

APPENDIX I.

Description of Data Sources for Marketplace Analyses

To perform the analyses in Appendices C through F, BBC used data from a range of sources, including U.S. Census Bureau's Public Use Micro-samples (PUMS) from the 1980 and 2000 Census and the Census Bureau's American Community Survey (ACS) for 2007. BBC also analyzed data from the Federal Reserve Board's 1998 and 2003 Survey of Small Businesses.

PUMS Data

The study team used PUMS data to analyze:

- Demographic characteristics of workers in construction and engineering, including related occupations;
- Educational attainment; and
- Self-employment (business ownership).

PUMS data offer several features ideal to the analyses reported in this study, including historical cross-sectional data, stratified national and state-level samples, and large sample sizes that enable many estimates to be made with a high level of statistical confidence, even for subsets of the population (e.g., ethnic and occupational groups).

BBC obtained selected Census and ACS data via the Minnesota Population Center's Integrated Public Use Micro-data Series (IPUMS). The IPUMS program provides access to customized, accurate data extracts. These data are available at the IPUMS website.¹ For the analyses contained in this report, BBC used the 1980 and 2000 Census 5 percent sample and the 2007 ACS datasets.

The ACS is conducted by the U.S. Census Bureau and uses monthly samples to produce annually updated data for the same small areas as the decennial census long-form.² Since 2005, the ACS has expanded to a roughly 1 percent sample of the population, based on a random sample of housing units in every county in the U.S. (along with the District of Columbia and Puerto Rico).

¹ Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. *Integrated Public Use Microdata Series: Version 3.0* [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], 2004. <http://usa.ipums.org/usa/>

² U.S. Census Bureau. *Design and Methodology - American Community Survey*. U.S. Government Printing Office, Washington D.C., May 2006. Available at <http://www.census.gov/acs/www/Downloads/tp67.pdf>

Data for 2000. The 2000 U.S. Census 5 percent sample contains 14,081,466 observations. Applying the Census person-level population weights, this sample represents 281,421,906 people in the United States. The 2000 Southern California sub-sample which includes Los Angeles County, Orange County, Riverside County, San Bernardino County, San Diego County and Ventura County contains 626,056 individual observations, weighted to represent 12,922,119 people in this area of the state. The 2000 sample for San Diego County contains 88,691 individual observations, representing 1,865,920 people in the county.

Categorizing individual race/ethnicity. To define race/ethnicity for the 2000 Census dataset, BBC used the detailed IPUMS race variables (RACED and HISPAND) to categorize individuals into one of seven groups:

- Non-Hispanic white;
- Hispanic American;
- African American;
- Asian-Pacific American;
- Subcontinent Asian American;
- Native American; and
- Other minority (unspecified)

An individual is considered “non-Hispanic white” if they are not Hispanic and are not in combination with any other race group. Any self-identified Hispanic individuals are considered Hispanic American, regardless of any other race group identification.

For the five other racial groups, an individual’s race/ethnicity is categorized by the first (or only) race group identified in each possible race-type combination. BBC uses a rank ordering methodology which complements the 2000 Census data dictionary rank ordering. African American is first, followed by Native American, then Asian-Pacific American and finally Subcontinent Asian American. For example, if an individual identified “Korean,” this person belongs in the Asian-Pacific American category, whereas, if the individual identified “Korean” in combination with “Black,” the individual is considered African American. Hispanic identification overrules any other race group identification.

- The Asian-Pacific American category includes the following race/ethnic groups: Cambodian, Chamorro, Chinese, Filipino, Guamanian, Hmong, Indonesian, Japanese, Korean, Laotian, Malaysian, Samoan, Taiwanese, Thai, Tongan, and Vietnamese. This category also includes other Polynesian, Melanesian and Micronesian races as well as individuals identified as Pacific Islanders.
- The Subcontinent Asian American category includes these race groups: Asian Indian (Hindu), Bangladeshi, Pakistani, and Sri Lankan. Any individuals identified as “Asian,” but not clearly categorized as Asian-Pacific versus Subcontinent Asian, are put into the Asian-Pacific group. (Overall, nine in ten Asians counted in the 2000 Census in California were Asian-Pacific Americans.)

