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# Business Uses of Census Data and Nielsen Company Capabilities

This document contains the following information:

- Business uses for data released by the United States Census Bureau
- Importance of census data to your marketing strategy
- Reasons why Census 2010 is so important to the Nielsen Company, its clients, and partners.

## Introduction

As the leader in update demographics and a key business partner of the Census Bureau, Nielsen is often asked about ways that businesses use census data. This is a seemingly simple question—but one that is without a short and simple answer. To over-simplify, most businesses do not (or do not only) use the census data directly, but rather through other companies who formulate the census data for application in marketing and business intelligence.

There are two primary means for the application of census data for most purposes: (1) the demographic information that describes the U.S. population in terms of count and character, and (2) the often overlooked "stamping" of a consistent, statically-valid and stable cartographic base. Cartographic information is the key to Geographic Information System applications (GIS)—from MapInfo® to Google™ to Garmin® to Rand McNally®—for mapping and analysis but also for the co-mingling of census data with private sector data and software—in our case, for marketing applications.

Marketers' attention to the census data and demography does shift from the private sector to the public sector during each fielding of the decennial census but it takes time to collect, tabulate, and publish census results. When released, the data is one to two years behind, and is not in the proper form for marketers who need data representative of the current year and consistent in application. There are approximately half-a-dozen companies, including Nielsen, that specialize in updating census data for small area geographies between decennial census periods.

These companies provide the data in more usable formats and for up-to-date postal geographies for GIS and marketing applications. They also blend the census data with other inputs, using it to create estimates of consumer demand for hundreds of products and services, as well as consumer segmentation topologies–Nielsen PRIZM being the most well-known and widely used.

Finally, these companies provide technology products and services to their clients in marketing application. Not unlike information technology services, America's marketers rely on the expertise of third-party partners to take care of all the details and nuance in updating census data and making it usable for marketers in the tactical applications they need to prioritize real estate and consumer targeting decisions.

## U.S. Census: A Big Investment in Documenting America

In Article 1, Section 2 of the U.S. Constitution, it is stated that the government must count the populace once every ten years: "The actual Enumeration shall be made within three Years after the first Meeting of the Congress of the United States, and within every subsequent Term of ten Years, in such Manner as they shall by Law direct."

This seemingly simple directive to count the population of the nation in order to apportion seats (and electoral votes) to the U.S. House of Representatives seems to have generated more than its share of controversy over the years. These controversies have covered everything from the possible invasion of privacy to the large costs associated with administering the census.

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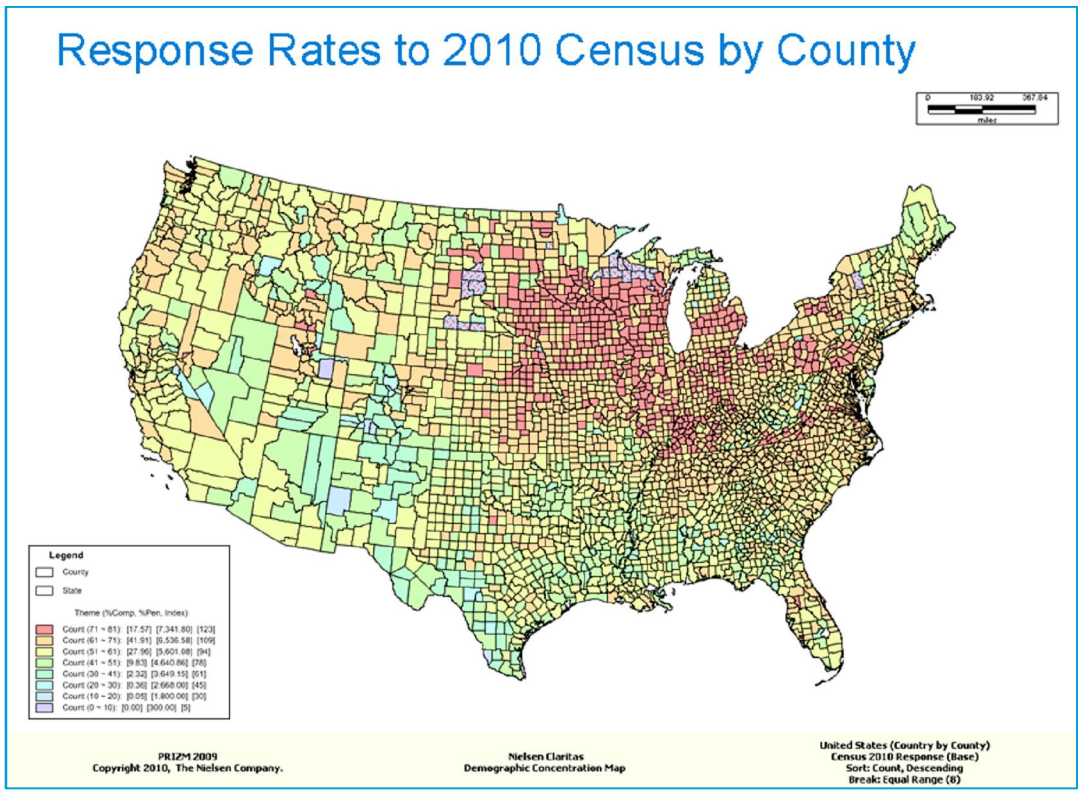


