or more cities that are independent of any county organization and thus constitute primary divisions of their States. These cities are known as "independent cities" and are treated as equivalent to counties for statistical purposes. That part of Yellowstone National Park in Montana is treated as a county equivalent. The District of Columbia has no primary divisions, and the entire area is considered equivalent to a county for statistical purposes.

Each county and county equivalent is assigned a three-digit FIPS code that is unique within State. These codes are assigned in alphabetical order of county or county equivalent within State, except for the independent cities, which follow the listing of counties.

COUNTY SUBDIVISION

County subdivisions are the primary subdivisions of counties and their equivalents for the reporting of decennial census data. They include census county divisions, census subareas, minor civil divisions, and unorganized territories.

Each county subdivision is assigned a three-digit census code in alphabetical order within county and a five-digit FIPS code in alphabetical order within State.

Census County Division (CCD)

Census county divisions (CCD's) are subdivisions of a county that were delineated by the Census Bureau, in cooperation with State officials and local census statistical areas committees, for statistical purposes. CCD's were established in 21 States where there are no legally established minor civil divisions (MCD's), where the MCD's do not have governmental or administrative purposes, where the boundaries of the MCD's change frequently, and/or where the MCD's are not generally known to the public. CCD's have no legal functions, and are not governmental units.

The boundaries of CCD's usually are delineated to follow visible features, and in most cases coincide with census tract or block numbering area boundaries. The name of each CCD is based on a place, county, or well-known local name that identifies its location. CCD's have been established in the following 21 States: Alabama, Arizona, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Kentucky, Montana, Nevada, New Mexico, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Washington, and Wyoming. For the 1980 census, the county subdivisions recognized for Nevada were MCD's.

Census Subarea (Alaska)

Census subareas are statistical subdivisions of boroughs and census areas (county equivalents) in Alaska. Census subareas were delineated cooperatively by the State of Alaska and the Census Bureau. The census subareas, identified first in 1980, replaced the various types of subdivisions used in the 1970 census.

Minor Civil Division (MCD)

Minor civil divisions (MCD's) are the primary political or administrative divisions of a county. MCD's represent many different kinds of legal entities with a wide variety of governmental and/or administrative functions. MCD's are variously designated as American Indian reservations, assessment districts, boroughs, election districts, gores, grants, magisterial districts, parish governing authority districts, plantations, precincts, purchases, supervisors' districts, towns, and townships. In some States, all or some incorporated places are not located in any

MCD and thus serve as MCD's in their own right. In other States, incorporated places are subordinate to (part of) the MCD's in which they are located, or the pattern is mixed—some incorporated places are independent of MCD's and others are subordinate to one or more MCD's.

The Census Bureau recognizes MCD's in the following 28 States: Arkansas, Connecticut, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, Virginia, West Virginia, and Wisconsin. The District of Columbia has no primary divisions, and the entire area is considered equivalent to an MCD for statistical purposes.

The MCD's in 12 selected States (Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin) also serve as general-purpose local governments. The Census Bureau presents data for these MCD's in all data products in which it provides data for places.

Unorganized Territory (unorg.)

In nine States (Arkansas, Iowa, Kansas, Louisiana, Maine, Minnesota, North Carolina, North Dakota, and South Dakota), some counties contain territory that is not included in an MCD recognized by the Census Bureau. Each separate area of unorganized territory in these States is recognized as one or more separate county subdivisions for census purposes. Each unorganized territory is given a descriptive name, followed by the designation "unorg."

GEOGRAPHIC CODE

Geographic codes are shown primarily on machine-readable data products, such as computer tape and compact disc-read only memory (CD-ROM), but also appear on other products such as microfiche; they also are shown on some census maps. Codes are identified as "census codes" only if there is also a Federal Information Processing Standards (FIPS) code for the same geographic entity. A code that is not identified as either "census" or "FIPS" is usually a census code for which there is no FIPS equivalent, or for which the Census Bureau does not use the FIPS code. The exceptions, which use only the FIPS code in census products, are county, congressional district, and metropolitan area (that is, metropolitan statistical area, consolidated metropolitan statistical area, and primary metropolitan statistical area).

Census Code

Census codes are assigned for a variety of geographic entities, including American Indian and Alaska

Native area, census division, census region, county subdivision, place, State, urbanized area, and voting district. The structure, format, and meaning of census codes appear in the 1990 census *Geographic Identification Code Scheme*; in the data dictionary portion of the technical documentation for summary tape files, CD-ROM's, and microfiche.

Federal Information Processing Standards (FIPS) Code

Federal Information Processing Standards (FIPS) codes are assigned for a variety of geographic entities, including American Indian and Alaska Native area, congressional district, county, county subdivision, metropolitan area, place, and State. The structure, format, and meaning of FIPS codes used in the census are shown in the 1990 census *Geographic Identification Code Scheme*; in the data dictionary portion of the technical documentation for summary tape files, CD-ROM's, and microfiche.

The objective of the FIPS codes is to improve the use of data resources of the Federal Government and avoid unnecessary duplication and incompatibilities in the collection, processing, and dissemination of data. More information about FIPS and FIPS code documentation is available from the National Technical Information Service, Springfield, VA 22161.

United States Postal Service (USPS) Code

United States Postal Service (USPS) codes for States are used in all 1990 data products. The codes are two-character alphabetic abbreviations. These codes are the same as the FIPS two-character alphabetic abbreviations.

GEOGRAPHIC PRESENTATION

Hierarchical Presentation

A hierarchical geographic presentation shows the geographic entities in a superior/subordinate structure in census products. This structure is derived from the legal, administrative, or areal relationships of the entities. The hierarchical structure is depicted in report tables by means of indentation, and is explained for machine-readable media in the discussion of file structure in the geographic coverage portion of the abstract in the technical documentation. An example of hierarchical presentation is the "standard census geographic hierarchy": block, within block group, within census tract or block numbering area, within place, within county subdivision, within county, within State, within division, within region, within the United States. Graphically, this is shown as:

United States
 Region
 Division
 State
 County
 County subdivision
 Place (or part)
 Census tract/ block numbering area
 (or part)
 Block group (or part)
 Block

Inventory Presentation

An inventory presentation of geographic entities is one in which all entities of the same type are shown in alphabetical or code sequence, without reference to their hierarchical relationships. Generally, an inventory presentation shows totals for entities that may be split in a hierarchical presentation, such as place, census tract/ block numbering area, or block group. An example of a series of inventory presentations is: State, followed by all the counties in that State, followed by all the places in that State. Graphically, this is shown as:

State
 County "A"
 County "B"
 County "C"
 Place "X"
 Place "Y"
 Place "Z"

HISTORICAL COUNTS

Historical counts for total population and total housing units are shown in the 1990 CPH-2, *Population and Housing Unit Counts* report series. As in past censuses, the general rule for presenting historical data for States, counties, county subdivisions, and places is to show historical counts only for single, continually existing entities. Stated another way, if an entity existed for both the current and preceding censuses, the tables show counts for the preceding censuses. Included in this category are entities of the same type (county, county subdivision, place) even if they had changed their names. Also included are entities that merged, but only if the new entity retained the name of one of the merged entities. The historical counts shown are for each entity as it was bounded at each census.

In cases where an entity was formed since a preceding census, such as a newly incorporated place or a newly organized township, the symbol three dots "..." is shown for earlier censuses. The three-dot symbol also is shown for those parts of a place that have extended into an additional county or county subdivision through annexation or other revision of boundaries since the preceding census.

In a few cases, changes in the boundaries of county subdivisions caused a place to be split into two or more parts, or to be split differently than in the preceding census. If historical counts for the parts of the place as currently split did not appear in a preceding census, "(NA)" is shown for the place in each county subdivision; however, the historical population and housing unit counts of the place appear in tables that show the entire place. For counties, county subdivisions, and places formed since January 1, 1980, 1980 census population and housing unit counts in the 1990 territory are reported in the geographic change notes included in the "User Notes" text section of 1990 CPH-2, *Population and Housing Unit Counts*, and in the technical documentation of Summary Tape Files 1 and 3.

In some cases, population and housing unit counts for individual areas were revised since publication of the 1980 reports (indicated by the prefix "r"). In a number of tables of 1990 CPH-2, *Population and Housing Unit Counts*, 1980 counts are shown for aggregations of individual areas, such as the number, population, and housing unit counts of places in size groups, or urban and rural distributions. Revisions of population and housing unit counts for individual areas were not applied to the various aggregations. Therefore, it may not be possible to determine the individual areas in a given aggregation using the historical counts; conversely, the sum of the counts shown for individual areas may not agree with the aggregation.

INTERNAL POINT

An internal point is a set of geographic coordinates (latitude and longitude) that is located within a specified geographic entity. A single point is identified for each entity; for many entities, this point represents the approximate geographic center of that entity. If the shape of the entity caused this point to be located outside the boundaries of the entity, it is relocated from the center so that it is within the entity. If the internal point for a block falls in a water area, it is relocated to a land area within the block. On machine-readable products, internal points are shown to six decimal places; the decimal point is implied.

METROPOLITAN AREA (MA)

The general concept of a metropolitan area (MA) is one of a large population nucleus, together with adjacent communities that have a high degree of economic and social integration with that nucleus. Some MA's are defined around two or more nuclei.

The MA classification is a statistical standard, developed for use by Federal agencies in the production, analysis, and publication of data on MA's. The MA's are designated and defined by the Federal Office of Management and Budget, following a set of official published standards. These standards were developed by

the interagency Federal Executive Committee on Metropolitan Areas, with the aim of producing definitions that are as consistent as possible for all MA's nationwide.

Each MA must contain either a place with a minimum population of 50,000 or a Census Bureau-defined urbanized area and a total MA population of at least 100,000 (75,000 in New England). An MA comprises one or more central counties. An MA also may include one or more outlying counties that have close economic and social relationships with the central county. An outlying county must have a specified level of commuting to the central counties and also must meet certain standards regarding metropolitan character, such as population density, urban population, and population growth. In New England, MA's are composed of cities and towns rather than whole counties.

The territory, population, and housing units in MA's are referred to as "metropolitan." The metropolitan category is subdivided into "inside central city" and "outside central city." The territory, population, and housing units located outside MA's are referred to as "nonmetropolitan." The metropolitan and nonmetropolitan classification cuts across the other hierarchies; for example, there is generally both urban and rural territory within both metropolitan and nonmetropolitan areas.

To meet the needs of various users, the standards provide for a flexible structure of metropolitan definitions that classify an MA either as a metropolitan statistical area (MSA) or as a consolidated metropolitan statistical area (CMSA) that is divided into primary metropolitan statistical areas (PMSA's). Documentation of the MA standards and how they are applied is available from the Secretary, Federal Executive Committee on Metropolitan Areas, Population Division, U.S. Bureau of the Census, Washington, DC 20233.

Central City

In each MSA and CMSA, the largest place and, in some cases, additional places are designated as "central cities" under the official standards. A few PMSA's do not have central cities. The largest central city and, in some cases, up to two additional central cities are included in the title of the MA; there also are central cities that are not included in an MA title. An MA central city does not include any part of that city that extends outside the MA boundary.

Consolidated and Primary Metropolitan Statistical Area (CMSA and PMSA)

If an area that qualifies as an MA has more than one million persons, primary metropolitan statistical areas (PMSA's) may be defined within it. PMSA's consist of a large urbanized county or cluster of counties that demonstrates very strong internal economic and social links, in addition to close ties to other portions of the larger

area. When PMSA's are established, the larger area of which they are component parts is designated a consolidated metropolitan statistical area (CMSA).

Metropolitan Statistical Area (MSA)

Metropolitan statistical areas (MSA's) are relatively freestanding MA's and are not closely associated with other MA's. These areas typically are surrounded by nonmetropolitan counties.

Metropolitan Area Title and Code

The title of an MSA contains the name of its largest central city and up to two additional city names, provided that the additional places meet specified levels of population, employment, and commuting. Generally, a city with a population of 250,000 or more is in the title, regardless of other criteria.

The title of a PMSA may contain up to three place names, as determined above, or up to three county names, sequenced in order of population. A CMSA title also may include up to three names, the first of which generally is the most populous central city in the area. The second name may be the first city or county name in the most populous remaining PMSA; the third name may be the first city or county name in the next most populous PMSA. A regional designation may be substituted for the second and/or third names in a CMSA title if such a designation is supported by local opinion and is deemed to be unambiguous and suitable by the Office of Management and Budget.

The titles for all MA's also contain the name of each State in which the area is located. Each metropolitan area is assigned a four-digit FIPS code, in alphabetical order nationwide. If the fourth digit of the code is a "2," it identifies a CMSA. Additionally, there is a separate set of two-digit codes for CMSA's, also assigned alphabetically.

OUTLYING AREAS OF THE UNITED STATES

The Census Bureau treats the outlying areas as the statistical equivalents of States for the 1990 census. The outlying areas are American Samoa, Guam, the Commonwealth of the Northern Mariana Islands (Northern Mariana Islands), Republic of Palau (Palau), Puerto Rico, and the Virgin Islands of the United States (Virgin Islands). Geographic definitions specific to each outlying area are shown in appendix A of the text in the data products for each area.

PLACE

Places, for the reporting of decennial census data, include census designated places and incorporated places. Each place is assigned a four-digit census code

that is unique within State. Each place is also assigned a five-digit FIPS code that is unique within State. Both the census and FIPS codes are assigned based on alphabetical order within State. Consolidated cities (see below) are assigned a one-character alphabetical census code that is unique nationwide and a five-digit FIPS code that is unique within State.

Census Designated Place (CDP)

Census designated places (CDP's) are delineated for the decennial census as the statistical counterparts of incorporated places. CDP's comprise densely settled concentrations of population that are identifiable by name, but are not legally incorporated places. Their boundaries, which usually coincide with visible features or the boundary of an adjacent incorporated place, have no legal status, nor do these places have officials elected to serve traditional municipal functions. CDP boundaries may change with changes in the settlement pattern; a CDP with the same name as in previous censuses does not necessarily have the same boundaries.

Beginning with the 1950 census, the Census Bureau, in cooperation with State agencies and local census statistical areas committees, has identified and delineated boundaries for CDP's. In the 1990 census, the name of each such place is followed by "CDP." In the 1980 census, "(CDP)" was used; in 1970, 1960, and 1950 censuses, these places were identified by "(U)," meaning "unincorporated place."

To qualify as a CDP for the 1990 census, an unincorporated community must have met the following criteria:

1. In all States except Alaska and Hawaii, the Census Bureau uses three population size criteria to designate a CDP. These criteria are:
 - a. 1,000 or more persons if outside the boundaries of an urbanized area (UA) delineated for the 1980 census or a subsequent special census.
 - b. 2,500 or more persons if inside the boundaries of a UA delineated for the 1980 census or a subsequent special census.
 - c. 250 or more persons if outside the boundaries of a UA delineated for the 1980 census or a subsequent special census, and within the official boundaries of an American Indian reservation recognized for the 1990 census.
2. In Alaska, 25 or more persons if outside a UA, and 2,500 or more persons if inside a UA delineated for the 1980 census or a subsequent special census.
3. In Hawaii, 300 or more persons, regardless of whether the community is inside or outside a UA.

For the 1990 census, CDP's qualified on the basis of the population counts prepared for the 1990 Postcensus Local Review Program. Because these counts were subject to change, a few CDP's may have final population counts lower than the minimums shown above.

Hawaii is the only State with no incorporated places recognized by the Bureau of the Census. All places shown for Hawaii in the data products are CDP's. By agreement with the State of Hawaii, the Census Bureau does not show data separately for the city of Honolulu, which is coextensive with Honolulu County.

Consolidated City

A consolidated government is a unit of local government for which the functions of an incorporated place and its county or minor civil division (MCD) have merged. The legal aspects of this action may result in both the primary incorporated place and the county or MCD continuing to exist as legal entities, even though the county or MCD performs few or no governmental functions and has few or no elected officials. Where this occurs, and where one or more other incorporated places in the county or MCD continue to function as separate governments, even though they have been included in the consolidated government, the primary incorporated place is referred to as a "consolidated city."

The data presentation for consolidated cities varies depending upon the geographic presentation. In hierarchical presentations, consolidated cities are not shown. These presentations include the semi-independent places and the "consolidated city (remainder)." Where the consolidated city is coextensive with a county or county subdivision, the data shown for those areas in hierarchical presentations are equivalent to those for the consolidated government.

For inventory geographic presentations, the consolidated city appears at the end of the listing of places. The data for the consolidated city include places that are part of the consolidated city. The "consolidated city (remainder)" is the portion of the consolidated government minus the semi-independent places, and is shown in alphabetical sequence with other places.

In summary presentations by size of place, the consolidated city is not included. The places semi-independent of consolidated cities are categorized by their size, as is the "consolidated city (remainder)."

Each consolidated city is assigned a one-character alphabetic census code. Each consolidated city also is assigned a five-digit FIPS code that is unique within State. The semi-independent places and the "consolidated city (remainder)" are assigned a four-digit census code and a five-digit FIPS place code that are unique within State. Both the census and FIPS codes are assigned based on alphabetical order within State.

Incorporated Place

Incorporated places recognized in 1990 census data products are those reported to the Census Bureau as legally in existence on January 1, 1990 under the laws of their respective States as cities, boroughs, towns, and villages, with the following exceptions: the towns in the New England States, New York, and Wisconsin, and the boroughs in New York are recognized as minor civil divisions for census purposes; the boroughs in Alaska are county equivalents.

POPULATION OR HOUSING UNIT DENSITY

Population or housing unit density is computed by dividing the total population or housing units of a geographic unit (for example, United States, State, county, place) by its land area measured in square kilometers or square miles. Density is expressed as both "persons (or housing units) per square kilometer" and "persons (or housing units) per square mile" of land area in 1990 census printed reports.

STATE

States are the primary governmental divisions of the United States. The District of Columbia is treated as a statistical equivalent of a State for census purposes. The four census regions, nine census divisions, and their component States are shown under "CENSUS REGION AND CENSUS DIVISION" in this appendix.

The Census Bureau treats the outlying areas as State equivalents for the 1990 census. The outlying areas are American Samoa, Guam, the Northern Mariana Islands, Palau, Puerto Rico, and the Virgin Islands of the United States. Geographic definitions specific to each outlying area are shown in appendix A in the data products for each area.

Each State and equivalent is assigned a two-digit numeric Federal Information Processing Standards (FIPS) code in alphabetical order by State name, followed by the outlying area names. Each State and equivalent area also is assigned a two-digit census code. This code is assigned on the basis of the geographic sequence of each State within each census division; the first digit of the code is the code for the respective division. Puerto Rico, the Virgin Islands, and the outlying areas of the Pacific are assigned "0" as the division code. Each State and equivalent area also is assigned the two-letter FIPS/United States Postal Service (USPS) code.

In 12 selected States (Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin), the minor civil divisions also serve as general-purpose local governments. The Census Bureau presents data for these minor civil divisions in all data products in which it provides data for places.

AREA CLASSIFICATIONS

TIGER

TIGER is an acronym for the new digital (computer-readable) geographic data base that automates the mapping and related geographic activities required to support the Census Bureau's census and survey programs. The Census Bureau developed the Topologically Integrated Geographic Encoding and Referencing (TIGER) System to automate the geographic support processes needed to meet the major geographic needs of the 1990 census: producing the cartographic products to support data collection and map publication, providing the geographic structure for tabulation and publication of the collected data, assigning residential and employer addresses to their geographic location and relating those locations to the Census Bureau's geographic units, and so forth. The content of the TIGER data base is made available to the public through a variety of "TIGER Extract" files that may be obtained from the Data User Services Division, U.S. Bureau of the Census, Washington, DC 20233.