- American Indian, Alaskan Native, Hawaiian and Latin American Indian groups are considered Native American.
- If an individual is identified with any of the above groups and an “other race” group, the individual is categorized into the known category. Individuals identified as “other race” or “white and other race” are categorized as “other minority.”

One exception to the rules listed above pertains to individuals who are Asian-Pacific American in combination with Hawaiian. An individual identified as Hawaiian alone is considered Native American. Individuals who are a combination of Native American and Asian-Pacific are considered Native American in all cases except those identified as Hawaiian Native Americans. These individuals are considered primarily Asian-Pacific.

Business ownership. BBC uses the Census “class of worker” variable (CLASSWKD) to determine self-employment. Individuals are classified into eight categories:

- Self-employed for a non-incorporated business;
- Self-employed for an incorporated business;
- Wage or salary employee for a private firm;
- Wage or salary employee for a non-profit organization;
- Employee of the Federal government;
- Employee of a State government;
- Employee of a local government; or
- Unpaid family worker.

BBC included individuals who reported self-employment, either for an incorporated or a non-incorporated business, as business owners.

Defining selected industry sectors. The construction sector is defined using the 2000 Census code for the industry, 077, which is equivalent to the 1997 NAICS code 23. The Architectural, Engineering and Related Services industry is Census code 729; corresponding to 1997 NAICS code 5413.

“Airport concessions” was created by combining several industries by the Census codes. Since only 2000 data was analyzed for these industries, the 1980 codes are not included. The six industries used and their corresponding 2000 codes are listed below:

- Clothing and accessories, except shoe, stores (Census industry code 517);
- Jewelry, luggage and leather goods stores (Census industry code 519);
- Book stores and news dealers (Census industry code 537);
- Gift, novelty, and souvenir shops (Census industry code 557);
- Restaurants and other food services (Census industry code 868); and
- Drinking places, alcohol beverages (Census industry code 869).

Relevant engineering occupational titles. When referring to engineering as an occupation, BBC included civil (136), environmental (142) and mining and geological engineers (150). The Census codes for these occupational titles (in parentheses) tie to Standard Occupational Classification (SOC) codes 17-2051, 17-2081 and 17-2151, respectively.

Education variables. BBC used the variable denoting the highest level of educational attainment (EDUC99) to classify individuals into the following four categories: less than high school, high school diploma, some college and at least a bachelor's degree.

Definition of workers. The universe for the class of worker, industry and occupation variables includes workers aged between 16 and 65 who reported last working within the five years preceding the Census survey.

1980 Census data. BBC compared 2000 Census data with data for the 1980 Census to analyze changes in worker demographics, educational attainment and business ownership over time. A number of changes in variables and coding took place between the 1980 and 2000 Censuses.

Changes in race/ethnicity categories between censuses. Figure I-1 lists the seven BBC-defined race/ethnic categories with the corresponding 1980 and 2000 Census race groups. A difference between the 1980 and 2000 Census race groups is the availability of combinations of race types. In 2000, the Bureau of the Census introduced categories representing a combination of race types, so that individuals could select multiple races when responding to the 2000 Census questionnaire.

For example, an individual who is primarily white, yet with one quarter of Native American ancestry, could choose the “white and American Indian/Alaska Native” race group in 2000. However, if the same individual must choose a single race, as in prior years, the choice may either be “white” or “American Indian/Alaska Native.” The choice depends on unknowable factors including how strongly the individual identifies with his or her Native heritage. In addition, the data analyst does not have information about the proportions of individual ancestry and will only know that the ancestry is mixed. The variability introduced by allowing multiple race selection complicates direct comparisons between race data from the 2000 Census and previous censuses. Even so, 98 percent of survey respondents in 2000 indicated a single race.³

³ Grieco, Elizabeth M. & Rachel C. Cassidy. “Overview of Race and Hispanic Origin,” *Census 2000 Brief*, March 2001, page 3.