For a country of more than 300 million persons spread out over 3.6 million square miles, counting the entire populace is an immense logistical feat. To accomplish it, the Census Bureau mails approximately 134 million questionnaires to be completed by census day on April 1. That would cost nearly $60 million in postage alone if the Census Bureau did not get free postage from the United States Postal Service (USPS). The collective weight of all 360 million printed questionnaires (from all three mailings) is nearly 12 million pounds, and if stacked on top of one another, would be nearly 29 miles high.

Given those logistics, it may seem less unreasonable that the decennial census has turned into a $15 billion investment, complete with a $340 million advertising and marketing budget, executed in 28 different languages. Paid advertising was first used for Census 2000, and is credited with turning around a declining response rate. In that census cycle, 33% of households did not respond to the first mailing, and each percentage point of non-response cost the government (i.e., taxpayers) $85 million or more to send enumerators knocking on doors. The Census Bureau estimates that for this cycle, nearly 48 million households will require a visit from an enumerator to gain compliance. That equates to nearly $2.7 billion just to follow-up on households who did not return their census form.

Ad spending for Census 2010 is 20% higher than for Census 2000, with approximately $60 million for general English language advertising, $25 million for Hispanic audiences, $23 million for outreach to African American audiences, and $14 million for advertising in several Asian languages. Beyond the cost of actually collecting the data, there are hundreds of millions of dollars spent on questionnaire research and design, data tabulation and reporting, and of course the wages of enumerators to solicit responses from those who did not respond by mail.



## Myths and Facts about the Census

Each decade the census generates controversy, usually surrounding the potential for government interference in the personal lives of Americans, as well as the cost of executing such a huge logistical program. Here we will discuss some of the myths and realities of the U.S. census program.

**The decennial census is unconstitutional:**
**Myth—**Article 1, Section 2 of The Constitution does more than allow the government to count the population every 10 years—it requires that an enumeration be done "in such manner as they [Congress] shall by law direct." Congress began with a simple count in 1790—asking only for the numbers of free white males and females, slaves, and other persons. By 1820, it was also asking how many in each household were "engaged in agriculture, commerce, and manufactures." In 1830, it asked how many were deaf, dumb, or blind. As far back as 1870, the U.S. Supreme Court wrote in passing that the government had unquestioned authority to ask for more than a mere head count. The questions directed by Congress grew increasingly detailed through the remainder of the 19th century, and in 1902, Congress established the Census Bureau as a permanent agency.

**Completing the census is easy:**
**Fact—**The Census 2010 form consists of only ten questions, including name, sex, age, date of birth, Hispanic origin, race, household relationship, and whether you own or rent. It takes approximately 10 minutes to complete the census form.

**The census is no longer necessary:**
**Myth**—Given the expenses associated with administering the decennial census, there are those who believe the private sector or an aggregation of state and local data could serve as its replacement. While it is true that the estimated $15 billion price tag of Census 2010 is a lot of money, it is also true that there is no substitute for the wealth of data obtained by the census. No other count considers every man, woman, and child in the country, and much of the private sector data cited as a potential for replacement is actually rooted in decennial census data itself. In addition, there are many examples of census data uncovering trends that surprised the experts. Some examples from Census 2000 include the unexpected population surge in many of the older large cities, such as Chicago, and the unexpected spread of the nation's Hispanics into new states such as North Carolina. For 2010, the census will tell us more about small but growing populations such as same-sex partners and multiracial populations whose presence in an area can impact laws and public policies.