UNITED STATES

The United States comprises the 50 States and the District of Columbia. In addition, the Census Bureau treats the outlying areas as statistical equivalents of States for the 1990 census. The outlying areas include American Samoa, Guam, the Northern Mariana Islands, Palau, Puerto Rico, and the Virgin Islands.

URBAN AND RURAL

The Census Bureau defines "urban" for the 1990 census as comprising all territory, population, and housing units in urbanized areas and in places of 2,500 or more persons outside urbanized areas. More specifically, "urban" consists of territory, persons, and housing units in:

1. Places of 2,500 or more persons incorporated as cities, villages, boroughs (except in Alaska and New York), and towns (except in the six New England States, New York, and Wisconsin), but excluding the rural portions of "extended cities."
2. Census designated places of 2,500 or more persons.
3. Other territory, incorporated or unincorporated, included in urbanized areas.

Territory, population, and housing units not classified as urban constitute "rural." In the 100-percent data products, "rural" is divided into "places of less than 2,500" and "not in places." The "not in places" category comprises "rural" outside incorporated and census designated places and the rural portions of extended

cities. In many data products, the term "other rural" is used; "other rural" is a residual category specific to the classification of the rural in each data product.

In the sample data products, rural population and housing units are subdivided into "rural farm" and "rural nonfarm." "Rural farm" comprises all rural households and housing units on farms (places from which \$1,000 or more of agricultural products were sold in 1989); "rural nonfarm" comprises the remaining rural.

The urban and rural classification cuts across the other hierarchies; for example, there is generally both urban and rural territory within both metropolitan and nonmetropolitan areas.

In censuses prior to 1950, "urban" comprised all territory, persons, and housing units in incorporated places of 2,500 or more persons, and in areas (usually minor civil divisions) classified as urban under special rules relating to population size and density. The definition of urban that restricted itself to incorporated places having 2,500 or more persons excluded many large, densely settled areas merely because they were not incorporated. Prior to the 1950 census, the Census Bureau attempted to avoid some of the more obvious omissions by classifying selected areas as "urban under special rules." Even with these rules, however, many large, closely built-up areas were excluded from the urban category.

To improve its measure of urban territory, population, and housing units, the Census Bureau adopted the concept of the urbanized area and delineated boundaries for unincorporated places (now, census designated places) for the 1950 census. Urban was defined as territory, persons, and housing units in urbanized areas and, outside urbanized areas, in all places, incorporated or unincorporated, that had 2,500 or more persons. With the following three exceptions, the 1950 census definition of urban has continued substantially unchanged. First, in the 1960 census (but not in the 1970, 1980, or 1990 censuses), certain towns in the New England States, townships in New Jersey and Pennsylvania, and Arlington County, Virginia, were designated as urban. However, most of these "special rule" areas would have been classified as urban anyway because they were included in an urbanized area or in an unincorporated place of 2,500 or more persons. Second, "extended cities" were identified for the 1970, 1980, and 1990 censuses. Extended cities primarily affect the figures for urban and rural territory (area), but have very little effect on the urban and rural population and housing units at the national and State levels—although for some individual counties and urbanized areas, the effects have been more evident. Third, changes since the 1970 census in the criteria for defining urbanized areas have permitted these areas to be defined around smaller centers.

Documentation of the urbanized area and extended city criteria is available from the Chief, Geography Division, U.S. Bureau of the Census, Washington, DC 20233.

Extended City

Since the 1960 census, there has been a trend in some States toward the extension of city boundaries to include territory that is essentially rural in character. The classification of all the population and living quarters of such places as urban would include in the urban designation territory, persons, and housing units whose environment is primarily rural. For the 1970, 1980, and 1990 censuses, the Census Bureau identified as rural such territory and its population and housing units for each extended city whose closely settled area was located in an urbanized area. For the 1990 census, this classification also has been applied to certain places outside urbanized areas.

In summary presentations by size of place, the urban portion of an extended city is classified by the population of the entire place; the rural portion is included in "other rural."

URBANIZED AREA (UA)

The Census Bureau delineates urbanized areas (UA's) to provide a better separation of urban and rural territory, population, and housing in the vicinity of large places. A UA comprises one or more places ("central place") and the adjacent densely settled surrounding territory ("urban fringe") that together have a minimum of 50,000 persons. The urban fringe generally consists of contiguous territory having a density of at least 1,000 persons per square mile. The urban fringe also includes outlying territory of such density if it was connected to the core of the contiguous area by road and is within 1 1/2 road miles of that core, or within 5 road miles of the core but separated by water or other undevelopable territory. Other territory with a population density of fewer than 1,000 people per square mile is included in the urban fringe if it eliminates an enclave or closes an indentation in the boundary of the urbanized area. The population density is determined by (1) outside of a place, one or more contiguous census blocks with a population density of at least 1,000 persons per square mile or (2) inclusion of a place containing census blocks that have at least 50 percent of the population of the place and a density of at least 1,000 persons per square mile. The complete criteria are available from the Chief, Geography Division, U.S. Bureau of the Census, Washington, DC 20233.

Urbanized Area Central Place

One or more central places function as the dominant centers of each UA. The identification of a UA central place permits the comparison of this dominant center

with the remaining territory in the UA. There is no limit on the number of central places, and not all central places are necessarily included in the UA title. UA central places include:

1. Each place entirely (or partially, if the place is an extended city) within the UA that is a central city of a metropolitan area (MA).
2. If the UA does not contain an MA central city or is located outside of an MA, the central place(s) is determined by population size.

Urbanized Area Title and Code

The title of a UA identifies those places that are most important within the UA; it links the UA to the encompassing MA, where appropriate. If a single MA includes most of the UA, the title and code of the UA generally are the same as the title and code of the MA. If the UA is not mostly included in a single MA, if it does not include any place that is a central city of the encompassing MA, or if it is not located in an MA, the Census Bureau uses the population size of the included places, with a preference for incorporated places, to determine the UA title. The name of each State in which the UA is located also is in each UA title.

The numeric code used to identify each UA is the same as the code for the mostly encompassing MA (including CMSA and PMSA). If MA title cities represent multiple UA's, or the UA title city does not correspond to the first name of an MA title, the Census Bureau assigns a code based on the alphabetical sequence of the UA title in relationship to the other UA and MA titles.

VOTING DISTRICT (VTD)

A voting district (VTD) is any of a variety of types of areas (for example, election districts, precincts, wards,

legislative districts) established by State and local governments for purposes of elections. For census purposes, each State participating in Phase 2 of the 1990 Census Redistricting Data Program outlined the boundaries of VTD's around groups of whole census blocks on census maps. The entities identified as VTD's are not necessarily those legally or currently established. Also, to meet the "whole block" criterion, a State may have had to adjust VTD boundaries to nearby block boundaries. Therefore, the VTD's shown on the 1990 census tapes, listings, and maps may not represent the actual VTD's in effect at the time of the census. In the 1980 census, VTD's were referred to as "election precincts."

Each VTD is assigned a four-character alphanumeric code that is unique within each county. The code "ZZZZ" is assigned to nonparticipating areas; the Census Bureau reports data for areas coded "ZZZZ."

ZIP CODE*

ZIP Codes are administrative units established by the United States Postal Service (USPS) for the distribution of mail. ZIP Codes serve addresses for the most efficient delivery of mail, and therefore generally do not respect political or census statistical area boundaries. ZIP Codes usually do not have clearly identifiable boundaries, often serve a continually changing area, are changed periodically to meet postal requirements, and do not cover all the land area of the United States. ZIP Codes are identified by five-digit codes assigned by the USPS. The first three digits identify a major city or sectional distribution center, and the last two digits generally signify a specific post office's delivery area or point. For the 1990 census, ZIP Code data are tabulated for the five-digit codes in STF 3B.

APPENDIX B.

Definitions of Subject Characteristics

This section contains definitions for the subjects asked on the questionnaire. Most of the subjects appear as variables on PUMS, although several may be changed because of requirements to protect the identity of individual respondents; for example, collapsed data or recoded data. See appendix C for those variables.

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POPULATION CHARACTERISTICS

AGE

The data on age were derived from answers to questionnaire item 5, which was asked of all persons. The age classification is based on the age of the person in complete years as of April 1, 1990. The age response in question 5a was used normally to represent a person's age. However, when the age response was unacceptable or unavailable, a person's age was derived from an acceptable year-of-birth response in question 5b.

Data on age are used to determine the applicability of other questions for a person and to classify other characteristics in census tabulations. Age data are needed to interpret most social and economic characteristics used to plan and examine many programs and policies. Therefore, age is tabulated by single years of age and by many different groupings, such as 5-year age groups.

Some tabulations are shown by the age of the householder. These data were derived from the age responses for each householder. (For more information on householder, see the discussion under "Household Type and Relationship.")

Median Age—This measure divides the age distribution into two equal parts: one-half of the cases falling below the median value and one-half above the value. Generally, median age is computed on the basis of more detailed age intervals than are shown in some census publications; thus, a median based on a less detailed distribution may differ slightly from a corresponding median for the same population based on a more detailed distribution. (For more information on medians, see the discussion under "Derived Measures.")

Limitation of the Data—Counts in 1970 and 1980 for persons 100 years old and over were substantially overstated. Improvements were made in the questionnaire design, in the allocation procedures, and to the respondent instruction guide to attempt to minimize this problem for the 1990 census.

Review of detailed 1990 census information indicated that respondents tended to provide their age as of the date of completion of the questionnaire, not their age as of April 1, 1990. In addition, there may have been a tendency for respondents to round their age up if they were close to having a birthday. It is likely that approximately 10 percent of persons in most age groups are actually 1 year younger. For most single years of age, the misstatements are largely offsetting. The problem is most pronounced at age 0 because persons lost to age 1 may not have been fully offset by the inclusion of babies born after April 1, 1990, and because there may have been more rounding up to age 1 to avoid reporting age as 0 years. (Age in complete months was not collected for infants under age 1.)

The reporting of age 1 year older than age on April 1, 1990, is likely to have been greater in areas where the census data were collected later in 1990. The magnitude of this problem was much less in the three previous censuses where age was typically derived from respondent data on year of birth and quarter of birth. (For more information on the design of the age question, see the section below that discusses "Comparability.")

Comparability—Age data have been collected in every census. For the first time since 1950, the 1990 data are not available by quarter year of age. This change was made so that coded information could be obtained for both age and year of birth. In each census since 1940, the age of a person was assigned when it was not reported. In censuses before 1940, with the exception of 1880, persons of unknown age were shown as a separate category. Since 1960, assignment of unknown age has been performed by a general procedure described as "imputation." The specific procedures for imputing age have been different in each census. (For more information on imputation, see Appendix C, Accuracy of the Data.)

ANCESTRY

The data on ancestry were derived from answers to questionnaire item 13, which was asked of a sample of persons. The question was based on self-identification; the data on ancestry represent self-classification by people according to the ancestry group(s) with which they most closely identify. Ancestry refers to a person's ethnic origin or descent, "roots," or heritage or the place of birth of the person or the person's parents or ancestors before their arrival in the United States. Some ethnic identities, such as "Egyptian" or "Polish" can be traced to geographic areas outside the United States, while other ethnicities such as "Pennsylvania Dutch" or "Cajun" evolved in the United States.

The intent of the ancestry question was not to measure the degree of attachment the respondent had to a particular ethnicity. For example, a response of "Irish" might reflect total involvement in an "Irish" community or only a memory of ancestors several generations removed from the individual.

The Census Bureau coded the responses through an automated review, edit, and coding operation. The open-ended write-in ancestry item was coded by subject-matter specialists into a numeric representation using a code list containing over 1,000 categories. The 1990 code list reflects the results of the Census Bureau's own research and consultations with many ethnic experts. Many decisions were made to determine the classification of responses. These decisions affected the grouping of the tabulated data. For example, the "Assyrian" category includes both responses of "Assyrian" and "Chaldean."

The ancestry question allowed respondents to report one or more ancestry groups. While a large number of respondents listed a single ancestry, the majority of answers included more than one ethnic entry. Generally, only the first two responses reported were coded in 1990. If a response was in terms of a dual ancestry, for example, Irish-English, the person was assigned two codes, in this case one for Irish and another for English.

However, in certain cases, multiple responses such as "French Canadian," "Scotch-Irish," "Greek Cypriote," and "Black Dutch" were assigned a single code reflecting their status as unique groups. If a person reported one of these unique groups in addition to another group, for example, "Scotch-Irish English," resulting in three terms, that person received one code for the unique group ("Scotch-Irish") and another one for the remaining group ("English"). If a person reported "English Irish French," only English and Irish were coded. Certain combinations of ancestries where the ancestry group is a part of another, such as "German-Bavarian," the responses were coded as a single ancestry using the smaller group ("Bavarian"). Also, responses such as "Polish-American" or "Italian-American" were coded and tabulated as a single entry ("Polish" or "Italian").

The Census Bureau accepted "American" as a unique ethnicity if it was given alone, with an ambiguous response, or with State names. If the respondent listed any other ethnic identity such as "Italian American," generally the "American" portion of the response was not coded. However, distinct groups such as "American Indian," "Mexican American," and "African American" were coded and identified separately because they represented groups who considered themselves different from those who reported as "Indian," "Mexican," or "African," respectively.

In all tabulations, when respondents provided an unacceptable ethnic identity (for example, an uncodeable or unintelligible response such as "multi-national,"

"adopted," or "I have no idea"), the answer was included in "Ancestry not reported."

The tabulations on ancestry are presented using two types of data presentations—one used total persons as the base, and the other used total responses as the base. The following are categories shown in the two data presentations:

Presentation Based on Persons:

Single Ancestries Reported—Includes all persons who reported only one ethnic group. Included in this category are persons with multiple-term responses such as "Scotch-Irish" who are assigned a single code.

Multiple Ancestries Reported—Includes all persons who reported more than one group and were assigned two ancestry codes.

Ancestry Unclassified—Includes all persons who provided a response that could not be assigned an ancestry code because they provided nonsensical entries or religious responses.

Presentations Based on Responses:

Total Ancestries Reported—Includes the total number of ancestries reported and coded. If a person reported a multiple ancestry such as "French Danish," that response was counted twice in the tabulations—once in the "French" category and again in the "Danish" category. Thus, the sum of the counts in this type of presentation is not the total population but the total of all responses.

First Ancestry Reported—Includes the first response of all persons who reported at least one codeable entry. For example, in this category, the count for "Danish" would include all those who reported only Danish and those who reported Danish first and then some other group.

Second Ancestry Reported—Includes the second response of all persons who reported a multiple ancestry. Thus, the count for "Danish" in this category includes all persons who reported Danish as the second response, regardless of the first response provided.

The Census Bureau identified hundreds of ethnic groups in the 1990 census. However, it was impossible to show information for every group in all census tabulations because of space constraints. Publications such as the 1990 CP-2, *Social and Economic Characteristics* and the 1990 CPH-3, *Population and Housing Characteristics for Census Tracts and Block Numbering Areas* reports show a limited number of groups based on the number reported and the advice received from experts. A more complete distribution of groups is

presented in the 1990 Summary Tape File 4, *Supplementary Reports*, and a special subject report on ancestry. In addition, groups identified specifically in the questions on race and Hispanic origin (for example, Japanese, Laotian, Mexican, Cuban, and Spaniard), in general, are not shown separately in ancestry tabulations.

Limitation of the Data—Although some experts consider religious affiliation a component of ethnic identity, the ancestry question was not designed to collect any information concerning religion. The Bureau of the Census is prohibited from collecting information on religion. Thus, if a religion was given as an answer to the ancestry question, it was coded as an "Other" response.

Comparability—A question on ancestry was first asked in the 1980 census. Although there were no comparable data prior to the 1980 census, related information on ethnicity was collected through questions on parental birthplace, own birthplace, and language which were included in previous censuses. Unlike other census questions, there was no imputation for nonresponse to the ancestry question.

In 1990, respondents were allowed to report more than one ancestry group; however, only the first two ancestry groups identified were coded. In 1980, the Census Bureau attempted to code a third ancestry for selected triple-ancestry responses.

New categories such as "Arab" and "West Indian" were added to the 1990 question to meet important data needs. The "West Indian" category excluded "Hispanic" groups such as "Puerto Rican" and "Cuban" that were identified primarily through the question on Hispanic origin. In 1990, the ancestry group, "American" is recognized and tabulated as a unique ethnicity. In 1980, "American" was tabulated but included under the category "Ancestry not specified."

A major improvement in the 1990 census was the use of an automated coding system for ancestry responses. The automated coding system used in the 1990 census greatly reduced the potential for error associated with a clerical review. Specialists with a thorough knowledge of the subject matter reviewed, edited, coded, and resolved inconsistent or incomplete responses.

CITIZENSHIP

The data on citizenship were derived from answers to questionnaire item 9, which was asked of a sample of persons.

Citizen—Persons who indicated that they were native-born and foreign-born persons who indicated that they have become naturalized. (For more information on native and foreign born, see the discussion under "Place of Birth.")

There are four categories of citizenship: (1) born in the United States, (2) born in Puerto Rico, Guam, the Virgin Islands of the United States, or the Commonwealth of the Northern Mariana Islands, (3) born abroad of American parents, and (4) citizen by naturalization.

Naturalized Citizen—Foreign-born persons who had completed the naturalization process at the time of the census and upon whom the rights of citizenship had been conferred.

Not a Citizen—Foreign-born persons who were not citizens, including persons who had begun but not completed the naturalization process at the time of the census.

Limitation of the Data—Evaluation studies completed after previous censuses indicated that some persons may have reported themselves as citizens although they had not yet attained the status.

Comparability—Similar questions on citizenship were asked in the censuses of 1820, 1830, 1870, 1890 through 1950, 1970, and 1980. The 1980 question was asked of a sample of the foreign-born population. In 1990, both native and foreign-born persons who received the long-form questionnaire were asked to respond to the citizenship question.

EDUCATIONAL ATTAINMENT

Data on educational attainment were derived from answers to questionnaire item 12, which was asked of a sample of persons. Data are tabulated as attainment for persons 15 years old and over. Persons are classified according to the highest level of school completed or the highest degree received. The question included instructions to report the level of the previous grade attended or the highest degree received for persons currently enrolled in school. The question included response categories which allowed persons to report completing the 12th grade without receiving a high school diploma, and which instructed respondents to report as "high school graduate(s)"—persons who received either a high school diploma or the equivalent, for example, passed the Test of General Educational Development (G.E.D.), and did not attend college. (On the Military Census Report questionnaire, the lowest response category was "Less than 9th grade.")

Instructions included in the 1990 respondent instruction guide, which was mailed with the census questionnaire, further specified that schooling completed in foreign or ungraded school systems should be reported as the equivalent level of schooling in the regular American system; that vocational certificates or diplomas from vocational, trade, or business schools or colleges were not to be reported unless they were

college level degrees; and that honorary degrees were not to be reported. The instructions gave "medicine, dentistry, chiropractic, optometry, osteopathic medicine, pharmacy, podiatry, veterinary medicine, law, and theology" as examples of professional school degrees, and specifically excluded "barber school, cosmetology, or other training for a specific trade" from the professional school category. The order in which they were listed suggested that doctorate degrees were "higher" than professional school degrees, which were "higher" than master's degrees.