Figure I-1.
BBC race/ethnic categories compared with Census race and Hispanic Origin survey questions, 1980 and 2000

BBC-defined race/ethnic categories	2000 Census	1980 Census
African American	Hispanic origin: no Race: Black/Negro alone or in combination with any other non-Hispanic group	Hispanic origin: no Race: Black/Negro
Asian-Pacific American	Hispanic origin: no Race: Chinese, Taiwanese, Japanese, Filipino, Korean, Vietnamese, Cambodian, Hmong, Laotian, Thai, Indonesian, Malaysian, Samoan, Tongan, Polynesian, Guamanian/Chamorro, Pacific Islander, Micronesian, Melanesian, or other Asian, either alone or in combination with any non-Hispanic, non-Black, or non-Native American groups. <i>Does include Asian-Pacific in combination with Hawaiian.</i>	Hispanic origin: no Race: Chinese, Japanese, Filipino, Korean, Vietnamese, Pacific Islander or other Asian
Subcontinent Asian American	Hispanic origin: no Race: Asian Indian, Bangladeshi, Pakistani or Sri Lankan, alone or in combination with white or other groups only	Hispanic origin: no Race: Asian Indian
Hispanic American	Hispanic origin: yes Race: any race groups, alone or in combination with other groups	Hispanic origin: yes Race: any or Hispanic origin: no Race: Spanish
Native American	Hispanic origin: no Race: American Indian or Alaskan Native tribe identified, or Hawaiian, alone or in combination with any non-Hispanic, non-Black group. <i>Does not include Asian-Pacific in combination with Hawaiian.</i>	Hispanic origin: no Race: American Indian/Alaska Native or Hawaiian
Other minority group	Hispanic origin: no Race: other race alone or in combination with white only	Hispanic origin: no Race: other race
Non-Hispanic white	Hispanic origin: no Race: white alone	Hispanic origin: no Race: white

Source: BBC Research & Consulting from the IPUMS program: <http://usa.ipums.org/usa/>.

Business ownership. BBC uses the Census “class of worker” variable (CLASSWKD) to determine self-employment. This variable is the same for 1980 and 2000.

Changes in industry codes between censuses. The Construction sector is coded as “077” in the 2000 Census, and “060” in the 1980 Census. The 2000 Census represents the “architectural, engineering and related services” industry with code “729.” In 1980, the code is “882” for “engineering, architectural and surveying services.”

Changes in occupational codes between censuses. Occupational titles and codes vary between censuses. BBC made the following adjustments:

- The 1980 Census does not include specific categories for environmental or geological engineers, so these are omitted when comparing populations over time by engineering occupation. Instead, BBC focuses on civil engineers, coded as “136” in 2000, or “53” in 1980.
- Codes for occupations within the construction industry changed between the 1980 and 2000 censuses. Figure I-2 contains the occupational code crosswalk and all job descriptions. For occupations related to the industries included in airport concessions, the 1980 codes are listed as “n/a” since only 2000 Census data was used for analysis.

Changes in educational variables between Censuses. The 2000 Census uses an educational variable (EDUC99) that denotes the highest level of educational attainment, whereas the 1980 Census uses a variable (HIGRADE) that reports the highest-grade of school attended. In order to compare educational attainment in 1980 and 2000, BBC made the following assumptions:

- An individual who has not completed 12th grade or a GED has less than a high school diploma.
- An individual who completed 12th grade is considered a high school graduate.
- An individual who completed at least 12th grade, but less than completion of four years of college is categorized under “some college.”
- An individual who completed at least four years of college is categorized as receiving at least a bachelor’s degree.