**Census is only used for Congressional apportionment:**
**Myth**—Census data is also used to understand the needs of the community and to plan for adequate services of its residents. It is heavily used by state and local governments, and also by the private sector. The results of the census are made available—tabulated by geography, not by household—at little or no cost to anyone who wishes to obtain them. Much of the data is provided online at the Census Bureau Web site. The annual distribution of nearly $450 billion in federal assistance programs such as Medicare, and more than $400 billion in federal grants, is based on census data. For example in 2007, Arlington County, VA estimates that it received more than $207 million from federal grant programs dependent on census data. Furthermore, it is estimated that 3,500 Arlington residents were not counted in Census 2000, meaning that the county may have lost out on up to $3.4 million in additional federal funding.

**All residents must complete their census form:**
**Fact—**In fact, refusing to answer either the brief Census 2010 form, or the longer American Community Survey (ACS) form, is a violation of federal law (U.S. Code, Title 13, Section 221). Refusing to answer is punishable by a fine of $100, while giving false answers carries a fine of up to $1000 per falsified answer. However, prosecution is rare, as the Census Bureau is looking for responses, not law suits.

**Big Brother is intruding on our lives:**
**Myth**—There are those who have tried to persuade others not to complete their census form on the grounds that it is unconstitutional, a waste of taxpayer money, unnecessary, and/or intrusive. In reality, the Census Bureau (or the government, for that matter) is not seeking details about our private lives but rather data about our communities.

Individual surveys are kept strictly confidential for 72 years, at which time they are released to the National Archives for genealogical research. And for those who are concerned with the expense, the Census Bureau estimates it costs $85 million dollars for enumerators to go door-to-door for follow-up for every 1% of non-response. As a taxpayer, the best means to reduce costs is to complete the mailed questionnaire on time.

**Information provided to the census is private:**

**Fact—**Title 13, Section 9 of the U.S. Code, states that "copies of census reports…shall be immune from legal process, and shall not, without the consent of the individual or establishment concerned, be admitted as evidence or used for any purpose in any action, suit, or other judicial or administrative proceeding." The law also forbids the sharing of individual census reports with any other "department, bureau, agency, officer, or employee of the Government" (including the CIA and FBI) and prohibits release of anything other than statistical information that does not identify individuals or businesses. Furthermore, the law makes it a crime punishable by up to five years in prison and a fine of up to $5,000 for any census official to make unauthorized release of information. (The Census Bureau says the fine can be up to $250,000 under Title 18.)

## Importance of the U.S. Census

The census is intended to fill the mandate to count everyone in the nation on April 1—whether or not they are a citizen. The Constitution simply mandates a count of persons, not citizens—a distinction that often creates controversy. First, the census results are used to alter the state-by-state apportionment of seats in the House of Representatives, and therefore the Electoral College. For Census 2010, Texas is likely to gain three seats, while Arizona, Florida, Georgia, and Utah will likely each gain one. The states that are likely to lose one seat each are Iowa, Louisiana (as a result of Hurricane Katrina shifting residents from New Orleans to Houston and elsewhere), Massachusetts, Michigan, New Jersey, New York, Ohio, and Pennsylvania. Second, state legislatures use census data to redraw internal districts as well as those for Congressional House members.

The third major use for census data is to determine how much money the states receive back from the federal government. While estimates vary considerably, in 2008, census data was used to apportion $447 billion for federal assistance programs such as Medicaid, and another $420 billion in federal grants for a wide variety of purposes. Those facts combined with the reality that there will always be subsections of the population that will likely be over- and under- counted, create the potential for discontent and political discourse.

## Over- and Under-Counted Populations

It is estimated that Census 2000 resulted in an over-count of approximately 1.3 million affluent white persons (e.g., those with multiple residences) and an under-count of nearly 4.5 million under-privileged persons such as disenfranchised blacks and Hispanics. As you might imagine, those who were over-counted tend to have Republican leanings, while the under-counted tend to align with Democratic candidates during elections. This, of course, causes significant controversy among politicians, election districts, and population subgroups.

But there is more to the census than congressional representation and distribution of federal funds—there is business—big business. Data from the census provides the foundational underpinnings of the demographic data used in modern marketing in America today.

# Business Uses for Census Data

The U.S. census drives business intelligence in America—even though many, if not most, of its users are not fully aware of this fact. However, if you have ever examined demographics about your customers or store trade areas, you are likely an indirect user of census data.