Persons who did not report educational attainment were assigned the attainment of a person of the same age, race or Spanish origin, and sex who resided in the same or a nearby area. Persons who filled more than one circle were edited to the highest level or degree reported.

High School Graduate or Higher—Includes persons whose highest degree was a high school diploma or its equivalent, persons who attended college or professional school, and persons who received a college, university, or professional degree. Persons who reported completing the 12th grade but not receiving a diploma are not included.

Not Enrolled, Not High School Graduate—Includes persons of compulsory school attendance age or above who were not enrolled in school and were not high school graduates; these persons may be taken to be "high school dropouts." There is no restriction on when they "dropped out" of school, and they may have never attended high school.

In prior censuses, "Median school years completed" was used as a summary measure of educational attainment. In 1990, the median can only be calculated for groups of which less than half the members have attended college. "Percent high school graduate or higher" and "Percent bachelor's degree or higher" are summary measures which can be calculated from the present data and offer quite readily interpretable measures of differences between population subgroups. To make comparisons over time, "Percent high school graduate or higher" can be calculated and "Percent bachelor's degree or higher" can be approximated with data from previous censuses.

Comparability—From 1840 to 1930, the census measured educational attainment by means of a basic literacy question. In 1940, a single question was asked on highest grade of school completed. In the censuses of 1950 through 1980, a two-part question asking highest grade of school attended and whether that grade was finished was used to construct highest grade or year of school completed. For persons who have not attended college, the response categories in the 1990

educational attainment question should produce data which are comparable to data on highest grade completed from earlier censuses.

The response categories for persons who have attended college were modified from earlier censuses because there was some ambiguity in interpreting responses in terms of the number of years of college completed. For instance, it was not clear whether "completed the fourth year of college," "completed the senior year of college," and "college graduate" were synonymous. Research conducted shortly before the census suggests that these terms were more distinct in 1990 than in earlier decades, and this change may have threatened the ability to estimate the number of "college graduates" from the number of persons reported as having completed the fourth or a higher year of college. It was even more difficult to make inferences about post-baccalaureate degrees and "Associate" degrees from highest year of college completed. Thus, comparisons of post-secondary educational attainment in this and earlier censuses should be made with great caution.

In the 1960 and subsequent censuses, persons for whom educational attainment was not reported were assigned the same attainment level as a similar person whose residence was in the same or a nearby area. In the 1940 and 1950 censuses, persons for whom educational attainment was not reported were not allocated.

EMPLOYMENT STATUS

The data on employment status were derived from answers to questionnaire items 21, 25, and 26, which were asked of a sample of persons. The series of questions on employment status was asked of all persons 15 years old and over and was designed to identify, in this sequence: (1) persons who worked at any time during the reference week; (2) persons who did not work during the reference week but who had jobs or businesses from which they were temporarily absent (excluding layoff); (3) persons on layoff; and (4) persons who did not work during the reference week, but who were looking for work during the last four weeks and were available for work during the reference week. (For more information, see the discussion under "Reference Week.")

The employment status data shown in this and other 1990 census tabulations relate to persons 16 years old and over. Some tabulations showing employment status, however, include persons 15 years old. By definition, these persons are classified as "Not in Labor Force." In the 1940, 1950, and 1960 censuses, employment status data were presented for persons 14 years old and over. The change in the universe was made in 1970 to agree with the official measurement of the labor force as revised in January 1967 by the U.S. Department of Labor. The 1970 census was the last to show employment data for persons 14 and 15 years old.

Employed—All civilians 16 years old and over who were either (1) "at work"—those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a family business; or (2) were "with a job but not at work"—those who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons. Excluded from the employed are persons whose only activity consisted of work around the house or unpaid volunteer work for religious, charitable, and similar organizations; also excluded are persons on active duty in the United States Armed Forces.

Unemployed—All civilians 16 years old and over are classified as unemployed if they (1) were neither "at work" nor "with a job but not at work" during the reference week, and (2) were looking for work during the last 4 weeks, and (3) were available to accept a job. Also included as unemployed are civilians who did not work at all during the reference week and were waiting to be called back to a job from which they had been laid off. Examples of job seeking activities are:

- Registering at a public or private employment office
- Meeting with prospective employers
- Investigating possibilities for starting a professional practice or opening a business
- Placing or answering advertisements
- Writing letters of application
- Being on a union or professional register

Civilian Labor Force—Consists of persons classified as employed or unemployed in accordance with the criteria described above.

Experienced Unemployed—These are unemployed persons who have worked at any time in the past.

Experienced Civilian Labor Force—Consists of the employed and the experienced unemployed.

Labor Force—All persons classified in the civilian labor force plus members of the U.S. Armed Forces (persons on active duty with the United States Army, Air Force, Navy, Marine Corps, or Coast Guard).

Not in Labor Force—All persons 16 years old and over who are not classified as members of the labor force. This category consists mainly of students, housewives, retired workers, seasonal workers enumerated in an

off season who were not looking for work, institutionalized persons, and persons doing only incidental unpaid family work (less than 15 hours during the reference week).

Worker—This term appears in connection with several subjects: journey-to-work items, class of worker, weeks worked in 1989, and number of workers in family in 1989. Its meaning varies and, therefore, should be determined in each case by referring to the definition of the subject in which it appears.

Actual Hours Worked Last Week—All persons who reported working during the reference week were asked to report in questionnaire item 21b the number of hours that they worked. The statistics on hours worked pertain to the number of hours actually worked at all jobs, and do not necessarily reflect the number of hours typically or usually worked or the scheduled number of hours. The concept of "actual hours" differs from that of "usual hours" described below. The number of persons who worked only a small number of hours is probably understated since such persons sometimes consider themselves as not working. Respondents were asked to include overtime or extra hours worked, but to exclude lunch hours, sick leave, and vacation leave.

Limitation of the Data—The census may understate the number of employed persons because persons who have irregular, casual, or unstructured jobs sometimes report themselves as not working. The number of employed persons "at work" is probably overstated in the census (and conversely, the number of employed "with a job, but not at work" is understated) since some persons on vacation or sick leave erroneously reported themselves as working. This problem has no effect on the total number of employed persons. The reference week for the employment data is not the same for all persons. Since persons can change their employment status from one week to another, the lack of a uniform reference week may mean that the employment data do not reflect the reality of the employment situation of any given week. (For more information, see the discussion under "Reference Week.")

Comparability—The questionnaire items and employment status concepts for the 1990 census are essentially the same as those used in the 1980 and 1970 censuses. However, these concepts differ in many respects from those associated with the 1950 and 1960 censuses.

Since employment data from the census are obtained from respondents in households, they differ from statistics based on reports from individual business establishments, farm enterprises, and certain government programs. Persons employed at more than one job are counted only once in the census and are classified according to the job at which they worked the greatest

number of hours during the reference week. In statistics based on reports from business and farm establishments, persons who work for more than one establishment may be counted more than once. Moreover, some tabulations may exclude private household workers, unpaid family workers, and self-employed persons, but may include workers less than 16 years of age.

An additional difference in the data arises from the fact that persons who had a job but were not at work are included with the employed in the census statistics, whereas many of these persons are likely to be excluded from employment figures based on establishment payroll reports. Furthermore, the employment status data in census tabulations include persons on the basis of place of residence regardless of where they work, whereas establishment data report persons at their place of work regardless of where they live. This latter consideration is particularly significant when comparing data for workers who commute between areas.

Census data on actual hours worked during the reference week may differ from data from other sources. The census measures hours actually worked, whereas some surveys measure hours paid for by employers. Comparability of census actual hours worked data may also be affected by the nature of the reference week (see "Reference Week").

For several reasons, the unemployment figures of the Census Bureau are not comparable with published figures on unemployment compensation claims. For example, figures on unemployment compensation claims exclude persons who have exhausted their benefit rights, new workers who have not earned rights to unemployment insurance, and persons losing jobs not covered by unemployment insurance systems (including some workers in agriculture, domestic services, and religious organizations, and self-employed and unpaid family workers). In addition, the qualifications for drawing unemployment compensation differ from the definition of unemployment used by the Census Bureau. Persons working only a few hours during the week and persons with a job but not at work are sometimes eligible for unemployment compensation but are classified as "Employed" in the census. Differences in the geographical distribution of unemployment data arise because the place where claims are filed may not necessarily be the same as the place of residence of the unemployed worker.

The figures on employment status from the decennial census are generally comparable with similar data collected in the Current Population Survey. However, some difference may exist because of variations in enumeration and processing techniques.

FERTILITY

The data on fertility (also referred to as "children ever born") were derived from answers to questionnaire item 20, which was asked of a sample of women 15 years old

and over regardless of marital status. Stillbirths, stepchildren, and adopted children were excluded from the number of children ever born. Ever-married women were instructed to include all children born to them before and during their most recent marriage, children no longer living, and children away from home, as well as children who were still living in the home. Never-married women were instructed to include all children born to them.

Data are most frequently presented in terms of the aggregate number of children ever born to women in the specified category and in terms of the rate per 1,000 women. For purposes of calculating the aggregate, the open-ended response category, "12 or more" is assigned a value of 13.

Limitation of the Data—Although the data are assumed to be less complete for out-of-wedlock births than for births occurring within marriage, comparisons of 1980 census data on the fertility of single women with other census sources and administrative records indicate that no significant differences were found between different data sources; that is, 1980 census data on children ever born to single women were complete with no significant understatements of childbearing.

Comparability—The wording of the question on children ever born was the same in 1990 as in 1980. In 1970, however, the question on children ever born was asked of all ever-married women but only of never-married women who received self-administered questionnaires. Therefore, rates and numbers of children ever born to single women in 1970 may be understated. Data presented for children ever born to ever-married women are comparable for the 1990 census and all previous censuses containing this question.

GROUP QUARTERS

All persons not living in households are classified by the Census Bureau as living in group quarters. Two general categories of persons in group quarters are recognized: (1) institutionalized persons and (2) other persons in group quarters (also referred to as "noninstitutional group quarters").

Institutionalized Persons—Includes persons under formally authorized, supervised care or custody in institutions at the time of enumeration. Such persons are classified as "patients or inmates" of an institution regardless of the availability of nursing or medical care, the length of stay, or the number of persons in the institution. Generally, institutionalized persons are restricted to the institutional buildings and grounds (or must have passes or escorts to leave) and thus have limited interaction with the surrounding community. Also, they are generally under the care of trained staff who have responsibility for their safekeeping and supervision.

Type of Institution—The type of institution was determined as part of census enumeration activities. For institutions which specialize in only one specific type of service, all patients or inmates were given the same classification. For institutions which had multiple types of major services (usually general hospitals and Veterans' Administration hospitals), patients were classified according to selected types of wards. For example, in psychiatric wards of hospitals, patients were classified in "mental (psychiatric) hospitals"; in hospital wards for persons with chronic diseases, patients were classified in "hospitals for the chronically ill." Each patient or inmate was classified in only one type of institution. Institutions include the following types:

Correctional Institutions—Includes prisons, Federal detention centers, military stockades and jails, police lockups, halfway houses, local jails, and other confinement facilities, including work farms.

Prisons—Where persons convicted of crimes serve their sentences. In some census products, the prisons are classified by two types of control: (1) "Federal" (operated by the Bureau of Prisons of the Department of Justice) and (2) "State." Residents who are criminally insane were classified on the basis of where they resided at the time of enumeration: (1) in institutions (or hospital wards) operated by departments of correction or similar agencies; or (2) in institutions operated by departments of mental health or similar agencies.

Federal Detention Centers—Operated by the Immigration and Naturalization Service (INS) and the Bureau of Prisons. These facilities include detention centers used by the Park Police; Bureau of Indian Affairs Detention Centers; INS Centers, such as the INS Federal Alien Detention Facility; INS Processing Centers; and INS Contract Detention Centers used to detain aliens under exclusion or deportation proceedings, as well as those aliens who have not been placed into proceedings, such as custodial required departures; and INS Detention Centers operated within local jails, and State and Federal prisons.

Military Stockades, Jails—Operated by military police and used to hold persons awaiting trial or convicted of violating military laws.

Local Jails and Other Confinement Facilities—Includes facilities operated by counties and cities that primarily hold persons beyond arraignment, usually for more than 48 hours. Also included in this category are work farms used to hold persons awaiting trial or serving time on relatively short sentences and jails run by private businesses under contract for local governments (but *not* by State governments).

Police Lockups—Temporary-holding facilities operated by county and city police that hold persons for 48 hours or less only if they have not been formally charged in court.

Halfway Houses—Operated for correctional purposes and include probation and restitution centers, pre-release centers, and community-residential centers.

Other Types of Correctional Institutions—Privately operated correctional facilities and correctional facilities specifically for alcohol/drug abuse.

Nursing Homes—Comprises a heterogeneous group of places. The majority of patients are elderly, although persons who require nursing care because of chronic physical conditions may be found in these homes regardless of their age. Included in this category are skilled-nursing facilities, intermediate-care facilities, long-term care rooms in wards or buildings on the grounds of hospitals, or long-term care rooms/nursing wings in congregate housing facilities. Also included are nursing, convalescent, and rest homes, such as soldiers', sailors', veterans', and fraternal or religious homes for the aged, with or without nursing care. In some census products, nursing homes are classified by type of ownership as "Federal," "State," "Private not-for-profit," and "Private for profit."

Mental (Psychiatric) Hospitals—Includes hospitals or wards for the criminally insane not operated by a prison, and psychiatric wards of general hospitals and veterans' hospitals. Patients receive supervised medical/nursing care from formally-trained staff. In some census products, mental hospitals are classified by type of ownership as "Federal," "State or local," "Private," and "Ownership not known."

Hospitals for Chronically Ill—Includes hospitals for patients who require long-term care, including those in military hospitals and wards for the chronically ill located on military bases; or other hospitals or wards for the chronically ill, which include tuberculosis hospitals or wards, wards in general and Veterans' Administration hospitals for the chronically ill, neurological wards, hospices, wards for patients with Hansen's Disease (leprosy) and other incurable diseases, and other unspecified wards for the chronically ill. Patients who had no usual home elsewhere were enumerated as part of the institutional population in the wards of general and military hospitals. Most hospital patients are at the hospital temporarily and were enumerated at their usual place of residence. (For more information, see "Wards in General and Military Hospitals for Patients Who Have No Usual Home Elsewhere.")

Schools, Hospitals, or Wards for the Mentally Retarded—Includes those institutions such as wards in hospitals for the mentally retarded, and intermediate-care facilities for the mentally retarded that provide supervised medical/nursing care from formally-trained staff. In some census products, this category is classified by type of ownership as "Federal," "State or local," "Private," and "Ownership not known."

Schools, Hospitals, or Wards for the Physically Handicapped—Includes three types of institutions: institutions for the blind, those for the deaf, and orthopedic wards and institutions for the physically handicapped. Institutions for persons with speech problems are classified with "institutions for the deaf." The category "orthopedic wards and institutions for the physically handicapped" includes those institutions providing relatively long-term care to accident victims, and to persons with polio, cerebral palsy, and muscular dystrophy. In some census products, this category is classified by type of ownership as "Public," "Private," and "Ownership not known."

Hospitals, and Wards for Drug/Alcohol Abuse—Includes hospitals, and hospital wards in psychiatric and general hospitals. These facilities are equipped medically and designed for the diagnosis and treatment of medical or psychiatric illnesses associated with alcohol or drug abuse. Patients receive supervised medical care from formally-trained staff.

Wards in General and Military Hospitals for Patients Who Have No Usual Home Elsewhere—Includes maternity, neonatal, pediatric (including wards for boarder babies), military, and surgical wards of hospitals, and wards for persons with infectious diseases.

Juvenile Institutions—Includes homes, schools, and other institutions providing care for children (short- or long-term care). Juvenile institutions include the following types:

Homes for Abused, Dependent, and Neglected Children—Includes orphanages and other institutions which provide long-term care (usually more than 30 days) for children. This category is classified in some census products by type of ownership as "Public" and "Private."

Residential Treatment Centers—Includes those institutions which primarily serve children who, by clinical diagnosis, are moderately or seriously disturbed emotionally. Also, these institutions provide long-term treatment services, usually supervised or directed by a psychiatrist.

Training Schools for Juvenile Delinquents—Includes residential training schools or homes, and industrial schools, camps, or farms for juvenile delinquents.

Public Training Schools for Juvenile Delinquents—Usually operated by a State agency (for example, department of welfare, corrections, or a youth authority). Some are operated by county and city governments. These public training schools are specialized institutions serving delinquent children, generally between the ages of 10 and 17 years old, all of whom are committed by the courts.

Private Training Schools—Operated under private auspices. Some of the children they serve are committed by the courts as delinquents. Others are referred by parents or social agencies because of delinquent behavior. One difference between private and public training schools is that, by their administrative policy, private schools have control over their selection and intake.

Detention Centers—Includes institutions providing short-term care (usually 30 days or less) primarily for delinquent children pending disposition of their cases by a court. This category also covers diagnostic centers. In practice, such institutions may be caring for both delinquent and neglected children pending court disposition.

Other Persons in Group Quarters (also referred to as "noninstitutional group quarters")—Includes all persons who live in group quarters other than institutions. Persons who live in the following living quarters are classified as "other persons in group quarters" when there are 10 or more unrelated persons living in the unit; otherwise, these living quarters are classified as housing units.

Rooming Houses—Includes persons residing in rooming and boarding houses and living in quarters with 10 or more unrelated persons.

Group Homes—Includes "community-based homes" that provide care and supportive services. Such places include homes for the mentally ill, mentally retarded, and physically handicapped; drug/alcohol halfway houses; communes; and maternity homes for unwed mothers.

Homes for the Mentally Ill—Includes community-based homes that provide care primarily for the mentally ill. In some data products, this category is classified by type of ownership as "Federal," "State," "Private," and "Ownership not known." Homes which combine treatment of the physically handicapped with treatment of the mentally ill are counted as homes for the mentally ill.

Homes for the Mentally Retarded—Includes community-based homes that provide care primarily for the mentally retarded. Homes which combine treatment of the physically handicapped with treatment

of the mentally retarded are counted as homes for the mentally retarded. This category is classified by type of ownership in some census products, as "Federal," "State," "Private," or "Ownership not known."

Homes for the Physically Handicapped—Includes community-based homes for the blind, for the deaf, and other community-based homes for the physically handicapped. Persons with speech problems are classified with homes for the deaf. In some census products, this category is classified by type of ownership as "Public," "Private," or "Ownership not known."

Homes or Halfway Houses for Drug/Alcohol Abuse—Includes persons with no usual home elsewhere in places that provide community-based care and supportive services to persons suffering from a drug/alcohol addiction and to recovering alcoholics and drug abusers. Places providing community-based care for drug and alcohol abusers include group homes, detoxification centers, quarterway houses (residential treatment facilities that work closely with accredited hospitals), halfway houses, and recovery homes for ambulatory, mentally competent recovering alcoholics and drug abusers who may be re-entering the work force.

Maternity Homes for Unwed Mothers—Includes persons with no usual home elsewhere in places that provide domestic care for unwed mothers and their children. These homes may provide social services and post-natal care within the facility, or may make arrangements for women to receive such services in the community. Nursing services are usually available in the facility.

Other Group Homes—Includes persons with no usual home elsewhere in communes, foster care homes, and job corps centers with 10 or more unrelated persons. These types of places provide communal living quarters, generally for persons who have formed their own community in which they have common interests and often share or own property jointly.