Figure I-2.
Occupational crosswalk for 1980 and 2000 IPUMS data

Census 2000 occupational title and code	Census 1980 occupational title and code	Job description for 2000 titles
Construction managers 22	Managers and administrators, n.e.c. 19	Plan, direct, coordinate, or budget, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, and implementation. Include specialized construction fields, such as carpentry or plumbing. Include general superintendents, project managers, and constructors who manage, coordinate, and supervise the construction process.
First-line supervisors/managers of construction trades and extraction workers 620	Supervisors (categories separated): brickmasons, stonemasons, and tile setters; carpenters and related workers; electricians and power transmission installers; painters, paperhangers and plasterers; plumbers, pipefitters and steamfitters; n.e.c.; and extractive occupations 553-558 & 613	Directly supervise and coordinate the activities of construction or extraction workers.
Brickmasons, blockmasons and stonemasons 622	Brickmasons and stone masons 563	Lay and bind building materials, such as brick, structural tile, concrete block, cinder block, glass block, and terra-cotta block, Construct or repair walls, partitions, arches, sewers, and other structures. Build stone structures, such as piers, walls, and abutments and lay walks, curbstones, or special types of masonry for vats, tanks, and floors.
Carpenters 623	Carpenters 567	Construct, erect, install, or repair structures and fixtures made of wood, such as concrete forms, building frameworks, including partitions, joists, studding, rafters, wood stairways, window and door frames, and hardwood floors.
Carpet, floor, and tile installers and finishers 624	Tile setters, hard and soft 565	Apply shock-absorbing, sound-deadening, or decorative coverings to floors. Lay carpet on floors and install padding and trim flooring materials. Scrape and sand wooden floors to smooth surfaces, apply coats of finish. Apply hard tile, marble, wood tile, walls, floors, ceilings, and roof decks.
Cement masons, concrete finishers and terrazzo workers 625	Concrete and terrazzo finishers 588	Smooth and finish surfaces of poured concrete, such as floors, walks, sidewalks, or curbs using a variety of hand and power tools. Align forms for sidewalks, curbs or gutters; patch voids; use saws to cut expansion joints. Terrazzo workers apply a mixture of cement, sand, pigment or marble chips to floors, stairways, and cabinet fixtures.

Figure I-2. (continued)
Occupational crosswalk for 1980 and 2000 IPUMS data

Census 2000 occupational title and code	Census 1980 occupational title and code	Job description for 2000 titles
Construction laborers 626	Construction laborers 869	Perform tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, clean up rubble and debris, and remove asbestos, lead, and other hazardous waste materials. May assist other craft workers. Exclude construction laborers who primarily assist a particular craft worker, and classify them under "helpers, construction trades."
Paving, surfacing and tamping equipment operators 630	Paving, surfacing and tamping equipment operators 594	Operate equipment used for applying concrete, asphalt, or other materials to road beds, parking lots, or airport runways and taxiways, or equipment used for tamping gravel, dirt, or other materials. Include concrete and asphalt paving machine operators, form tampers, tamping machine operators, and stone spreader operators.
Miscellaneous construction equipment operators, including pile-driver operators 632	Grader, dozer and scraper operators 855	Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement. Operate pile drivers mounted on skids, barges, crawler treads, or locomotive cranes to drive pilings for retaining walls, bulkheads, and foundations of structures, such as buildings, bridges, and piers.
Drywall installers, ceiling tile installers and tapers 633	Drywall installers 573	Apply plasterboard or other wallboard to ceilings or interior walls of buildings, mount acoustical tiles or blocks, strips, or sheets of shock-absorbing materials to ceilings and walls of buildings to reduce or reflect sound.
Electricians 635	Electricians and apprentices 575 & 576	Install, maintain, and repair electrical wiring, equipment, and fixtures. Ensure that work is in accordance with relevant codes. May install or service street lights, intercom systems, or electrical control systems. Exclude "security and fire alarm systems installers." The 2000 category includes electrician apprentices.
Glaziers 636	Glaziers 589	Install glass in windows, skylights, store fronts, display cases, building fronts, interior walls, ceilings, and tabletops.
Painters, construction and maintenance 642	Painters, construction and maintenance 579	Paint walls, equipment, buildings, bridges, and other structural surfaces, using brushes, rollers, and spray guns. Remove old paint to prepare surfaces prior to painting and mix colors or oils to obtain desired color or consistency.