Religious Group Quarters—Includes, primarily, group quarters for nuns teaching in parochial schools and for priests living in rectories. It also includes other convents and monasteries, except those associated with a general hospital or an institution.

College Quarters Off Campus—Includes privately-owned rooming and boarding houses off campus, if the place is reserved exclusively for occupancy by college students and if there are 10 or more unrelated persons. In census products, persons in this category are classified as living in a college dormitory.

Persons residing in certain other types of living arrangements are classified as living in "noninstitutional group quarters" regardless of the number of people sharing the unit. These include persons residing in the following types of group quarters:

College Dormitories—Includes college students in dormitories (provided the dormitory is restricted to students who do not have their families living with them), fraternity and sorority houses, and on-campus residential quarters used exclusively for those in religious orders who are attending college. Students in privately-owned rooming and boarding houses off campus are also included, if the place is reserved exclusively for occupancy by college-level students and if there are 10 or more unrelated persons.

Military Quarters—Includes military personnel living in barracks and dormitories on base, in transient quarters on base for temporary residents (both civilian and military), and on military ships. However, patients in military hospitals receiving treatment for chronic diseases or who had no usual home elsewhere, and persons being held in military stockades were included as part of the institutional population.

Agriculture Workers' Dormitories—Includes persons in migratory farm workers' camps on farms, bunkhouses for ranch hands, and other dormitories on farms, such as those on "tree farms."

Other Workers' Dormitories—Includes persons in logging camps, construction workers' camps, firehouse dormitories, job-training camps, energy enclaves (Alaska only), and nonfarm migratory workers' camps (for example, workers in mineral and mining camps).

Emergency Shelters for Homeless Persons (with sleeping facilities) and Visible in Street Locations—Includes persons enumerated during the "Shelter-and-Street-Night" operation primarily on March 20-21, 1990. Enumerators were instructed not to ask if a person was "homeless." If a person was at one of the locations below on March 20-21, the person was counted as described below. (For more information on the "Shelter-and-Street-Night" operation, see Appendix D, Collection and Processing Procedures.) This category is divided into four classifications:

Emergency Shelters for Homeless Persons (with sleeping facilities)—Includes persons who stayed overnight on March 20, 1990, in permanent and temporary emergency housing, missions, hotels/motels, and flophouses charging \$12 or less (excluding taxes) per night; Salvation Army shelters, hotels, and motels used *entirely* for homeless persons regardless of the nightly rate charged; rooms in hotels and motels used *partially* for the homeless;

and similar places known to have persons who have no usual home elsewhere staying overnight. If not shown separately, shelters and group homes that provide temporary sleeping facilities for runaway, neglected, and homeless children are included in this category in data products.

Shelters for Runaway, Neglected, and Homeless Children—Includes shelters/group homes which provide temporary sleeping facilities for juveniles.

Visible in Street Locations—Includes street blocks and open public locations designated before March 20, 1990, by city and community officials as places where the homeless congregate at night. All persons found at predesignated street sites from 2 a.m. to 4 a.m. and leaving abandoned or boarded-up buildings from 4 a.m. to 8 a.m. on March 21, 1990, were enumerated during "street" enumeration, except persons in uniform such as police and persons engaged in obvious money-making activities other than begging or panhandling. Enumerators were instructed not to ask if a person was "homeless."

This cannot be considered a complete count of all persons living on the streets because those who were so well hidden that local people did not know where to find them were likely to have been missed as were persons moving about or in places not identified by local officials. It is also possible that persons with homes could have been included in the count of "visible in street locations" if they were present when the enumerator did the enumeration of a particular block.

Predesignated street sites include street corners, parks, bridges, persons emerging from abandoned and boarded-up buildings, noncommercial campsites (tent cities), all-night movie theaters, all-night restaurants, emergency hospital waiting rooms, train stations, airports, bus depots, and subway stations.

Shelters for Abused Women (Shelters Against Domestic Violence or Family Crisis Centers)—Includes community-based homes or shelters that provide domiciliary care for women who have sought shelter from family violence and who may have been physically abused. Most shelters also provide care for children of abused women. These shelters may provide social services, meals, psychiatric treatment, and counseling. In some census products, "shelters for abused women" are included in the category "other noninstitutional group quarters."

Dormitories for Nurses and Interns in General and Military Hospitals—Includes group quarters for nurses and other staff members. It excludes patients.

Crews of Maritime Vessels—Includes officers, crew members, and passengers of maritime U.S. flag vessels. All ocean-going and Great Lakes ships are included.

Staff Residents of Institutions—Includes staff residing in group quarters on institutional grounds who provide formally-authorized, supervised care or custody for the institutionalized population.

Other Nonhousehold Living Situations—Includes persons with no usual home elsewhere enumerated during transient or "T-Night" enumeration at YMCA's, YWCA's, youth hostels, commercial and government-run campgrounds, campgrounds at racetracks, fairs, and carnivals, and similar transient sites.

Living Quarters for Victims of Natural Disasters—Includes living quarters for persons temporarily displaced by natural disasters.

Limitation of the Data—Two types of errors can occur in the classification of "types of group quarters":

1. *Misclassification of Group Quarters*—During the 1990 Special Place Prelist operation, the enumerator determined the type of group quarters associated with each special place in their assignment. The enumerator used the Alphabetical Group Quarters Code List and Index to the Alphabetical Group Quarters Code List to assign a two-digit code number followed by either an "I," for institutional, or an "N," for noninstitutional to each group quarters. In 1990, unacceptable group quarter codes were edited. (For more information on editing of unacceptable data, see Appendix C, Accuracy of the Data.)
2. *No Classification (unknowns)*—The imputation rate for type of institution was higher in 1980 (23.5 percent) than in 1970 (3.3 percent). Improvements were made to the 1990 Alphabetical Group Quarters Code List; that is, the inclusion of more group quarters categories and an "Index to the Alphabetical Group Quarters Code List." (For more information on the allocation rates for Type of Institution, see the allocation rates in 1990 CP-1, *General Population Characteristics*.)

In previous censuses, allocation rates for demographic characteristics (such as age, sex, race, and marital status) of the institutional population were similar to those for the total population. The allocation rates for sample characteristics such as school enrollment, highest grade completed, income, and veteran status for the institutional and noninstitutional group quarters population have been substantially higher than the population in households at least as far back as the 1960 census. The data, however, have historically presented a reasonable picture of the institutional and noninstitutional group quarters population.

Shelter and Street Night (S-Night)—For the 1990 census “Shelter-and-Street-Night” operation, persons well hidden, moving about, or in locations enumerators did not visit were likely to be missed. The number of people missed will never be known; thus, the 1990 census cannot be considered to include a definitive count of America’s total homeless population. It does, however, give an idea of relative differences among areas of the country. Other components were counted as part of regular census procedures.

The count of persons in shelters and visible on the street could have been affected by many factors. How much the factors affected the count can never be answered definitively, but some elements include:

1. How well enumerators were trained and how well they followed procedures.
2. How well the list of shelter and street locations given to the Census Bureau by the local government reflected the actual places that homeless persons stay at night.
3. Cities were encouraged to open temporary shelters for census night, and many did that and actively encouraged people to enter the shelters. Thus, people who may have been on the street otherwise were in shelters the night of March 20, so that the ratio of shelter-to-street population could be different than usual.
4. The weather, which was unusually cold in some parts of the country, could affect how likely people were to seek emergency shelter or to be more hidden than usual if they stayed outdoors.
5. The media occasionally interfered with the ability to do the count.
6. How homeless people perceived the census and whether they wanted to be counted or feared the census and hid from it.

The Census Bureau conducted two assessments of Shelter and Street Night: (1) the quality of the lists of shelters used for the Shelter-and-Street-Night operation, and (2) how well procedures were followed by census-takers for the street count in parts of five cities (Chicago, Los Angeles, New Orleans, New York, and Phoenix). Information about these two assessments is available from the Chief, Center for Survey Methods Research, Bureau of the Census, Washington, DC 20233.

Comparability—For the 1990 census, the definition of institutionalized persons was revised so that the definition of “care” only includes persons under organized medical or formally-authorized, supervised care or custody. As a result of this change to the institutional definition, maternity homes are classified as noninstitutional rather than institutional group quarters as in

previous censuses. The following types of other group quarters are classified as institutional rather than noninstitutional group quarters: “halfway houses (operated for correctional purposes)” and “wards in general and military hospitals for patients who have no usual home elsewhere,” which includes maternity, neonatal, pediatric, military, and surgical wards of hospitals, other-purpose wards of hospitals, and wards for infectious diseases. These changes should not significantly affect the comparability of data with earlier censuses because of the relatively small number of persons involved.

As in 1980, 10 or more unrelated persons living together were classified as living in noninstitutional group quarters. In 1970, the criteria was six or more unrelated persons.

Several changes also have occurred in the identification of specific types of group quarters. For the first time, the 1990 census identifies separately the following types of correctional institutions: persons in halfway houses (operated for correctional purposes), military stockades and jails, and police lockups. In 1990, tuberculosis hospitals or wards are included with hospitals for the chronically ill; in 1980, they were shown separately. For 1990, the noninstitutional group quarters category, “Group homes” is further classified as: group homes for drug/alcohol abuse; maternity homes (for unwed mothers), group homes for the mentally ill, group homes for the mentally retarded, and group homes for the physically handicapped. Persons living in communes, foster-care homes, and job corps centers are classified with “Other group homes” only if 10 or more unrelated persons share the unit; otherwise, they are classified as housing units.

In 1990, workers’ dormitories were classified as group quarters regardless of the number of persons sharing the dorm. In 1980, 10 or more unrelated persons had to share the dorm for it to be classified as a group quarters. In 1960, data on persons in military barracks were shown only for men. In subsequent censuses, they include both men and women.

In 1990 census data products, the phrase “inmates of institutions” was changed to “institutionalized persons.” Also, persons living in noninstitutional group quarters were referred to as “other persons in group quarters,” and the phrase “staff residents” was used for staff living in institutions.

In 1990, there are additional institutional categories and noninstitutional group quarters categories compared with the 1980 census. The institutional categories added include “hospitals and wards for drug/alcohol abuse” and “military hospitals for the chronically ill.” The noninstitutional group quarters categories added include emergency shelters for homeless persons; shelters for runaway, neglected, and homeless children; shelters for abused women; and visible-in-street locations. Each of these noninstitutional group quarters categories was enumerated on March 20-21, 1990,

during the "Shelter-and-Street-Night" operation. (For more information on the "Shelter-and-Street-Night" operation, see Appendix D, Collection and Processing Procedures.)

HISPANIC ORIGIN

The data on Spanish/Hispanic origin were derived from answers to questionnaire item 7, which was asked of all persons. Persons of Hispanic origin are those who classified themselves in one of the specific Hispanic origin categories listed on the questionnaire—"Mexican," "Puerto Rican," or "Cuban"—as well as those who indicated that they were of "other Spanish/Hispanic" origin. Persons of "Other Spanish/Hispanic" origin are those whose origins are from Spain, the Spanish-speaking countries of Central or South America, or the Dominican Republic, or they are persons of Hispanic origin identifying themselves generally as Spanish, Spanish-American, Hispanic, Hispano, Latino, and so on. Write-in responses to the "other Spanish/Hispanic" category were coded only for sample data.

Origin can be viewed as the ancestry, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. Persons of Hispanic origin may be of any race.

Some tabulations are shown by the Hispanic origin of the householder. In all cases where households, families, or occupied housing units are classified by Hispanic origin, the Hispanic origin of the householder is used. (See the discussion of householder under "Household Type and Relationship.")

During direct interviews conducted by enumerators, if a person could not provide a single origin response, he or she was asked to select, based on self-identification, the group which best described his or her origin or descent. If a person could not provide a single group, the origin of the person's mother was used. If a single group could not be provided for the person's mother, the first origin reported by the person was used.

If any household member failed to respond to the Spanish/Hispanic origin question, a response was assigned by the computer according to the reported entries of other household members by using specific rules of precedence of household relationship. In the processing of sample questionnaires, responses to other questions on the questionnaire, such as ancestry and place of birth, were used to assign an origin before any reference was made to the origin reported by other household members. If an origin was not entered for any household member, an origin was assigned from another household according to the race of the householder. This procedure is a variation of the general imputation process described in Appendix C, Accuracy of the Data.

Comparability—There may be differences between the total Hispanic origin population based on 100-percent tabulations and sample tabulations. Such differences

are the result of sampling variability, nonsampling error, and more extensive edit procedures for the Spanish/Hispanic origin item on the sample questionnaires. (For more information on sampling variability and nonsampling error, see Appendix C, Accuracy of the Data.)

The 1990 data on Hispanic origin are generally comparable with those for the 1980 census. However, there are some differences in the format of the Hispanic origin question between the two censuses. For 1990, the word "descent" was deleted from the 1980 wording. In addition, the term "Mexican-Amer." used in 1980 was shortened further to "Mexican-Am." to reduce misreporting (of "American") in this category detected in the 1980 census. Finally, the 1990 question allowed those who reported as "other Spanish/Hispanic" to write in their specific Hispanic origin group.

Misreporting in the "Mexican-Amer." category of the 1980 census item on Spanish/Hispanic origin may affect the comparability of 1980 and 1990 census data for persons of Hispanic origin for certain areas of the country. An evaluation of the 1980 census item on Spanish/Hispanic origin indicated that there was misreporting in the Mexican origin category by White and Black persons in certain areas. The study results showed evidence that the misreporting occurred in the South (excluding Texas), the Northeast (excluding the New York City area), and a few States in the Midwest Region. Also, results based on available data suggest that the impact of possible misreporting of Mexican origin in the 1980 census was severe in those portions of the above-mentioned regions where the Hispanic origin population was generally sparse. However, national 1980 census data on the Mexican origin population or total Hispanic origin population at the national level was not seriously affected by the reporting problem. (For a more detailed discussion of the evaluation of the 1980 census Spanish/Hispanic origin item, see the 1980 census Supplementary Reports.)

The 1990 and 1980 census data on the Hispanic population are not directly comparable with 1970 Spanish origin data because of a number of factors: (1) overall improvements in the 1980 and 1990 censuses, (2) better coverage of the population, (3) improved question designs, and (4) an effective public relations campaign by the Census Bureau with the assistance of national and community ethnic groups.

Specific changes in question design between the 1980 and 1970 censuses included the placement of the category "No, not Spanish/Hispanic" as the first category in that question. (The corresponding category appeared last in the 1970 question.) Also, the 1970 category "Central or South American" was deleted because in 1970 some respondents misinterpreted the category; furthermore, the designations "Mexican-American" and "Chicano" were added to the Spanish/Hispanic origin question in 1980. In the 1970 census, the question on Spanish origin was asked of only a 5-percent sample of the population.

HOUSEHOLD TYPE AND RELATIONSHIP

Household

A household includes all the persons who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from the outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements.

In 100-percent tabulations, the count of households or householders always equals the count of occupied housing units. In sample tabulations, the numbers may differ as a result of the weighting process.

Persons Per Household—A measure obtained by dividing the number of persons in households by the number of households (or householders). In cases where persons in households are cross-classified by race or Hispanic origin, persons in the household are classified by the race or Hispanic origin of the householder rather than the race or Hispanic origin of each individual.

Relationship to Householder

Householder—The data on relationship to householder were derived from answers to questionnaire item 2, which was asked of all persons in housing units. One person in each household is designated as the householder. In most cases, this is the person, or one of the persons, in whose name the home is owned, being bought, or rented and who is listed in column 1 of the census questionnaire. If there is no such person in the household, any adult household member 15 years old and over could be designated as the householder.

Households are classified by type according to the sex of the householder and the presence of relatives. Two types of householders are distinguished: a family householder and a nonfamily householder. A family householder is a householder living with one or more persons related to him or her by birth, marriage, or adoption. The householder and all persons in the household related to him or her are family members. A nonfamily householder is a householder living alone or with nonrelatives only.

Spouse—Includes a person married to and living with a householder. This category includes persons in formal marriages, as well as persons in common-law marriages.

The number of spouses is equal to the number of "married-couple families" or "married-couple households" in 100-percent tabulations. The number of spouses, however, is generally less than half of the number of "married persons with spouse present" in sample tabulations, since more than one married couple can live in a household, but only spouses of householders are specifically identified as "spouse." For sample tabulations, the number of "married persons with spouse present" includes married-couple subfamilies and married-couple families.

Child—Includes a son or daughter by birth, a stepchild, or adopted child of the householder, regardless of the child's age or marital status. The category excludes sons-in-law, daughters-in-law, and foster children.

Natural-Born or Adopted Son/Daughter—A son or daughter of the householder by birth, regardless of the age of the child. Also, this category includes sons or daughters of the householder by legal adoption, regardless of the age of the child. If the stepson/stepdaughter of the householder has been legally adopted by the householder, the child is still classified as a stepchild.

Stepson/Stepdaughter—A son or daughter of the householder through marriage but not by birth, regardless of the age of the child. If the stepson/stepdaughter of the householder has been legally adopted by the householder, the child is still classified as a stepchild.

Own Child—A never-married child under 18 years who is a son or daughter by birth, a stepchild, or an adopted child of the householder. In certain tabulations, own children are further classified as living with two parents or with one parent only. Own children of the householder living with two parents are by definition found only in married-couple families.

In a subfamily, an "own child" is a never-married child under 18 years of age who is a son, daughter, stepchild, or an adopted child of a mother in a mother-child subfamily, a father in a father-child subfamily, or either spouse in a married-couple subfamily.

"Related children" in a family include own children and all other persons under 18 years of age in the household, regardless of marital status, who are related to the householder, except the spouse of the householder. Foster children are not included since they are not related to the householder.

Other Relatives—In tabulations, includes any household member related to the householder by birth, marriage, or adoption, but not included specifically in another relationship category. In certain detailed tabulations, the following categories may be shown:

Grandchild—The grandson or granddaughter of the householder.

Brother/Sister—The brother or sister of the householder, including stepbrothers, stepsisters, and brothers and sisters by adoption. Brothers-in-law and sisters-in-law are included in the "Other relative" category on the questionnaire.

Parent—The father or mother of the householder, including a stepparent or adoptive parent. Fathers-in-law and mothers-in-law are included in the "Other relative" category on the questionnaire.

Other Relatives—Anyone not listed in a reported category above who is related to the householder by birth, marriage, or adoption (brother-in-law, grandparent, nephew, aunt, mother-in-law, daughter-in-law, cousin, and so forth).

Nonrelatives—Includes any household member, including foster children not related to the householder by birth, marriage, or adoption. The following categories may be presented in more detailed tabulations:

Roomer, Boarder, or Foster Child—Roomer, boarder, lodger, and foster children or foster adults of the householder.

Housemate or Roommate—A person who is not related to the householder and who shares living quarters primarily in order to share expenses.

Unmarried Partner—A person who is not related to the householder, who shares living quarters, and who has a close personal relationship with the householder.

Other Nonrelatives—A person who is not related by birth, marriage, or adoption to the householder and who is not described by the categories given above.

When relationship is not reported for an individual, it is imputed according to the responses for age, sex, and marital status for that person while maintaining consistency with responses for other individuals in the household. (For more information on imputation, see Appendix C, Accuracy of the Data.)

Unrelated Individual

An unrelated individual is: (1) a householder living alone or with nonrelatives only, (2) a household member who is not related to the householder, or (3) a person living in group quarters who is not an inmate of an institution.

Family Type

A family consists of a householder and one or more other persons living in the same household who are related to the householder by birth, marriage, or adoption. All persons in a household who are related to the householder are regarded as members of his or her family. A household can contain only one family for purposes of census tabulations. Not all households contain families since a household may comprise a group of unrelated persons or one person living alone.

Families are classified by type as either a "married-couple family" or "other family" according to the sex of the householder and the presence of relatives. The data on family type are based on answers to questions on sex and relationship which were asked on a 100-percent basis.

Married-Couple Family—A family in which the householder and his or her spouse are enumerated as members of the same household.

Other Family:

Male Householder, No Wife Present—A family with a male householder and no spouse of householder present.

Female Householder, No Husband Present—A family with a female householder and no spouse of householder present.

Persons Per Family—A measure obtained by dividing the number of persons in families by the total number of families (or family householders). In cases where the measure, "persons in family" or "persons per family" are cross-tabulated by race or Hispanic origin, the race or Hispanic origin refers to the householder rather than the race or Hispanic origin of each individual.

Subfamily

A subfamily is a married couple (husband and wife enumerated as members of the same household) with or without never-married children under 18 years old, or one parent with one or more never-married children under 18 years old, living in a household and related to, but not including, either the householder or the householder's spouse. The number of subfamilies is not included in the count of families, since subfamily members are counted as part of the householder's family.

Subfamilies are defined during processing of sample data. In selected tabulations, subfamilies are further classified by type: married-couple subfamilies, with or without own children; mother-child subfamilies; and father-child subfamilies.

Lone parents include people maintaining either one-parent families or one-parent subfamilies. Married couples include husbands and wives in both married-couple families and married-couple subfamilies.

Unmarried-Partner Household

An unmarried-partner household is a household other than a "married-couple household" that includes a householder and an "unmarried partner." An "unmarried partner" can be of the same sex or of the opposite sex of the householder. An "unmarried partner" in an "unmarried-partner household" is an adult who is unrelated to the householder, but shares living quarters and has a close personal relationship with the householder.

Unmarried-Couple Household

An unmarried-couple household is composed of two unrelated adults of the opposite sex (one of whom is the householder) who share a housing unit with or without the presence of children under 15 years old.

Foster Children

Foster children are nonrelatives of the householder and are included in the category, "Roomer, boarder, or foster child" on the questionnaire. Foster children are identified as persons under 18 years old and living in households that have no nonrelatives 18 years old and over (who might be parents of the nonrelatives under 18 years old).

Stepfamily

A stepfamily is a "married-couple family" with at least one stepchild of the householder present, where the householder is the husband.

Comparability—The 1990 definition of a household is the same as that used in 1980. The 1980 relationship category "Son/daughter" has been replaced by two categories, "Natural-born or adopted son/daughter" and "Stepson/stepdaughter." "Grandchild" has been added as a separate category. The 1980 nonrelative categories: "Roomer, boarder" and "Partner, roommate" have been replaced by the categories "Roomer, boarder, or foster child," "Housemate, roommate," and "Unmarried partner." The 1980 nonrelative category "Paid employee" has been dropped.

INCOME IN 1989

The data on income in 1989 were derived from answers to questionnaire items 32 and 33. Information on money income received in the calendar year 1989 was requested from persons 15 years old and over.

"Total income" is the algebraic sum of the amounts reported separately for wage or salary income; net nonfarm self-employment income; net farm self-employment income; interest, dividend, or net rental or royalty income; Social Security or railroad retirement income; public assistance or welfare income; retirement or disability income; and all other income. "Earnings" is defined as the algebraic sum of wage or salary income and net income from farm and nonfarm self-employment. "Earnings" represent the amount of income received regularly before deductions for personal income taxes, Social Security, bond purchases, union dues, medicare deductions, etc.

Receipts from the following sources are not included as income: money received from the sale of property (unless the recipient was engaged in the business of selling such property); the value of income "in kind" from food stamps, public housing subsidies, medical care, employer contributions for persons, etc.; withdrawal of bank deposits; money borrowed; tax refunds; exchange of money between relatives living in the same household; gifts and lump-sum inheritances, insurance payments, and other types of lump-sum receipts.

Income Type in 1989

The eight types of income reported in the census are defined as follows:

1. *Wage or Salary Income*—Includes total money earnings received for work performed as an employee during the calendar year 1989. It includes wages, salary, Armed Forces pay, commissions, tips, piece-rate payments, and cash bonuses earned before deductions were made for taxes, bonds, pensions, union dues, etc.
2. *Nonfarm Self-Employment Income*—Includes net money income (gross receipts minus expenses) from one's own business, professional enterprise, or partnership. Gross receipts include the value of all goods sold and services rendered. Expenses includes costs of goods purchased, rent, heat, light, power, depreciation charges, wages and salaries paid, business taxes (not personal income taxes), etc.
3. *Farm Self-Employment Income*—Includes net money income (gross receipts minus operating expenses) from the operation of a farm by a person on his or her own account, as an owner, renter, or sharecropper. Gross receipts include the value of all products sold, government farm programs, money received from the rental of farm equipment to others, and incidental receipts from the sale of wood, sand, gravel, etc. Operating expenses include cost of feed, fertilizer, seed, and other farming supplies, cash wages paid to farmhands, depreciation charges, cash rent, interest on farm mortgages, farm building

repairs, farm taxes (not State and Federal personal income taxes), etc. The value of fuel, food, or other farm products used for family living is not included as part of net income.

4. **Interest, Dividend, or Net Rental Income**—Includes interest on savings or bonds, dividends from stock holdings or membership in associations, net income from rental of property to others and receipts from boarders or lodgers, net royalties, and periodic payments from an estate or trust fund.
5. **Social Security Income**—Includes Social Security pensions and survivors benefits and permanent disability insurance payments made by the Social Security Administration prior to deductions for medical insurance, and railroad retirement insurance checks from the U.S. Government. Medicare reimbursements are not included.
6. **Public Assistance Income**—Includes: (1) supplementary security income payments made by Federal or State welfare agencies to low income persons who are aged (65 years old or over), blind, or disabled; (2) aid to families with dependent children, and (3) general assistance. Separate payments received for hospital or other medical care (vendor payments) are excluded from this item.
7. **Retirement or Disability Income**—Includes: (1) retirement pensions and survivor benefits from a former employer, labor union, or Federal, State, county, or other governmental agency; (2) disability income from sources such as worker's compensation; companies or unions; Federal, State, or local government; and the U.S. military; (3) periodic receipts from annuities and insurance; and (4) regular income from IRA and KEOGH plans.
8. **All Other Income**—Includes unemployment compensation, Veterans Administration (VA) payments, alimony and child support, contributions received periodically from persons not living in the household, military family allotments, net gambling winnings, and other kinds of periodic income other than earnings.

Income of Households—Includes the income of the householder and all other persons 15 years old and over in the household, whether related to the householder or not. Because many households consist of only one person, average household income is usually less than average family income.

Income of Families and Persons—In compiling statistics on family income, the incomes of all members 15 years old and over in each family are summed and treated as a single amount. However, for persons 15 years old and over, the total amounts of their own

incomes are used. Although the income statistics covered the calendar year 1989, the characteristics of persons and the composition of families refer to the time of enumeration (April 1990). Thus, the income of the family does not include amounts received by persons who were members of the family during all or part of the calendar year 1989 if these persons no longer resided with the family at the time of enumeration. Yet, family income amounts reported by related persons who did not reside with the family during 1989 but who were members of the family at the time of enumeration are included. However, the composition of most families was the same during 1989 as in April 1990.

Median Income—The median divides the income distribution into two equal parts, one having incomes above the median and the other having incomes below the median. For households and families, the median income is based on the distribution of the total number of units including those with no income. The median for persons is based on persons with income. The median income values for all households, families, and persons are computed on the basis of more detailed income intervals than shown in most tabulations. Median household or family income figures of \$50,000 or less are calculated using linear interpolation. For persons, corresponding median values of \$40,000 or less are also computed using linear interpolation. All other median income amounts are derived through Pareto Interpolation. (For more information on medians and interpolation, see the discussion under "Derived Measures.")

Mean Income—This is the amount obtained by dividing the total income of a particular statistical universe by the number of units in that universe. Thus, mean household income is obtained by dividing total household income by the total number of households. For the various types of income the means are based on households having those types of income. "Per capita income" is the mean income computed for every man, woman, and child in a particular group. It is derived by dividing the total income of a particular group by the total population in that group.

Care should be exercised in using and interpreting mean income values for small subgroups of the population. Because the mean is influenced strongly by extreme values in the distribution, it is especially susceptible to the effects of sampling variability, misreporting, and processing errors. The median, which is not affected by extreme values, is, therefore, a better measure than the mean when the population base is small. The mean, nevertheless, is shown in some data products for most small subgroups because, when weighted according to the number of cases, the means can be added to obtained summary measures for areas and groups other than those shown in census tabulations.

Limitation of the Data—Since questionnaire entries for income frequently are based on memory and not on records, many persons tended to forget minor or irregular sources of income and, therefore, underreport their income. Underreporting tends to be more pronounced for income sources that are not derived from earnings, such as Social Security, public assistance, or from interest, dividends, and net rental income.

There are errors of reporting due to the misunderstanding of the income questions such as reporting gross rather than net dollar amounts for the two questions on net self-employment income, which resulted in an overstatement of these items. Another common error is the reporting of identical dollar amounts in two of the eight type of income items where a respondent with only one source of income assumed that the second amount should be entered to represent total income. Such instances of overreporting had an impact on the level of mean nonfarm or farm self-employment income and mean total income published for the various geographical subdivisions of the State.

Extensive computer editing procedures were instituted in the data processing operation to reduce some of these reporting errors and to improve the accuracy of the income data. These procedures corrected various reporting deficiencies and improved the consistency of reported income items associated with work experience and information on occupation and class of worker. For example, if persons reported they were self-employed on their own farm, not incorporated, but had reported wage and salary earnings only, the latter amount was shifted to net farm self-employment income. Also, if any respondent reported total income only, the amount was generally assigned to one of the type of income items according to responses to the work experience and class-of-worker questions. Another type of problem involved nonreporting of income data. Where income information was not reported, procedures were devised to impute appropriate values with either no income or positive or negative dollar amounts for the missing entries. (For more information on imputation, see Appendix C, Accuracy of the Data.)

In income tabulations for households and families, the lowest income group (e.g., less than \$5,000) includes units that were classified as having no 1989 income. Many of these were living on income "in kind," savings, or gifts, were newly created families, or families in which the sole breadwinner had recently died or left the household. However, many of the households and families who reported no income probably had some money income which was not recorded in the census.

The income data presented in the tabulations covers money income only. The fact that many farm families receive an important part of their income in the form of "free" housing and goods produced and consumed on the farm rather than in money should be taken into consideration in comparing the income of farm and nonfarm residents. Nonmoney income such as business

expense accounts, use of business transportation and facilities, or partial compensation by business for medical and educational expenses was also received by some nonfarm residents. Many low income families also receive income "in kind" from public welfare programs. In comparing income data for 1989 with earlier years, it should be noted that an increase or decrease in money income does not necessarily represent a comparable change in real income, unless adjustments for changes in prices are made.

Comparability—The income data collected in the 1980 and 1970 censuses are similar to the 1990 census data, but there are variations in the detail of the questions. In 1980, income information for 1979 was collected from persons in approximately 19 percent of all housing units and group quarters. Each person was required to report:

- Wage or salary income
- Net nonfarm self-employment income
- Net farm self-employment income
- Interest, dividend, or net rental or royalty income
- Social Security income
- Public assistance income
- Income from all other sources

Between the 1980 and 1990 censuses, there were minor differences in the processing of the data. In both censuses, all persons with missing values in one or more of the detailed type of income items *and* total income were designated as allocated. Each missing entry was imputed either as a "no" or as a dollar amount. If total income was reported *and* one or more of the type of income fields was not answered, then the entry in total income generally was assigned to one of the income types according to the socioeconomic characteristics of the income recipient. This person was designated as unallocated.

In 1980 and 1990, all nonrespondents with income not reported (whether heads of households or other persons) were assigned the reported income of persons with similar characteristics. (For more information on imputation, see Appendix C, "Accuracy of the Data.")

There was a difference in the method of computer derivation of aggregate income from individual amounts between the two census processing operations. In the 1980 census, income amounts less than \$100,000 were coded in tens of dollars, and amounts of \$100,000 or more were coded in thousands of dollars; \$5 was added to each amount coded in tens of dollars and \$500 to each amount coded in thousands of dollars. Entries of \$999,000 or more were treated as \$999,500 and losses of \$9,999 or more were treated as minus \$9,999. In the 1990 census, income amounts less than \$999,999 were

keyed in dollars. Amounts of \$999,999 or more were treated as \$999,999 and losses of \$9,999 or more were treated as minus \$9,999 in all of the computer derivations of aggregate income.

In 1970, information on income in 1969 was obtained from all members in every fifth housing unit and small group quarters (less than 15 persons) and every fifth person in all other group quarters. Each person was required to report:

- Wage or salary income
- Net nonfarm self-employment income
- Net farm self-employment income
- Social Security or Railroad Retirement
- Public assistance or welfare payments
- Income from all other sources

If a person reported a dollar amount in wage or salary, net nonfarm self-employment income, or net farm self-employment income, the person was considered as unallocated only if no further dollar amounts were imputed for any additional missing entries.

In 1960, data on income were obtained from all members in every fourth housing unit and from every fourth person 14 years old and over living in group quarters. Each person was required to report wage or salary income, net self-employment income, and income other than earnings received in 1959. An assumption was made in the editing process that no other type of income was received by a person who reported the receipt of either wage and salary income or self-employment but who had failed to report the receipt of other money income.

For several reasons, the income data shown in census tabulations are not directly comparable with those that may be obtained from statistical summaries of income tax returns. Income, as defined for Federal tax purposes, differs somewhat from the Census Bureau concept. Moreover, the coverage of income tax statistics is different because of the exemptions of persons having small amounts of income and the inclusion of net capital gains in tax returns. Furthermore, members of some families file separate returns and others file joint returns; consequently, the income reporting unit is not consistently either a family or a person.

The earnings data shown in census tabulations are not directly comparable with earnings records of the Social Security Administration. The earnings record data for 1989 excluded the earnings of most civilian government employees, some employees of nonprofit organizations, workers covered by the Railroad Retirement Act, and persons not covered by the program because of insufficient earnings. Furthermore, earnings received from any one employer in excess of \$48,000 in 1989 are not covered by earnings records. Finally, because census data are obtained from household

questionnaires, they may differ from Social Security Administration earnings record data, which are based upon employers' reports and the Federal income tax returns of self-employed persons.

The Bureau of Economic Analysis (BEA) of the Department of Commerce publishes annual data on aggregate and per-capita personal income received by the population for States, metropolitan areas, and selected counties. Aggregate income estimates based on the income statistics shown in census products usually would be less than those shown in the BEA income series for several reasons. The Census Bureau data are obtained directly from households, whereas the BEA income series is estimated largely on the basis of data from administrative records of business and governmental sources. Moreover, the definitions of income are different. The BEA income series includes some items not included in the income data shown in census publications, such as income "in kind," income received by nonprofit institutions, the value of services of banks and other financial intermediaries rendered to persons without the assessment of specific charges, Medicare payments, and the income of persons who died or emigrated prior to April 1, 1990. On the other hand, the census income data include contributions for support received from persons not residing in the same household and employer contributions for social insurance.

INDUSTRY, OCCUPATION, AND CLASS OF WORKER

The data on industry, occupation, and class of worker were derived from answers to questionnaire items 28, 29, and 30 respectively. These questions were asked of a sample of persons. Information on industry relates to the kind of business conducted by a person's employing organization; occupation describes the kind of work the person does on the job.

For employed persons, the data refer to the person's job during the reference week. For those who worked at two or more jobs, the data refer to the job at which the person worked the greatest number of hours. For unemployed persons, the data refer to their last job. The industry and occupation statistics are derived from the detailed classification systems developed for the 1990 census as described below. The *Classified Index of Industries and Occupations* provided additional information on the industry and occupation classification systems.

Respondents provided the data for the tabulations by writing on the questionnaires descriptions of their industry and occupation. These descriptions were keyed and passed through automated coding software which assigned a portion of the written entries to categories in the classification system. The automated system assigned codes to 59 percent of the industry entries and 38 percent of the occupation entries.

Those cases not coded by the computer were referred to clerical staff in the Census Bureau's Kansas City processing office for coding. The clerical staff converted the written questionnaire descriptions to codes by comparing these descriptions to entries in the *Alphabetical Index of Industries and Occupations*. For the industry code, these coders also referred to an Employer Name List (formerly called Company Name List). This list, prepared from the Standard Statistical Establishment List developed by the Census Bureau for the economic censuses and surveys, contained the names of business establishments and their Standard Industrial Classification (SIC) codes converted to population census equivalents. This list facilitated coding and maintained industrial classification comparability.

Industry

The industry classification system developed for the 1990 census consists of 235 categories for employed persons, classified into 13 major industry groups. Since 1940, the industrial classification has been based on the Standard Industrial Classification Manual (SIC). The 1990 census classification was developed from the 1987 SIC published by the Office of Management and Budget Executive Office of the President.

The SIC was designed primarily to classify establishments by the type of industrial activity in which they were engaged. However, census data, which were collected from households, differ in detail and nature from those obtained from establishment surveys. Therefore, the census classification systems, while defined in SIC terms, cannot reflect the full detail in all categories. There are several levels of industrial classification found in census products. For example, the 1990 CP-2, *Social and Economic Characteristics* report includes 41 unique industrial categories, while the 1990 Summary Tape File 4 (STF 4) presents 72 categories.

Occupation

The occupational classification system developed for the 1990 census consists of 500 specific occupational categories for employed persons arranged into 6 summary and 13 major occupational groups. This classification was developed to be consistent with the Standard Occupational Classification (SOC) Manual: 1980, published by the Office of Federal Statistical Policy and Standards, U.S. Department of Commerce. Tabulations with occupation as the primary characteristic present several levels of occupational detail. The most detailed tabulations are shown in a special 1990 subject report and tape files on occupation. These products contain all 500 occupational categories plus industry or class of worker subgroupings of occupational categories.

Some occupation groups are related closely to certain industries. Operators of transportation equipment, farm operators and workers, and private household

workers account for major portions of their respective industries of transportation, agriculture, and private households. However, the industry categories include persons in other occupations. For example, persons employed in agriculture include truck drivers and bookkeepers; persons employed in the transportation industry include mechanics, freight handlers, and payroll clerks; and persons employed in the private household industry include occupations such as chauffeur, gardener, and secretary.

Class of Worker

The data on class of worker were derived from answers to questionnaire item 30. The information on class of worker refers to the same job as a respondent's industry and occupation and categorizes persons according to the type of ownership of the employing organization. The class of worker categories are defined as follows:

Private Wage and Salary Workers—Includes persons who worked for wages, salary, commission, tips, pay-in-kind, or piece rates for a private for profit employer or a private not-for-profit, tax-exempt or charitable organization. Self-employed persons whose business was incorporated are included with private wage and salary workers because they are paid employees of their own companies. Some tabulations present data separately for these subcategories: "For profit," "Not for profit," and "Own business incorporated."

Employees of foreign governments, the United Nations, or other formal international organizations were classified as "Private-not-for-profit."