Figure I-2. (continued)
Occupational crosswalk for 1980 and 2000 IPUMS data

Census 2000 occupational title and code	Census 1980 occupational title and code	Job description for 2000 titles
Plasterers and stucco masons 646	Plasterers 584	Apply interior or exterior plaster, cement, stucco, or similar materials and set ornamental plaster.
Roofers 651	Roofers 595	Cover roofs of structures with shingles, slate, asphalt, aluminum, and wood. Spray roofs, sidings, and walls with material to bind, seal, insulate, or soundproof sections of structures
Sheet metal workers 652	Sheet metal duct workers 596	Fabricate, assemble, install, and repair sheet metal products such as ducts, control boxes, drainpipes, and furnace casings.
Iron and steel workers, including reinforcing iron and rebar workers 653	Structural metal workers 597	<i>Iron and steel workers</i> raise, place, and unite iron or steel girders, columns, and other structural members to form completed structures or structural frameworks. May erect metal storage tanks and assemble prefabricated metal buildings. <i>Reinforcing iron and rebar workers</i> position and secure steel bars or mesh in concrete forms in order to reinforce concrete. Use a variety of fasteners, rod-bending machines, blowtorches, and hand tools. Include rod busters.
Helpers, construction trades 660	Helpers, construction trades 866	All construction trades helpers not listed separately.
Driver/sales workers and truck drivers 913	Truck drivers (heavy), truck drivers (light) and driver-sales workers 804, 805 & 806	<i>Driver/sales workers</i> drive trucks or other vehicles over established routes or within an established territory and sell goods, such as food products, including restaurant take-out items, or pick up and deliver items, such as laundry. May also take orders and collect payments. Include newspaper delivery drivers. <i>Truck drivers (heavy)</i> drive a tractor-trailer combination or a truck with a capacity of at least 26,000 GVW, to transport and deliver goods, livestock, or materials in liquid, loose, or packaged form. May be required to unload truck. May require use of automated routing equipment. Requires commercial drivers' license. <i>Truck drivers (light)</i> drive a truck or van with a capacity of under 26,000 GVW, primarily to deliver or pick up merchandise or to deliver packages within a specified area. May require use of automatic routing or location software. May load and unload truck. Exclude "couriers and messengers."
Crane and tower operators 951	Crane and tower operators 849	Operate mechanical boom and cable or tower and cable equipment to lift and move materials, machines, or products in many directions. Exclude "excavating and loading machine and dragline operators."

Figure I-2. (continued)
Occupational crosswalk for 1980 and 2000 IPUMS data

Census 2000 occupational title and code	Census 1980 occupational title and code	Job description for 2000 titles
Dredge, excavating and loading machine operators 952	Excavating and loading machine operators 853	<i>Dredge operators</i> operate dredge to remove sand, gravel, or other materials from lakes, rivers, or streams; and to excavate and maintain navigable channels in waterways. <i>Excavating and loading machine and dragline operators</i> Operate or tend machinery equipped with scoops, shovels, or buckets, to excavate and load loose materials. <i>Loading machine operators, underground mining</i> , Operate underground loading machine to load coal, ore, or rock into shuttle or mine car or onto conveyors. Loading equipment may include power <i>shovels</i> , hoisting engines equipped with cable-drawn scraper or scoop, or machines equipped with gathering arms and conveyor.
Food Services Managers 31	N/A	Plan, direct, or coordinate activities of an organization or department that serves food and beverages.
Chefs and head cooks 400	N/A	Direct the preparation, seasoning, and cooking of salads, soups, fish, meats, vegetables, desserts, or other foods. May plan and price menu items, order supplies, and keep records and accounts. May participate in cooking.
First-line supervisors of food preparation and serving workers 401	N/A	Supervise workers engaged in preparing and serving food.
Cooks 402	N/A	Prepare, season, and cook soups, meats, vegetables, desserts, or other foodstuffs in restaurants. May order supplies, keep records and accounts, price items on menu, or plan menu.
Food preparation workers 403	N/A	Perform a variety of food preparation duties other than cooking, such as preparing cold foods and shellfish, slicing meat, and brewing coffee or tea.
Bartenders 404	N/A	Mix and serve drinks to patrons, directly or through waitstaff.
Combined Food Preparation and Serving Workers, Including Fast Food 405	N/A	Perform duties which combine both food preparation and food service.
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop 406	N/A	Serve food to diners at counter or from a steam table.