Government Workers—Includes persons who were employees of any local, State, or Federal governmental unit, regardless of the activity of the particular agency. For some tabulations, the data were presented separately for the three levels of government.

Self-Employed Workers—Includes persons who worked for profit or fees in their own unincorporated business, profession, or trade, or who operated a farm.

Unpaid Family Workers—Includes persons who worked 15 hours or more without pay in a business or on a farm operated by a relative.

Salaried/Self-Employed—In tabulations that categorize persons as either salaried or self-employed, the salaried category includes private and government wage and salary workers; self-employed includes self-employed persons and unpaid family workers.

The industry category, "Public administration," is limited to regular government functions such as legislative, judicial, administrative, and regulatory activities of

governments. Other government organizations such as schools, hospitals, liquor stores, and bus lines are classified by industry according to the activity in which they are engaged. On the other hand, the class of worker government categories include all government workers.

Occasionally respondents supplied industry, occupation, or class of worker descriptions which were not sufficiently specific for precise classification or did not report on these items at all. Some of these cases were corrected through the field editing process and during the coding and tabulation operations. In the coding operation, certain types of incomplete entries were corrected using the *Alphabetical Index of Industries and Occupations*. For example, it was possible in certain situations to assign an industry code based on the occupation reported.

Following the coding operations, there was a computer edit and an allocation process. The edit first determined whether a respondent was in the universe which required an industry and occupation code. The codes for the three items (industry, occupation, and class of worker) were checked to ensure they were valid and were edited for their relation to each other. Invalid and inconsistent codes were either blanked or changed to a consistent code.

If one or more of the three codes were blank after the edit, a code was assigned from a "similar" person based on other items such as age, sex, education, farm or nonfarm residence, and weeks worked. If all the labor force and income data also were blank, all these economic items were assigned from one other person who provided all the necessary data.

Comparability—Comparability of industry and occupation data was affected by a number of factors, primarily the systems used to classify the questionnaire responses. For both the industry and occupation classification systems, the basic structures were generally the same from 1940 to 1970, but changes in the individual categories limited comparability of the data from one census to another. These changes were needed to recognize the "birth" of new industries and occupations, the "death" of others, and the growth and decline in existing industries and occupations, as well as, the desire of analysts and other users for more detail in the presentation of the data. Probably the greatest cause of incomparability is the movement of a segment of a category to a different category in the next census. Changes in the nature of jobs and respondent terminology, and refinement of category composition made these movements necessary.

In the 1990 census, the industry classification had minor revisions to reflect recent changes to the SIC. The 1990 occupational classification system is essentially the same as that for the 1980 census. However, the conversion of the census classification to the SOC

in 1980 meant that the 1990 classification system was less comparable to the classifications used prior to the 1980 census.'

Other factors that affected data comparability included the universe to which the data referred (in 1970, the age cutoff for labor force was changed from 14 years to 16 years); how the industry and occupation questions were worded on the questionnaire (for example, important changes were made in 1970); improvements in the coding procedures (the Employer Name List technique was introduced in 1960); and how the "not reported" cases are handled. Prior to 1970, they were placed in the residual categories, "Industry not reported" and "Occupation not reported." In 1970, an allocation process was introduced that assigned these cases to major groups. In 1990, as in 1980, the "Not reported" cases were assigned to individual categories. Therefore, the 1980 and 1990 data for individual categories included some numbers of persons who were tabulated in a "Not reported" category in previous censuses.

The following publications contain information on the various factors affecting comparability and are particularly useful for understanding differences in the occupation and industry information from earlier censuses: U.S. Bureau of the Census, *Changes Between the 1950 and 1960 Occupation and Industry Classifications With Detailed Adjustments of 1950 Data to the 1960 Classifications*, Technical Paper No. 18, 1968; U.S. Bureau of the Census, *1970 Occupation and Industry Classification Systems in Terms of their 1960 Occupation and Industry Elements*, Technical Paper No. 26, 1972; and U.S. Bureau of the Census, *The Relationship Between the 1970 and 1980 Industry and Occupation Classification Systems*, Technical Paper No. 59, 1988. For citations for earlier census years, see the 1980 Census of Population report, PC80-1-D, *Detailed Population Characteristics*.

The 1990 census introduced an additional class of worker category for "private not-for-profit" employers. This category is a subset of the 1980 category "employee of private employer" so there is no comparable data before 1990. Also in 1990, employees of foreign governments, the United Nations, etc., are classified as "private not-for-profit," rather than Federal Government as in 1970 and 1980. While in theory, there was a change in comparability, in practice, the small number of U.S. residents working for foreign governments made this change negligible.

Comparability between the statistics on industry and occupation from the 1990 census and statistics from other sources is affected by many of the factors described in the section on "Employment Status." These factors are primarily geographic differences between residence and place of work, different dates of reference, and differences in counts because of dual job holding. Industry data from population censuses cover all industries and all kinds of workers, whereas, data from

establishments often excluded private household workers, government workers, and the self-employed. Also, the replies from household respondents may have differed in detail and nature from those obtained from establishments.

Occupation data from the census and data from government licensing agencies, professional associations, trade unions, etc., may not be as comparable as expected. Organizational listings often include persons not in the labor force or persons devoting all or most of their time to another occupation; or the same person may be included in two or more different listings. In addition, relatively few organizations, except for those requiring licensing, attained complete coverage of membership in a particular occupational field.

JOURNEY TO WORK

Place of Work

The data on place of work were derived from answers to questionnaire item 22, which was asked of persons who indicated in question 21 that they worked at some time during the reference week. (For more information, see discussion under "Reference Week.")

Data were tabulated for workers 16 years and over; that is, members of the Armed Forces and civilians who were at work during the reference week. Data on place of work refer to the geographic location at which workers carried out their occupational activities during the reference week. The exact address (number and street) of the place of work was asked, as well as the place (city, town, or post office); whether or not the place of work was inside or outside the limits of that city or town; and the county, State, and ZIP Code. If the person's employer operated in more than one location, the exact address of the location or branch where the respondent worked was requested. When the number and street name were unknown, a description of the location, such as the building name or nearest street or intersection, was to be entered.

Persons who worked at more than one location during the reference week were asked to report the one at which they worked the greatest number of hours. Persons who regularly worked in several locations each day during the reference week were requested to give the address at which they began work each day. For cases in which daily work did not begin at a central place each day, the person was asked to provide as much information as possible to describe the area in which he or she worked most during the reference week.

In some tabulations, place-of-work locations may be defined as "in area of residence" and "outside area of residence." The area of residence may vary from table to table or even within a table, and refers to the particular area or areas shown. For example, in a table

that provides data for counties, "in area of residence" refers to persons who worked in the same county in which they lived, while "outside area of residence" refers to persons whose workplace was located in a county different from the one in which they lived. Similarly, in a table that provides data for several types of areas, such as the State and its individual metropolitan areas (MA's), counties, and places, the place-of-work data will be variable and is determined by the geographic level (State, MA, county, or place) shown in each section of the tabulation.

In tabulations that present data for States, workplaces for the residents of the State may include, in addition to the State itself, each contiguous State. The category, "in noncontiguous State or abroad," includes persons who worked in a State that did not border their State of residence as well as persons who worked outside the United States.

In tabulations that present data for an MSA/PMSA, place-of-work locations are specified to show the main destinations of workers living in the MSA/PMSA. (For more information on metropolitan areas (MA's), see Appendix A, Area Classifications.) All place-of-work locations are identified with respect to the boundaries of the MSA/PMSA as "inside MSA/PMSA" or "outside MSA/PMSA." Locations within the MSA/PMSA are further divided into each central city, and each county or county balance. Selected large incorporated places also may be specified as places of work.

Within New England MSA/PMSA's, the places of work presented generally are cities and towns. Locations outside the MSA/PMSA are specified if they are important commuting destinations for residents of the MSA/PMSA, and may include adjoining MSA/PMSA's and their central cities, their component counties, large incorporated places, or counties, cities, or other geographic areas outside any MA. In tabulations for MSA/PMSA's in New England; Honolulu, Hawaii; and certain other MA's, some place-of-work locations are identified as "areas" (e.g., Area 1, Area 5, Area 12, etc.). Such areas consist of groups of towns, cities, census designated places (Honolulu MSA only), or counties that have been identified as unique place-of-work destinations. When an adjoining MSA/PMSA or MSA/PMSA remainder is specified as a place-of-work location, its components are not defined. However, the components are presented in the 1990 CP-1, *General Population Characteristics for Metropolitan Areas* and the 1990 CH-1, *General Housing Characteristics for Metropolitan Areas* reports. In tabulations that present data for census tracts outside MA's, place-of-work locations are defined as "in county of residence" and "outside county of residence."

In areas where the workplace address was coded to the block level, persons were tabulated as working inside or outside a specific place based on the location of that address, regardless of the response to question 22c concerning city/town limits. In areas where it was

impossible to code the workplace address to the block level, persons were tabulated as working in a place if a place name was reported in question 22b and the response to question 22c was either "Yes" or the item was left blank. In selected areas, census designated places (CDP's) may appear in the tabulations as places of work. The accuracy of place-of-work data for CDP's may be affected by the extent to which their census names were familiar to respondents, and by coding problems caused by similarities between the CDP name and the names of other geographic jurisdictions in the same vicinity.

Place-of-work data are given for selected minor civil divisions (generally, cities, towns, and townships) in the nine Northeastern States, based on the responses to the place-of-work question. Many towns and townships are regarded locally as equivalent to a place and therefore, were reported as the place of work. When a respondent reported a locality or incorporated place that formed a part of a township or town, the coding and tabulating procedure was designed to include the response in the total for the township or town. The accuracy of the place-of-work data for minor civil divisions is greatest for the New England States. However, the data for some New England towns, for towns in New York, and for townships in New Jersey and Pennsylvania may be affected by coding problems that resulted from the unfamiliarity of the respondent with the minor civil division in which the workplace was located or when a township and a city or borough of the same or similar name are located close together.

Place-of-work data may show a few workers who made unlikely daily work trips (e.g., workers who lived in New York and worked in California). This result is attributable to persons who worked during the reference week at a location that was different from their usual place of work, such as persons away from home on business.

Comparability—The wording of the question on place of work was substantially the same in the 1990 census as it was in 1980. However, data on place of work from the 1990 census are based on the full census sample, while data from the 1980 census were based on only about one-half of the full sample.

For the 1980 census, nonresponse or incomplete responses to the place-of-work question were not allocated, resulting in the use of "not reported" categories in the 1980 publications. However, for the 1990 census, when place of work was not reported or the response was incomplete, a work location was allocated to the person based on their means of transportation to work, travel time to work, industry, and location of residence and workplace of others. The 1990 publications, therefore, do not contain a "not reported" category for the place-of-work data.

Comparisons between 1980 and 1990 census data on the gross number of workers in particular commuting

flows, or the total number of persons working in an area, should be made with extreme caution. Any apparent increase in the magnitude of the gross numbers may be due solely to the fact that for 1990 the "not reported" cases have been distributed among specific place-of-work destinations, instead of tallied in a separate category as in 1980.

Limitation of the Data—The data on place of work relate to a reference week; that is, the calendar week preceding the date on which the respondents completed their questionnaires or were interviewed by enumerators. This week is not the same for all respondents because the enumeration was not completed in 1 week. However, for the majority of persons, the reference week for the 1990 census is the last week in March 1990. The lack of a uniform reference week means that the place-of-work data reported in the census will not exactly match the distribution of workplace locations observed or measured during an actual workweek.

The place-of-work data are estimates of persons 16 years old and over who were both employed and at work during the reference week (including persons in the Armed Forces). Persons who did not work during the reference week but had jobs or businesses from which they were temporarily absent due to illness, bad weather, industrial dispute, vacation, or other personal reasons are not included in the place-of-work data. Therefore, the data on place of work understate the total number of jobs or total employment in a geographic area during the reference week. It also should be noted that persons who had irregular, casual, or unstructured jobs during the reference week may have erroneously reported themselves as not working.

The address where the individual worked most often during the reference week was recorded on the census questionnaire. If a worker held two jobs, only data about the primary job (the one worked the greatest number of hours during the preceding week) was requested. Persons who regularly worked in several locations during the reference week were requested to give the address at which they began work each day. For cases in which daily work was not begun at a central place each day, the person was asked to provide as much information as possible to describe the area in which he or she worked most during the reference week.

Means of Transportation to Work

The data on means of transportation to work were derived from answers to questionnaire item 23a, which was asked of persons who indicated in question 21 that they worked at some time during the reference week. (For more information, see discussion under "Reference Week.") Means of transportation to work refers to the principal mode of travel or type of conveyance that the person usually used to get from home to work during the reference week.

Persons who used different means of transportation on different days of the week were asked to specify the one they used most often, that is, the greatest number of days. Persons who used more than one means of transportation to get to work each day were asked to report the one used for the longest distance during the work trip. The category, "Car, truck, or van," includes workers using a car (including company cars but excluding taxicabs), a truck of one-ton capacity or less, or a van. The category, "Public transportation," includes workers who used a bus or trolley bus, streetcar or trolley car, subway or elevated, railroad, ferryboat, or taxicab even if each mode is not shown separately in the tabulation. The category, "Other means," includes workers who used a mode of travel which is not identified separately within the data distribution. The category, "Other means," may vary from table to table, depending on the amount of detail shown in a particular distribution.

The means of transportation data for some areas may show workers using modes of public transportation that are not available in those areas (e.g., subway or elevated riders in an MA where there actually is no subway or elevated service). This result is largely due to persons who worked during the reference week at a location that was different from their usual place of work (such as persons away from home on business in an area where subway service was available) and persons who used more than one means of transportation each day but whose principal means was unavailable where they lived (for example, residents of nonmetropolitan areas who drove to the fringe of an MA and took the commuter railroad most of the distance to work).

Private Vehicle Occupancy

The data on private vehicle occupancy were derived from answers to questionnaire item 23b. This question was asked of persons who indicated in question 21 that they worked at some time during the reference week and who reported in question 23a that their means of transportation to work was "Car, truck, or van." (For more information, see discussion under "Reference Week.")

Private vehicle occupancy refers to the number of persons who usually rode to work in the vehicle during the reference week. The category, "Drove alone," includes persons who usually drove alone to work as well as persons who were driven to work by someone who then drove back home or to a nonwork destination. The category, "Carpooled," includes workers who reported that two or more persons usually rode to work in the vehicle during the reference week.

Persons Per Car, Truck, or Van—This is obtained by dividing the number of persons who reported using a car, truck, or van to get to work by the number of such vehicles that they used. The number of vehicles used is

derived by counting each person who drove alone as one vehicle, each person who reported being in a two-person carpool as one-half vehicle, each person who reported being in a three-person carpool as one-third vehicle, and so on, and then summing all the vehicles.

Time Leaving Home to Go to Work

The data on time leaving home to go to work were derived from answers to questionnaire item 24a. This question was asked of persons who indicated in question 21 that they worked at some time during the reference week and who reported in question 23a that they worked outside their home. The departure time refers to the time of day that the person usually left home to go to work during the reference week. (For more information, see discussion under "Reference Week.")

Travel Time to Work

The data on travel time to work were derived from answers to questionnaire item 24b. This question was asked of persons who indicated in question 21 that they worked at some time during the reference week and who reported in question 23a that they worked outside their home. Travel time to work refers to the total number of minutes that it usually took the person to get from home to work during the reference week. The elapsed time includes time spent waiting for public transportation, picking up passengers in carpools, and time spent in other activities related to getting to work. (For more information, see discussion under "Reference Week.")

LANGUAGE SPOKEN AT HOME AND ABILITY TO SPEAK ENGLISH

Language Spoken at Home

Data on language spoken at home were derived from the answers to questionnaire items 15a and 15b, which were asked of a sample of persons born before April 1, 1985. Instructions mailed with the 1990 census questionnaire stated that a respondent should mark "Yes" in question 15a if the person sometimes or always spoke a language other than English at home and should not mark "Yes" if a language was spoken only at school or if speaking was limited to a few expressions or slang. For question 15b, respondents were instructed to print the name of the non-English language spoken at home. If the person spoke more than one language other than English, the person was to report the language spoken more often or the language learned first.

The cover of the census questionnaire included information in Spanish which provided a telephone number for respondents to call to request a census

questionnaire and instructions in Spanish. Instruction guides were also available in 32 other languages to assist enumerators who encountered households or respondents who spoke no English.

Questions 15a and 15b referred to languages spoken at home in an effort to measure the current use of languages other than English. Persons who knew languages other than English but did not use them at home or who only used them elsewhere were excluded. Persons who reported speaking a language other than English at home may also speak English; however, the questions did not permit determination of the main or dominant language of persons who spoke both English and another language. (For more information, see discussion below on "Ability to Speak English.")

For persons who indicated that they spoke a language other than English at home in question 15a, but failed to specify the name of the language in question 15b, the language was assigned based on the language of other speakers in the household; on the language of a person of the same Spanish origin or detailed race group living in the same or a nearby area; or on a person of the same ancestry or place of birth. In all cases where a person was assigned a non-English language, it was assumed that the language was spoken at home. Persons for whom the name of a language other than English was entered in question 15b, and for whom question 15a was blank were assumed to speak that language at home.

The write-in responses listed in question 15b (specific language spoken) were transcribed onto computer files and coded into more than 380 detailed language categories using an automated coding system. The automated procedure compared write-in responses reported by respondents with entries in a computer dictionary, which initially contained approximately 2,000 language names. The dictionary was updated with a large number of new names, variations in spelling, and a small number of residual categories. Each write-in response was given a numeric code that was associated with one of the detailed categories in the dictionary. If the respondent listed more than one non-English language, only the first was coded.

The write-in responses represented the names people used for languages they speak. They may not match the names or categories used by linguists. The sets of categories used are sometimes geographic and sometimes linguistic. Figure 1 provides an illustration of the content of the classification schemes used to present language data. For more information, write to the Chief, Population Division, U.S. Bureau of the Census, Washington, DC 20233.

Household Language—In households where one or more persons (age 5 years old or over) speak a language other than English, the household language assigned to all household members is the non-English language spoken by the first person with a non-English

language in the following order: householder, spouse, parent, sibling, child, grandchild, other relative, stepchild, unmarried partner, housemate or roommate, roomer, boarder, or foster child, or other nonrelative. Thus, persons who speak only English may have a non-English household language assigned to them in tabulations of persons by household language.

Figure 1. **Four- and Twenty-Five-Group Classifications of 1990 Census Languages Spoken at Home with Illustrative Examples**

Four-Group Classification	Twenty-Five-Group Classification	Examples
Other Indo-European	Spanish	Spanish, Ladino
	French	French, Cajun, French Creole
		Italian
	Portuguese	
		German
	Yiddish	
		Other West Germanic
	Scandinavian	Danish, Norwegian, Swedish
		Polish
	Russian	
South Slavic		Serbocroatian, Bulgarian, Macedonian, Slovene
Other Slavic	Czech, Slovak, Ukrainian	
	Greek	
Indic	Hindi, Bengali, Gujarathi, Punjabi, Romany, Sinhalese	
	Other Indo-European, not elsewhere classified	Armenian, Gaelic, Lithuanian, Persian
Languages of Asia and the Pacific	Chinese	
	Japanese	
	Mon-Khmer	Cambodian
	Tagalog	
	Korean	
	Vietnamese	
Other languages (part)	Chamorro, Dravidian languages, Hawaiian, Ilocano, Thai, Turkish	
	All other languages	
Arabic		
	Hungarian	
Native North American languages		
	Other languages (part)	Amharic, Syriac, Finnish, Hebrew, languages of Central and South America, Other languages of Africa

Ability to Speak English

Persons 5 years old and over who reported that they spoke a language other than English in question 15a were also asked in question 15c to indicate their ability to speak English based on one of the following categories: "Very well," "Well," "Not well," or "Not at all."

The data on ability to speak English represent the person's own perception about his or her own ability or, because census questionnaires are usually completed

by one household member, the responses may represent the perception of another household member. The instruction guides and questionnaires that were mailed to households did not include any information on how to interpret the response categories in question 15c.

Persons who reported that they spoke a language other than English at home but whose ability to speak English was not reported, were assigned the English-language ability of a randomly selected person of the same age, Spanish origin, nativity and year of entry, and language group.

Linguistic Isolation—A household in which no person age 14 years or over speaks only English and no person age 14 years or over who speaks a language other than English speaks English "Very well" is classified as "linguistically isolated." All the members of a linguistically isolated household are tabulated as linguistically isolated, including members under age 14 years who may speak only English.

Limitation of the Data—Persons who speak a language other than English at home may have first learned that language at school. However, these persons would be expected to indicate that they spoke English "Very well." Persons who speak a language other than English, but do not do so *at home*, should have been reported as not speaking a language other than English at home.

The extreme detail in which language names were coded may give a false impression of the linguistic precision of these data. The names used by speakers of a language to identify it may reflect ethnic, geographic, or political affiliations and do not necessarily respect linguistic distinctions. The categories shown in the tabulations were chosen on a number of criteria, such as information about the number of speakers of each language that might be expected in a sample of the United States population.

Comparability—Information on language has been collected in every census since 1890. The comparability of data among censuses is limited by changes in question wording, by the subpopulations to whom the question was addressed, and by the detail that was published.

The same question on language was asked in the 1980 and 1990 censuses. This question on the current language spoken at home replaced the questions asked in prior censuses on mother tongue; that is, the language other than English spoken in the person's home when he or she was a child; one's first language; or the language spoken before immigrating to the United States. The censuses of 1910-1940, 1960 and 1970 included questions on mother tongue. A change in coding procedure from 1980 to 1990 should have improved accuracy of coding and may affect the number of persons reported in some of the 380 plus categories. It should

not greatly affect the 4-group or 25-group lists. In 1980, coding clerks supplied numeric codes for the written entries on each questionnaire using a 2,000 name reference list. In 1990 written entries were transcribed to a computer file and matched to a computer dictionary which began with the 2,000 name list, but expanded as unmatched names were referred to headquarters specialists for resolution.

The question on ability to speak English was asked for the first time in 1980. In tabulations from 1980, the categories "Very well" and "Well" were combined. Data from other surveys suggested a major difference between the category "Very well" and the remaining categories. In tabulations showing ability to speak English, persons who reported that they spoke English "Very well" are presented separately from persons who reported their ability to speak English as less than "Very well."

MARITAL STATUS

The data on marital status were derived from answers to questionnaire item 6, which was asked of all persons. The marital status classification refers to the status at the time of enumeration. Data on marital status are tabulated only for persons 15 years old and over.

All persons were asked whether they were "now married," "widowed," "divorced," "separated," or "never married." Couples who live together (unmarried persons, persons in common-law marriages) were allowed to report the marital status they considered the most appropriate.

Never Married—Includes all persons who have never been married, including persons whose only marriage(s) was annulled.

Ever Married—Includes persons married at the time of enumeration (including those separated), widowed, or divorced.

Now Married, Except Separated—Includes persons whose current marriage has not ended through widowhood, divorce, or separation (regardless of previous marital history). The category may also include couples who live together or persons in common-law marriages if they consider this category the most appropriate. In certain tabulations, currently married persons are further classified as "spouse present" or "spouse absent."

Separated—Includes persons legally separated or otherwise absent from their spouse because of marital discord. Included are persons who have been deserted or who have parted because they no longer want to live together but who have not obtained a divorce.

Widowed—Includes widows and widowers who have not remarried.

Divorced—Includes persons who are legally divorced and who have not remarried.

In selected sample tabulations, data for married and separated persons are reorganized and combined with information on the presence of the spouse in the same household.

Now Married—All persons whose current marriage has not ended by widowhood or divorce. This category includes persons defined above as "separated."

Spouse Present—Married persons whose wife or husband was enumerated as a member of the same household, including those whose spouse may have been temporarily absent for such reasons as travel or hospitalization.

Spouse Absent—Married persons whose wife or husband was not enumerated as a member of the same household. This category also includes all married persons living in group quarters.

Separated—Defined above.

Spouse Absent, Other—Married persons whose wife or husband was not enumerated as a member of the same household, excluding separated. Included is any person whose spouse was employed and living away from home or in an institution or absent in the Armed Forces.

Differences between the number of currently married males and the number of currently married females occur because of reporting differences and because some husbands and wives have their usual residence in different areas. In sample tabulations, these differences can also occur because different weights are applied to the individual's data. Any differences between the number of "now married, spouse present" males and females are due solely to sample weighting. By definition, the numbers would be the same.

When marital status was not reported, it was imputed according to the relationship to the householder and sex and age of the person. (For more information on imputation, see Appendix C, Accuracy of the Data.)

Comparability—The 1990 marital status definitions are the same as those used in 1980 with the exception of the term "never married" which replaces the term "single" in tabulations. A general marital status question has been asked in every census since 1880.

MOBILITY LIMITATION STATUS

The data on mobility limitation status were derived from answers to questionnaire item 19a, which was asked of a sample of persons 15 years old and over.

Persons were identified as having a mobility limitation if they had a health condition that had lasted for 6 or more months and which made it difficult to go outside the home alone. Examples of outside activities on the questionnaire included shopping and visiting the doctor's office.

The term "health condition" referred to both physical and mental conditions. A temporary health problem, such as a broken bone that was expected to heal normally, was not considered a health condition.

Comparability—This was the first time that a question on mobility limitation was included in the census.

PLACE OF BIRTH

The data on place of birth were derived from answers to questionnaire item 8, which was asked on a sample basis. The place-of-birth question asked respondents to report the U.S. State, commonwealth or territory, or the foreign country where they were born. Persons born outside the United States were asked to report their place of birth according to current international boundaries. Since numerous changes in boundaries of foreign countries have occurred in the last century, some persons may have reported their place of birth in terms of boundaries that existed at the time of their birth or emigration, or in accordance with their own national preference.

Persons not reporting place of birth were assigned the birthplace of another family member or were allocated the response of another person with similar characteristics. Persons allocated as foreign born were not assigned a specific country of birth but were classified as "Born abroad, country not specified."

Nativity—Information on place of birth and citizenship were used to classify the population into two major categories: native and foreign born. When information on place of birth was not reported, nativity was assigned on the basis of answers to citizenship, if reported, and other characteristics.

Native—Includes persons born in the United States, Puerto Rico, or an outlying area of the United States. The small number of persons who were born in a foreign country but have at least one American parent also are included in this category.

The native population is classified in the following groups: persons born in the State in which they resided at the time of the census; persons born in a different State, by region; persons born in Puerto Rico or an outlying area of the U.S.; and persons born abroad with at least one American parent.

Foreign Born—Includes persons not classified as "Native." Prior to the 1970 census, persons not reporting place of birth were generally classified as native.

The foreign-born population is shown by selected area, country, or region of birth: the places of birth shown in data products were selected based on the number of respondents who reported that area or country of birth.

Comparability—Data on the State of birth of the native population have been collected in each census beginning with that of 1850. Similar data were shown in tabulations for the 1980 census and other recent censuses. Nonresponse was allocated in a similar manner in 1980; however, prior to 1980, nonresponse to the place of birth question was not allocated. Prior to the 1970 census, persons not reporting place of birth were generally classified as native.

The questionnaire instruction to report mother's State of residence instead of the person's actual State of birth (if born in a hospital in a different State) was dropped in 1990. Evaluation studies of 1970 and 1980 census data demonstrated that this instruction was generally either ignored or misunderstood. Since the hospital and the mother's residence is in the same State for most births, this change may have a slight effect on State of birth data for States with large metropolitan areas that straddle State lines.

POVERTY STATUS IN 1989

The data on poverty status were derived from answers to the same questions as the income data, questionnaire items 32 and 33. (For more information, see the discussion under "Income in 1989.") Poverty statistics presented in census publications were based on a definition originated by the Social Security Administration in 1964 and subsequently modified by Federal interagency committees in 1969 and 1980 and prescribed by the Office of Management and Budget in Directive 14 as the standard to be used by Federal agencies for statistical purposes.

At the core of this definition was the 1961 economy food plan, the least costly of four nutritionally adequate food plans designed by the Department of Agriculture. It was determined from the Agriculture Department's 1955 survey of food consumption that families of three or more persons spend approximately one-third of their income on food; hence, the poverty level for these families was set at three times the cost of the economy food plan. For smaller families and persons living alone, the cost of the economy food plan was multiplied by factors that were slightly higher to compensate for the relatively larger fixed expenses for these smaller households.

The income cutoffs used by the Census Bureau to determine the poverty status of families and unrelated individuals included a set of 48 thresholds arranged in a two-dimensional matrix consisting of family size (from one person to nine or more persons) cross-classified by presence and number of family members under 18 years old (from no children present to eight or more children present). Unrelated individuals and two-person families were further differentiated by age of the householder (under 65 years old and 65 years old and over).

The total income of each family or unrelated individual in the sample was tested against the appropriate poverty threshold to determine the poverty status of that family or unrelated individual. If the total income was less than the corresponding cutoff, the family or unrelated individual was classified as "below the poverty level." The number of persons below the poverty level was the sum of the number of persons in families with incomes below the poverty level and the number of unrelated individuals with incomes below the poverty level.

The poverty thresholds are revised annually to allow for changes in the cost of living as reflected in the Consumer Price Index. The average poverty threshold for a family of four persons was \$12,674 in 1989. (For

Table A. Poverty Thresholds in 1989 by Size of Family and Number of Related Children Under 18 Years

Size of Family Unit	Weighted average thresholds	Related children under 18 years									
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more	
One person (unrelated individual)	\$6,310										
Under 65 years.....	6,451	\$6,451									
65 years and over.....	5,947	5,947									
Two persons.....	8,076										
Householder under 65 years...	8,343	8,303	\$8,547								
Householder 65 years and over.....	7,501	7,495	8,515								
Three persons.....	9,885	9,699	9,981	\$9,990							
Four persons.....	12,674	12,790	12,999	12,575	\$12,619						
Five persons.....	14,990	15,424	15,648	15,169	14,798	\$14,572					
Six persons.....	16,921	17,740	17,811	17,444	17,092	16,569	\$16,259				
Seven persons.....	19,162	20,412	20,540	20,101	19,794	19,224	18,558	\$17,828			
Eight persons.....	21,328	22,830	23,031	22,617	22,253	21,738	21,084	20,403	\$20,230		
Nine or more persons.....	25,480	27,463	27,596	27,229	26,921	26,415	25,719	25,089	24,933	\$23,973	

more information, see table A below.) Poverty thresholds were applied on a national basis and were not adjusted for regional, State or local variations in the cost of living. For a detailed discussion of the poverty definition, see U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 171, *Poverty in the United States: 1988 and 1989*.

Persons for Whom Poverty Status is Determined—

Poverty status was determined for all persons except institutionalized persons, persons in military group quarters and in college dormitories, and unrelated individuals under 15 years old. These groups also were excluded from the denominator when calculating poverty rates.

Specified Poverty Levels—Since the poverty levels currently in use by the Federal Government do not meet all the needs of data users, some of the data are presented for alternate levels. These specified poverty levels are obtained by multiplying the income cutoffs at the poverty level by the appropriate factor. For example, the average income cutoff at 125 percent of poverty level was \$15,843 ($\$12,674 \times 1.25$) in 1989 for a family of four persons.

Weighted Average Thresholds at the Poverty Level—The average thresholds shown in the first column of table A are weighted by the presence and number of children. For example, the weighted average threshold for a given family size is obtained by multiplying the threshold for each presence and number of children category within the given family size by the number of families in that category. These products are then aggregated across the entire range of presence and number of children categories, and the aggregate is divided by the total number of families in the group to yield the weighted average threshold at the poverty level for that family size.

Since the basic thresholds used to determine the poverty status of families and unrelated individuals are applied to all families and unrelated individuals, the weighted average poverty thresholds are derived using all families and unrelated individuals rather than just those classified as being below the poverty level. To obtain the weighted poverty thresholds for families and unrelated individuals below alternate poverty levels, the weighted thresholds shown in table A may be multiplied directly by the appropriate factor. The weighted average thresholds presented in the table are based on the March 1990 Current Population Survey. However, these thresholds would not differ significantly from those based on the 1990 census.

Income Deficit—Represents the difference between the total income of families and unrelated individuals below the poverty level and their respective poverty thresholds. In computing the income deficit, families reporting a net income loss are assigned zero dollars and for such cases the deficit is equal to the poverty threshold.

This measure provided an estimate of the amount which would be required to raise the incomes of all poor families and unrelated individuals to their respective poverty thresholds. The income deficit is thus a measure of the degree of impoverishment of a family or unrelated individual. However, caution must be used in comparing the average deficits of families with different characteristics. Apparent differences in average income deficits may, to some extent, be a function of differences in family size.

Mean Income Deficit—Represents the amount obtained by dividing the total income deficit of a group below the poverty level by the number of families (or unrelated individuals) in that group.

Comparability—The poverty definition used in the 1990 and 1980 censuses differed slightly from the one used in the 1970 census. Three technical modifications were made to the definition used in the 1970 census as described below:

1. The separate thresholds for families with a female householder with no husband present and all other families were eliminated. For the 1980 and 1990 censuses, the weighted average of the poverty thresholds for these two types of families was applied to all types of families, regardless of the sex of the householder.
2. Farm families and farm unrelated individuals no longer had a set of poverty thresholds that were lower than the thresholds applied to nonfarm families and unrelated individuals. The farm thresholds were 85 percent of the corresponding levels for nonfarm families in the 1970 census. The same thresholds were applied to all families and unrelated individuals regardless of residence in 1980 and 1990.
3. The thresholds by size of family were extended from seven or more persons in 1970 to nine or more persons in 1980 and 1990.

These changes resulted in a minimal increase in the number of poor at the national level. For a complete discussion of these modifications and their impact, see the Current Population Reports, Series P-60, No. 133.

The population covered in the poverty statistics derived from the 1980 and 1990 censuses was essentially the same as in the 1970 census. The only difference was that in 1980 and 1990, unrelated individuals under 15 years old were excluded from the poverty universe, while in 1970, only those under 14 years old were excluded. The poverty data from the 1960 census excluded all persons in group quarters and included all unrelated individuals regardless of age. It was unlikely that these differences in population coverage would have had significant impact when comparing the poverty data for persons since the 1960 censuses.

Current Population Survey—Because of differences in the questionnaires and data collection procedures, estimates of the number of persons below the poverty level by various characteristics from the 1990 census may differ from those reported in the March 1990 Current Population Survey.

RACE

The data on race were derived from answers to questionnaire item 4, which was asked of all persons. The concept of race as used by the Census Bureau reflects self-identification; it does not denote any clear-cut scientific definition of biological stock. The data for race represent self-classification by people according to the race with which they most closely identify. Furthermore, it is recognized that the categories of the race item include both racial and national origin or socio-cultural groups.

During direct interviews conducted by enumerators, if a person could not provide a single response to the race question, he or she was asked to select, based on self-identification, the group which best described his or her racial identity. If a person could not provide a single race response, the race of the mother was used. If a single race response could not be provided for the person's mother, the first race reported by the person was used. In all cases where occupied housing units, households, or families are classified by race, the race of the householder was used.

The racial classification used by the Census Bureau generally adheres to the guidelines in Federal Statistical Directive No. 15, issued by the Office of Management and Budget, which provides standards on ethnic and racial categories for statistical reporting to be used by all Federal agencies. The racial categories used in the 1990 census data products are provided below.

White—Includes persons who indicated their race as "White" or reported entries such as Canadian, German, Italian, Lebanese, Near Easterner, Arab, or Polish.

Black—Includes persons who indicated their race as "Black or Negro" or reported entries such as African American, Afro-American, Black Puerto Rican, Jamaican, Nigerian, West Indian, or Haitian.

American Indian, Eskimo, or Aleut—Includes persons who classified themselves as such in one of the specific race categories identified below.

American Indian—Includes persons who indicated their race as "American Indian," entered the name of an Indian tribe, or reported such entries as Canadian Indian, French-American Indian, or Spanish-American Indian.

American Indian Tribe—Persons who identified themselves as American Indian were asked to report their enrolled or principal tribe. Therefore, tribal data in tabulations reflect the written tribal entries reported on the questionnaires. Some of the entries (for example, Iroquois, Sioux, Colorado River, and Flathead) represent nations or reservations.

The information on tribe is based on self-identification and therefore does not reflect any designation of Federally- or State-recognized tribe. Information on American Indian tribes is presented in summary tape files and special data products. The information is derived from the American Indian Detailed Tribal Classification List for the 1990 census. The classification list represents all tribes, bands, and clans that had a specified number of American Indians reported on the census questionnaire.

Eskimo—Includes persons who indicated their race as "Eskimo" or reported entries such as Arctic Slope, Inupiat, and Yupik.

Aleut—Includes persons who indicated their race as "Aleut" or reported entries such as Alutiiq, Egegik, and Pribilofian.

Asian or Pacific Islander—Includes persons who reported in one of the Asian or Pacific Islander groups listed on the questionnaire or who provided write-in responses such as Thai, Nepali, or Tongan. A more detailed listing of the groups comprising the Asian or Pacific Islander population is presented in figure 2 below. In some data products, information is presented separately for the Asian population and the Pacific Islander population.

Asian—Includes "Chinese," "Filipino," "Japanese," "Asian Indian," "Korean," "Vietnamese," and "Other Asian." In some tables, "Other Asian" may not be shown separately, but is included in the total Asian population.

Chinese—Includes persons who indicated their race as "Chinese" or who identified themselves as Cantonese, Tibetan, or Chinese American. In standard census reports, persons who reported as "Taiwanese" or "Formosan" are included here with Chinese. In special reports on the Asian or Pacific Islander population, information on persons who identified themselves as Taiwanese are shown separately.

Filipino—Includes persons who indicated their race as "Filipino" or reported entries such as Philipino, Philippine, or Filipino American.

Japanese—Includes persons who indicated their race as "Japanese" and persons who identified themselves as Nipponese or Japanese American.

Asian Indian—Includes persons who indicated their race as "Asian Indian" and persons who identified themselves as Bengalese, Bharat, Dravidian, East Indian, or Goanese.

Korean—Includes persons who indicated their race as "Korean" and persons who identified themselves as Korean American.

Vietnamese—Includes persons who indicated their race as "Vietnamese" and persons who identified themselves as Vietnamese American.

Cambodian—Includes persons who provided a write-in response such as Cambodian or Cambodia.

Hmong—Includes persons who provided a write-in response such as Hmong, Laohmong, or Mong.

Laotian—Includes persons who provided a write-in response such as Laotian, Laos, or Lao.

Thai—Includes persons who provided a write-in response such as Thai, Thailand, or Siamese.

Other Asian—Includes persons who provided a write-in response of Bangladeshi, Burmese, Indonesian, Pakistani, Sri Lankan, Amerasian, or Eurasian. See figure 2 for other groups comprising "Other Asian."