Figure I-2. (continued)
Occupational crosswalk for 1980 and 2000 IPUMS data

Census 2000 occupational title and code	Census 1980 occupational title and code	Job description for 2000 titles
Waiters and waitresses 411	N/A	Take orders and serve food and beverages to patrons at tables in dining establishment.
Dining Room and Cafeteria Attendants, Bartender Helpers, and Miscellaneous Food Preparation and Serving Related Workers 413	N/A	Facilitate food service. Clean tables, carry dirty dishes, replace soiled table linens; set tables; replenish supply of clean linens, silverware, glassware, and dishes; supply service bar with food, and serve water, butter, and coffee to patrons.
Dishwashers 414	N/A	Clean dishes, kitchen, food preparation equipment, or utensils.
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop 415	N/A	Welcome patrons, seat them at tables or in lounge, and help ensure quality of facilities and service.
First-Line Supervisors/Managers of Retail Sales Workers 470	N/A	Directly supervise sales workers in a retail establishment or department. Duties may include management functions, such as purchasing, budgeting, accounting, and personnel work, in addition to supervisory duties.
Cashiers 472	N/A	Receive and disburse money in establishments other than financial institutions. Usually involves use of electronic scanners, cash registers, or related equipment. Often involved in processing credit or debit card transactions and validating checks.
Retail salesperson 476	N/A	Sell merchandise, such as furniture, motor vehicles, appliances, or apparel in a retail establishment.
Customer service representatives 524	N/A	Interact with customers to provide information in response to inquiries about products and services and to handle and resolve complaints. Exclude individuals whose duties are primarily sales or repair.

Note: All occupational groups include only individuals who work in the construction industry. By definition, this includes workers over the age of 16 who reported last working within five years of the Census survey.

Source: 2000 Census occupational titles and codes at <http://usa.ipums.org/usa/volii/00occup.shtml>, 1980 codes and titles at <http://usa.ipums.org/usa/volii/98occup.shtml>, job descriptions from the Bureau of Labor Statistics www.bls.gov.

2007 ACS data. BBC also used 2007 ACS data from IPUMS. The 2007 ACS sample contains 2,994,662 observations. Applying the person-level population weights, this sample represents 301,621,159 individuals in the U.S. The 2007 ACS includes 132,355 observations for Southern California, representing 14,378,115 people in this area of the state and 19,038 observations in San Diego County, representing 2,006,273 people in the county.

With the exception of a few minor differences, the variables available for the 2007 ACS dataset are the same as those available for the 2000 Census 5 percent sample.

Changes in race/ethnicity categories between the 2000 Census and 2007 ACS. The 2000 Census 5 percent sample and the 2007 ACS PUMS data use essentially the same numerical categories for the detailed race variable (RACED). However, in both the samples, any category that represented fewer than 10,000 people was combined with another category. As a result, some PUMS race/ethnicity categories that occur in one sample may not exist in the other, which could lead to inconsistencies between the two samples once the detailed race/ethnicity categories are aggregated up to the seven broader categories. This issue is unlikely to affect all but a very small number of observations. PUMS categories that were available in 2000 but not 2007 represented 0.07 percent of the 2000 population. Similarly, PUMS categories that were available in 2007 but not in 2000 represented 0.02 percent of the 2007 population. There were no changes in the available categories for the detailed Hispanic variable (HISPAND).