Pacific Islander—Includes persons who indicated their race as "Pacific Islander" by classifying themselves into one of the following groups or identifying themselves as one of the Pacific Islander cultural groups of Polynesian, Micronesian, or Melanesian.

Hawaiian—Includes persons who indicated their race as "Hawaiian" as well as persons who identified themselves as Part Hawaiian or Native Hawaiian.

Samoan—Includes persons who indicated their race as "Samoan" or persons who identified themselves as American Samoan or Western Samoan.

Guamanian—Includes persons who indicated their race as "Guamanian" or persons who identified themselves as Chamorro or Guam.

Other Pacific Islander—Includes persons who provided a write-in response of a Pacific Islander group such as Tahitian, Northern Mariana Islander, Palauan, Fijian, or a cultural group such as Polynesian, Micronesian, or Melanesian. See figure 2 for other groups comprising "Other Pacific Islander."

Other Race—Includes all other persons not included in the "White," "Black," "American Indian, Eskimo, or Aleut," and the "Asian or Pacific Islander" race categories described above. Persons reporting in the "Other race" category and providing write-in entries such as multiracial, multiethnic, mixed, interracial, Wesort, or a Spanish/Hispanic origin group (such as Mexican, Cuban, or Puerto Rican) are included here.

Written entries to three categories on the race item—"Indian (Amer.)," "Other Asian or Pacific Islander (API)," and "Other race"—were reviewed, edited, and coded by subject matter specialists. (For more information on the coding operation, see the section below that discusses "Comparability.")

The written entries under "Indian (Amer.)," and "Other Asian or Pacific Islander (API)" were reviewed and coded during 100-percent processing of the 1990 census questionnaires. A substantial portion of the entries for the "Other race" category also were reviewed, edited, and coded during the 100-percent processing. The remaining entries under "Other race" underwent review and coding during sample processing. Most of the written entries reviewed and coded during sample processing were those indicating Hispanic origin such as Mexican, Cuban, or Puerto Rican.

If the race entry for a member of a household was missing on the questionnaire, race was assigned based upon the reported entries of race by other household members using specific rules of precedence of household relationship. For example, if race was missing for the daughter of the householder, then the race of her mother (as female householder or female spouse) would be assigned. If there was no female householder or spouse in the household, the daughter would be assigned her father's (male householder) race. If race was not reported for anyone in the household, the race of a householder in a previously processed household was assigned. This procedure is a variation of the general imputation procedures described in Appendix C, Accuracy of the Data.

Limitation of the Data—In the 1980 census, a relatively high proportion (20 percent) of American Indians did not report any tribal entry in the race item. Evaluation of the pre-census tests indicated that changes made for the 1990 race item should improve the reporting of tribes in the rural areas (especially on reservations) for the 1990 census. The results for urban areas were inconclusive. Also, the precensus tests indicated that there may be overreporting of the Cherokee tribe. An evaluation of 1980 census data showed overreporting of Cherokee in urban areas or areas where the number of American Indians was sparse.

In the 1990 census, respondents sometimes did not fill in a circle or filled the "Other race" circle and wrote in a response, such as Arab, Polish, or African American in the shared write-in box for "Other race" and "Other

API" responses. During the automated coding process, these responses were edited and assigned to the appropriate racial designation. Also, some Hispanic origin persons did not fill in a circle, but provided entries such as Mexican or Puerto Rican. These persons were classified in the "Other race" category during the coding and editing process. There may be some minor differences between sample data and 100-percent data because sample processing included additional edits not included in the 100-percent processing.

Figure 2. Asian or Pacific Islander Groups Reported in the 1990 Census

Asian	Pacific Islander
Chinese	Hawaiian
Filipino	Samoan
Japanese	Guamanian
Asian Indian	Other Pacific Islander ¹
Korean	Carolinian
Vietnamese	Fijian
Cambodian	Kosraean
Hmong	Melanesian ³
Laotian	Micronesian ³
Thai	Northern Mariana Islander
Other Asian ¹	Palauan
Bangladeshi	Papua New Guinean
Bhutanese	Ponapean (Pohnpeian)
Borneo	Polynesian ³
Burmese	Solomon Islander
Celebesian	Tahitian
Ceram	Tarawa Islander
Indochinese	Tokelauan
Indonesian	Tongan
Iwo-Jiman	Trukese (Chuukese)
Javanese	Yapese
Malayan	Pacific Islander, not specified
Maldivian	
Nepali	
Okinawan	
Pakistani	
Sikkim	
Singaporean	
Sri Lankan	
Sumatran	
Asian, not specified ²	

¹In some data products, specific groups listed under "Other Asian" or "Other Pacific Islander" are shown separately. Groups not shown are tabulated as "All other Asian" or "All other Pacific Islander," respectively.

²Includes entries such as Asian American, Asian, Asiatic, Amerasian, and Eurasian.

³Polynesian, Micronesian, and Melanesian are Pacific Islander cultural groups.

Comparability—Differences between the 1990 census and earlier censuses affect the comparability of data for certain racial groups and American Indian tribes. The 1990 census was the first census to undertake, on a 100-percent basis, an automated review, edit, and coding operation for written responses to the race item. The automated coding system used in the 1990 census greatly reduced the potential for error associated with a clerical review. Specialists with a thorough knowledge of the race subject matter reviewed, edited, coded, and

resolved inconsistent or incomplete responses. In the 1980 census, there was only a limited clerical review of the race responses on the 100-percent forms with a full clerical review conducted only on the sample questionnaires.

Another major difference between the 1990 and preceding censuses is the handling of the write-in responses for the Asian or Pacific Islander populations. In addition to the nine Asian or Pacific Islander categories shown on the questionnaire under the spanner "Asian or Pacific Islander (API)," the 1990 census race item provided a new residual category, "Other API," for Asian or Pacific Islander persons who did not report in one of the listed Asian or Pacific Islander groups. During the coding operation, write-in responses for "Other API" were reviewed, coded, and assigned to the appropriate classification. For example, in 1990, a write-in entry of Laotian, Thai, or Javanese is classified as "Other Asian," while a write-in entry of Tongan or Fijian is classified as "Other Pacific Islander." In the 1990 census, these persons were able to identify as "Other API" in both the 100-percent and sample operations.

In the 1980 census, the nine Asian or Pacific Islander groups were also listed separately. However, persons not belonging to these nine groups wrote in their specific racial group under the "Other" race category. Persons with a written entry such as Laotian, Thai, or Tongan, were tabulated and published as "Other race" in the 100-percent processing operation in 1980, but were reclassified as "Other Asian and Pacific Islander" in 1980 sample tabulations. In 1980 special reports on the Asian or Pacific Islander populations, data were shown separately for "Other Asian" and "Other Pacific Islander."

The 1970 questionnaire did not have separate race categories for Asian Indian, Vietnamese, Samoan, and Guamanian. These persons indicated their race in the "Other" category and later, through the editing process, were assigned to a specific group. For example, in 1970, Asian Indians were reclassified as "White," while Vietnamese, Guamanians, and Samoans were included in the "Other" category.

Another difference between 1990 and preceding censuses is the approach taken when persons of Spanish/Hispanic origin did not report in a specific race category but reported as "Other race" or "Other." These persons commonly provided a write-in entry such as Mexican, Venezuelan, or Latino. In the 1990 and 1980 censuses, these entries remained in the "Other race" or "Other" category, respectively. In the 1970 census, most of these persons were included in the "White" category.

REFERENCE WEEK

The data on labor force status and journey to work were related to the reference week; that is, the calendar week preceding the date on which the respondents

completed their questionnaires or were interviewed by enumerators. This week is not the same for all respondents since the enumeration was not completed in one week. The occurrence of holidays during the enumeration period could affect the data on actual hours worked during the reference week, but probably had no effect on overall measurement of employment status (see the discussion below on "Comparability").

Comparability—The reference weeks for the 1990 and 1980 censuses differ in that Passover and Good Friday occurred in the first week of April 1980, but in the second week of April 1990. Many workers presumably took time off for those observances. The differing occurrence of these holidays could affect the comparability of the 1990 and 1980 data on actual hours worked for some areas if the respective weeks were the reference weeks for a significant number of persons. The holidays probably did not affect the overall measurement of employment status since this information was based on work activity during the entire reference week.

RESIDENCE IN 1985

The data on residence in 1985 were derived from answers to question 14b, which asked for the State (or foreign country), county, and place of residence on April 1, 1985, for those persons reporting in question 14a that on that date they lived in a different house than their current residence. Residence in 1985 is used in conjunction with location of current residence to determine the extent of residential mobility of the population and the resulting redistribution of the population across the various States, metropolitan areas, and regions of the country.

When no information on residence in 1985 was reported for a person, information for other family members, if available, was used to assign a location of residence in 1985. All cases of nonresponse or incomplete response that were not assigned a previous residence based on information from other family members were allocated the previous residence of another person with similar characteristics who provided complete information.

The tabulation category, "Same house," includes all persons 5 years old and over who did not move during the 5 years as well as those who had moved but by 1990 had returned to their 1985 residence. The category, "Different house in the United States," includes persons who lived in the United States in 1985 but in a different house or apartment from the one they occupied on April 1, 1990. These movers are then further subdivided according to the type of move.

In most tabulations, movers are divided into three groups according to their 1985 residence: "Different house, same county," "Different county, same State," and "Different State." The last group may be further

subdivided into region of residence in 1985. The category, "Abroad," includes those persons who were residing in a foreign country, Puerto Rico, or an outlying area of the U.S. in 1985, including members of the Armed Forces and their dependents. Some tabulations show movers who were residing in Puerto Rico or an outlying area in 1985 separately from those residing in other countries.

In tabulations for metropolitan areas, movers are categorized according to the metropolitan status of their current and previous residences, resulting in such groups as movers within an MSA/PMSA, movers between MSA/PMSA's, movers from nonmetropolitan areas to MSA/PMSA, and movers from central cities to the remainder of an MSA/PMSA. In some tabulations, these categories are further subdivided by size of MSA/PMSA, region of current or previous residence, or movers within or between central cities and the remainder of the same or a different MSA/PMSA.

The size categories used in some tabulations for both 1985 and 1990 residence refer to the populations of the MSA/PMSA on April 1, 1990; that is, at the end of the migration interval.

Some tabulations present data on immigrants, outmigrants, and net migration. "Immigrants" are generally defined as those persons who entered a specified area by crossing its boundary from some point outside the area. In some tabulations, movers from abroad are included in the number of immigrants; in others, only movers within the United States are included.

"Outmigrants" are persons who depart from a specific area by crossing its boundary to a point outside it, but without leaving the United States. "Net migration" is calculated by subtracting the number of outmigrants from the number of immigrants and, depending upon the particular tabulation, may or may not include movers from abroad. The net migration for the area is net immigration if the result was positive and net outmigration if the result was negative. In the tabulations, net outmigration is indicated by a minus sign (-).

Immigrants and outmigrants for States include only those persons who did not live in the same State in 1985 and 1990; that is, they exclude persons who moved between counties within the same State. Thus, the sum of the immigrants to (or outmigrants from) all counties in any State is greater than the number of immigrants to (or outmigrants from) that State. However, in the case of net migration, the sum of the nets for all the counties within a State equal the net for the State. In the same fashion, the net migration for a division or region equals the sum of the nets for the States comprising that division or region, while the number of immigrants and outmigrants for that division or region is less than the sum of the immigrants or outmigrants for the individual States.

The number of persons who were living in a different house in 1985 is somewhat less than the total number of moves during the 5-year period. Some persons in the

same house at the two dates had moved during the 5-year period but by the time of the census had returned to their 1985 residence. Other persons who were living in a different house had made one or more intermediate moves. For similar reasons, the number of persons living in a different county, MSA/PMSA, or State or moving between nonmetropolitan areas may be understated.

Comparability—Similar questions were asked on all previous censuses beginning in 1940, except the questions in 1950 referred to residence 1 year earlier rather than 5 years earlier. Although the questions in the 1940 census covered a 5-year period, comparability with that census was reduced somewhat because of different definitions and categories of tabulation. Comparability with the 1960 and 1970 census is also somewhat reduced because nonresponse was not allocated in those earlier censuses. For the 1980 census, nonresponse was allocated in a manner similar to the 1990 allocation scheme.

SCHOOL ENROLLMENT AND LABOR FORCE STATUS

Tabulation of data on enrollment, educational attainment, and labor force status for the population 16 to 19 years old allows for calculation of the proportion of the age group who are not enrolled in school and not high school graduates or "dropouts" and an unemployment rate for the "dropout" population. Definitions of the three topics and descriptions of the census items from which they were derived are presented in "Educational Attainment," "Employment Status," and "School Enrollment and Type of School." The published tabulations include both the civilian and Armed Forces populations, but labor force status is provided for the civilian population only. Therefore, the component labor force statuses may not add to the total lines *enrolled in school, high school graduate, and not high school graduate*. The difference is Armed Forces.

Comparability—The tabulation of school enrollment by labor force status is similar to that published in 1980 census reports. The 1980 census tabulation included a single data line for Armed Forces; however, enrollment, attainment, and labor force status data were shown for the civilian population only. In 1970, a tabulation was included for 16 to 21 year old males not attending school.

SCHOOL ENROLLMENT AND TYPE OF SCHOOL

Data on school enrollment were derived from answers to questionnaire item 11, which was asked of a sample of persons. Persons were classified as enrolled in

school if they reported attending a "regular" public or private school or college at any time between February 1, 1990, and the time of enumeration. The question included instructions to "include only nursery school, kindergarten, elementary school, and schooling which would lead to a high school diploma or a college degree" as regular school. Instructions included in the 1990 respondent instruction guide, which was mailed with the census questionnaire, further specified that enrollment in a trade or business school, company training, or tutoring were not to be included unless the course would be accepted for credit at a regular elementary school, high school, or college. Persons who did not answer the enrollment question were assigned the enrollment status and type of school of a person with the same age, race or Hispanic origin, and, at older ages, sex, whose residence was in the same or a nearby area.

Public and Private School—Includes persons who attended school in the reference period and indicated they were enrolled by marking one of the questionnaire categories for either "public school, public college" or "private school, private college." The instruction guide defines a public school as "any school or college controlled and supported by a local, county, State, or Federal Government." "Schools supported and controlled primarily by religious organizations or other private groups" are defined as private. Persons who filled both the "public" and "private" circles are edited to the first entry, "public."

Level of School in Which Enrolled—Persons who were enrolled in school were classified as enrolled in "preprimary school," "elementary or high school," or "college" according to their response to question 12 (years of school completed or highest degree received). Persons who were enrolled and reported completing nursery school or less were classified as enrolled in "preprimary school," which includes kindergarten. Similarly, enrolled persons who had completed at least kindergarten, but not high school, were classified as enrolled in elementary or high school. Enrolled persons who reported completing high school or some college or having received a post-secondary degree were classified as enrolled in "college." Enrolled persons who reported completing the twelfth grade but receiving "NO DIPLOMA" were classified as enrolled in high school. (For more information on level of school, see the discussion under "Educational Attainment.")

Comparability—School enrollment questions have been included in the census since 1840; grade attended was first asked in 1940; type of school was first asked in 1960. Before 1940, the enrollment question in various censuses referred to attendance in the preceding six months or the preceding year. In 1940, the reference was to attendance in the month preceding the census,

and in the 1950 and subsequent censuses, the question referred to attendance in the two months preceding the census date.

Until the 1910 census, there were no instructions limiting the kinds of schools in which enrollment was to be counted. Starting in 1910, the instructions indicated that attendance at "school, college, or any educational institution" was to be counted. In 1930 an instruction to include "night school" was added. In the 1940 instructions, night school, extension school, or vocational school were included only if the school was part of the regular school system. Correspondence school work of any kind was excluded. In the 1950 instructions, the term "regular school" was introduced, and it was defined as schooling which "advances a person towards an elementary or high school diploma or a college, university, or professional school degree." Vocational, trade, or business schools were excluded unless they were graded and considered part of a regular school system. On-the-job training was excluded, as was nursery school. Instruction by correspondence was excluded unless it was given by a regular school and counted towards promotion.

In 1960, the question used the term "regular school or college" and a similar, though expanded, definition of "regular" was included in the instructions, which continued to exclude nursery school. Because of the census' use of mailed questionnaires, the 1960 census was the first in which instructions were written for the respondent as well as enumerators. In the 1970 census, the questionnaire used the phrase "regular school or college" and included instructions to "count nursery school, kindergarten, and schooling which leads to an elementary school certificate, high school diploma, or college degree." Instructions in a separate document specified that to be counted as regular school, nursery school must include instruction as an important and integral phase of its program, and continued the exclusion of vocational, trade, and business schools. The 1980 census question was very similar to the 1970 question, but the separate instruction booklet did not require that nursery school include substantial instructional content in order to be counted.

The age range for which enrollment data have been obtained and published has varied over the censuses. Information on enrollment was recorded for persons of all ages in the 1930 and 1940 and 1970 through 1990; for persons under age 30, in 1950; and for persons age 5 to 34, in 1960. Most of the published enrollment figures referred to persons age 5 to 20 in the 1930 census, 5 to 24 in 1940, 5 to 29 in 1950, 5 to 34 in 1960, 3 to 34 in 1970, and 3 years old and over in 1980. This growth in the age group whose enrollment was reported reflects increased interest in the number of children in preprimary schools and in the number of older persons attending colleges and universities.

In the 1950 and subsequent censuses, college students were enumerated where they lived while attending college, whereas in earlier censuses, they generally were enumerated at their parental homes. This change should not affect the comparability of national figures on college enrollment since 1940; however, it may affect the comparability over time of enrollment figures at sub-national levels.

Type of school was first introduced in the 1960 census, where a separate question asked the enrolled persons whether they were in a "public" or "private" school. Since the 1970 census, the type of school was incorporated into the response categories for the enrollment question and the terms were changed to "public," "parochial," and "other private." In the 1980 census, "private, church related" and "private, not church related" replaced "parochial" and "other private."

Grade of enrollment was first available in the 1940 census, where it was obtained from responses to the question on highest grade of school completed. Enumerators were instructed that "for a person still in school, the last grade completed will be the grade preceding the one in which he or she was now enrolled." From 1950 to 1980, grade of enrollment was obtained from the highest grade attended in the two-part question used to measure educational attainment. (For more information, see the discussion under "Educational Attainment.") The form of the question from which level of enrollment was derived in the 1990 census most closely corresponds to the question used in 1940. While data from prior censuses can be aggregated to provide levels of enrollment comparable to the 1990 census, 1990 data cannot be disaggregated to show single grade of enrollment as in previous censuses.

Data on school enrollment were also collected and published by other Federal, State, and local government agencies. Where these data were obtained from administrative records of school systems and institutions of higher learning, they were only roughly comparable with data from population censuses and household surveys because of differences in definitions and concepts, subject matter covered, time references, and enumeration methods. At the local level, the difference between the location of the institution and the residence of the student may affect the comparability of census and administrative data. Differences between the boundaries of school districts and census geographic units also may affect these comparisons.

SELF-CARE LIMITATION STATUS

The data on self-care limitation status were derived from answers to questionnaire item 19b, which was asked of a sample of persons 15 years old and over. Persons were identified as having a self-care limitation if they had a health condition that had lasted for 6 or more months and which made it difficult to take care of their own personal needs, such as dressing, bathing, or getting around inside the home.