Other variables. Other variables used by BBC in its analysis were the same in 2000 and 2007. The variables CLASSWKD, IND, OCC, and EDUC99 were the same in both datasets, with variable codes in each case representing the same categories.

Survey of Small Business Finances

The study team used the Survey of Small Business Finances (SSBF) to analyze the availability and characteristics of loans among small business enterprises.

The SSBF, conducted every five years by the Federal Reserve Board, collects financial data from non-governmental for-profit firms with fewer than 500 employees. This survey is a nationally representative sample and is structured to allow for analysis of specific geographic regions, industry sectors, and gender and racial groups. This survey is unique in that it provides detailed data on both firm and owner financial characteristics. For the purposes of this report, BBC used the surveys from 1998 and 2003, which are available at the Federal Reserve Board website.⁴

Data for 1998. The 1998 SSBF includes information from 3,561 small businesses. This survey and those conducted prior to it, oversampled minority-owned businesses allowing for a more precise analysis of how minority owner status may affect loan and financial outcomes.

⁴ The Federal Reserve Board. *Survey of Small Business Finances, 1998* and *Survey of Small Business Finances, 2003*, obtained from <http://www.federalreserve.gov/pubs/oss/oss3/ssbf98/ssbf98home.html> and <http://www.federalreserve.gov/pubs/oss/oss3/ssbf03/ssbf03home.html> respectively.

Categorizing owner race/ethnicity and gender. Definition of race and ethnic groups in the 1998 SSBF are slightly different than the classifications used in the 2000 Census and 2007 ACS. In the Survey, businesses are classified into the following five race and ethnic groups:

- Non-Hispanic white;
- Hispanic American;
- African American;
- Asian American;
- Native American; and
- Other (unspecified).

A business is considered Hispanic American-owned if 50 percent or more of the owners are Hispanic American, regardless of race. All businesses reporting 50 percent or less Hispanic American ownership are included in the racial group that owns more than 50 percent of the company. No firms reported ownership by “other.”

Similarly, firms were classified as female-owned if more than 50 percent of the firm was owned by female individuals. Firms owned half by female owners and half by male owners were included in the male category.

Defining selected industry sectors. In the 1998 SSBF each business was classified into an industry by SIC codes. Using these data, the study team created industry variables and included each business into one of the following categories:

- Construction;
- Mining;
- Transportation, communications and utilities;
- Finance, insurance and real estate;
- Trade;
- Engineering;
- Services (excluding engineering); and
- Agriculture, forestry and fishing.

Region variables. The SSBF divides the United States into nine regions. California is included in the Pacific region.

Loan denial variables. In the 1998 survey, firm owners were asked if they have applied for a loan in the last three years and whether their loan applications were always, sometimes or never approved. For the purposes of this study, firms that responded with sometimes approved or always approved were considered as having loans approved. Only firms that were never approved were classified being denied a loan.

Data for 2003. The 2003 SSBF differs from previous surveys in the population surveyed, the variables available and in data reporting.

Population differences. Similar to the 1998 survey, the 2003 survey records data from businesses with 500 or fewer employees. The sample contains data from 4,240 firms, but in 2003, minority-owned firms were not oversampled. In the 1998 data, 7.3 percent of the firms were surveyed were owned by Hispanic Americans, however in 2003 that number dropped to 4 percent. Numbers dropped from 7.7 percent to 2.8 percent and 5.7 percent to 4.2 percent for African American-owned and Asian American-owned firms, respectively.

Variable differences. In the 2003 SSBF, businesses were able to give responses on owner characteristics for up to three different owners. The data also include a fourth variable that is a weighted average of other answers provided for each question. In order to define variables consistently from the 1998 to 2003 surveys, BBC used the final weighted average for variables on owner characteristics. Firms were then divided into race, ethnicity and gender groups according to the same guidelines used for the 1998 data.

Industry, region and loan denial variables for the 2003 survey were defined by the study team along the same guidelines as the 1998 survey with one exception. The 2003 survey did not include any firms classified in the agriculture, forestry and fishing industry.

Data reporting. Due to missing responses to survey questions in both the 1998 and 2003 datasets, data were imputed to fill in missing values. The missing values in the 2003 data set were imputed differently than in previous studies. The 1998 survey has one imputation so the number of observations in the data set matches the number of firms surveyed. However, the 2003 data includes five imputations. Thus there are 21,200 observations, five for each of the 4,240 firms surveyed. In both data sets, when the firm provided an answer to a survey question, that value is not changed during imputation, only the missing values are predicted and filled in.

As discussed in a recent paper about the 2003 imputations generated by the Finance and Economics Discussion Series, missing survey values can lead to biased estimates and inaccurate variances and confidence intervals.⁵ These problems can be corrected through use of multiple imputates. In order to provide the most accurate analysis, BBC utilized all five imputates provided with the 2003 data in analysis of the survey.

Multiple imputates were not provided with the 1998 data, thus the method of analysis used for the 2003 data was not applicable. To address this, the study team performed analysis two different ways, first only with observations whose data was not imputed and second with all observations. The differences in results were insignificant and the results presented are from the first method of analysis.

⁵ Lieu N. Hazelwood, Traci L. Mach and John D. Wolken. *Alternative Methods of Unit Nonresponse Weight Adjustments: An Application from the 2003 Survey of Small Businesses*. Finance and Economics Discussion Series Divisions of Research and Statistics and Monetary Affairs, Federal Reserve Board. Washington, D.C., 2007.
<http://www.federalreserve.gov/pubs/feds/2007/200710/200710pap.pdf>

Survey of Business Owners (SBO)

BBC used data from the 2002 SBO to analyze mean annual firm receipts.

The SBO is conducted every five years by the U.S. Census Bureau. The most recent publication of the SBO was collected in 2002. Response to the survey is mandatory, which ensures comprehensive economic and demographic information for business and business owners in the U.S. All tax-filing businesses are covered in the survey: firms with paid employees and firms without paid employees. In 2002, almost 23 million firms were surveyed.

BBC compiled a subset of the SBO data including number of firms, number of firms with paid employees, number of firms without paid employees, and total receipts. This information was available by geographic location, industry, gender and race/ethnicity.

Data was collected by geographic area for the U.S. as well as several California counties, including Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura counties.

The Census Bureau uses 2007 North American Industry Classification System (NAICS) for classification of industry. BBC analyzed data for firms in all industries and for firms in the construction industry.

To categorize business ownership of firms, the Census Bureau uses standard definitions for women-owned and minority-owned businesses. A business is defined as female-owned if more than half (51 percent or more) of the ownership and control is by women. Firms with joint male-/female-ownership were tabulated as an independent gender category. A business is defined as minority-owned if more than half (51 percent or more) of the ownership and control is African American, Asian, Hispanic, Native American or another minority group. Respondents had the option of selecting one or more racial groups when reporting on business ownership. BBC then analyzed data pertaining to the following six racial categorizations:

- African American
- Asian American
- Native American
- White
- Hispanic
- Non-Hispanic

Certain subsets of the data were withheld because they did not meet publication standards. The SBO is also limited by disclosure laws to protect sensitive business data. Selected subsets of the data were withheld (e.g., Native American-owned firms in San Bernardino County) but the data are included in higher level totals (e.g., Native American-owned firms in California). BBC was unable to access a select number of data subsets on the county level for these reasons. The withheld data was not included in calculations for mean annual receipts.