The census provides an underlying foundation for much of the modeling and data structures of the large household data compilers (Experian, Equifax, etc.) used to append demographic data to customer files and supply direct marketing lists and services. It also serves as an input to sampling plans for primary research surveys, as well as the projection of results to the population as a whole. Finally, it is the core foundation for

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updated geo-demographic data, such as that found in Nielsen Pop-Facts, used in site evaluation, demand modeling, and trade area definition. In short, modern marketing would nearly grind to a halt without the foundation that the U.S. census provides—it is a catalyst to the efficiency and competitiveness of the American marketplace.

It may hardly seem possible that all this relies on a simple, once-per-decade survey. However, while the survey may be simple, the process of getting 115 million households to complete it and then tabulate the results, is not. That is the key to its importance for American marketers. The census is the only instrument that measures the entire population, and therefore, serves as the benchmark for many elements of market research, consumer targeting, and retail (store) network planning—as well as a multitude of non-commercial applications.

While one could argue the details, most modern corporations have six key disciplines related to marketing, and they all use some element of census data or subsequent private-sector updates. The six disciplines often comprise individual departments or functions within corporations, or they may be assumed by an advertising agency, market research firm, or other third-party partner. Some of these functions take on much more importance within certain organizations than others, while some rely much more heavily on census data than do others.


## Strategic Planning & Market Research

The marketing functions illustrated above are represented within a circle around the customer. This exhibit represents the ideal of marketing—being customer-centric. The old adage for the four "Ps" of marketing—Promote the right Product, in the right Place, at the best Price, and of course at the right time—is as true as ever. Enabling and using effective marketing intelligence is key to that objective. While strategic planning does not have to be the starting point, it usually is the fulcrum of product design, brand management, and market research within the modern corporation.

**The census is counting all residents, legal or not:** **Fact**—The purpose of the census is to count all persons residing in the United States. That means all persons whose usual residence (where they live and sleep most of the time) is in the U.S., regardless of citizenship or legal status. With regards to the census, the Constitution refers to a count of persons—not citizens. The Constitution refers elsewhere to "citizens", so it is believed that if the founders had intended the census to count only citizens, they would have specified as much in the language of the Constitution. There have been proposals to require that the census count only U.S. citizens, with a major motivation of eliminating unauthorized aliens. However, current rulings seem to be clear that the purpose of the census is to count everyone residing in the U.S., and that representation among the states is to be apportioned based on those numbers. Apart from the politics of the issue, imagine how response to the census would be impacted if it had to ask about both citizenship and legal status, and then eliminate those who do not qualify. This could turn the census into an investigatory function, and cooperation, even among citizens, would likely take a major hit. So as challenging as it is, and odd as it might sound to some, the census really needs everyone—even those here illegally—to respond.

**The census does not count Americans living abroad:** **Fact**—Americans living in other countries are not counted in the census. However, persons in the armed forces and Federal workers stationed in other countries are counted, and assigned to their "state of record." But this is only for apportionment purposes. They are not included in the "resident population" numbers that we are most familiar with from PL 94, SF1, and other Census Bureau publications. As you can imagine, designating a "census block of record" would be a challenge in many cases. There has been pressure from some Americans overseas to be counted in the census on the grounds that they vote and pay taxes, and should therefore be counted in the census. As a result, Congress ordered the Census Bureau to test methods for counting the overseas population, and the test was conducted in three countries. Its major finding was that efforts to count Americans residing in other countries would be prohibitively expensive and not very successful, so the policy remained intact—non-residents are not counted.

**Incarcerated persons are counted where housed:** **Fact**—The issue of where to count the prison population has gained in importance as America's prison population has grown. The current rule is that prisoners are counted at the prison (considered group quarters) where they live and sleep most of the time. However, some have argued that prisoners should be counted at their pre-incarceration address. The argument is that the current rule inflates the population of rural white communities at the expense of typically urban, low income communities of color from which many prisoners originate. Census 2010 will count prisoners at their prison location, but there is discussion of releasing group quarters data at the block level early (shortly after PL 94) that would enable states to re-allocate these populations for funds distribution purposes. Other persons in group quarters, such as homeless shelters and senior living facilities, are also counted at their location of residence. It is estimated that there are 236,000 group quarter locations, including prisons and dormitories, as well as 65,000 shelters, soup kitchens, and other outdoor locations, that will be visited in order to count the homeless population.

Like it or not—the census may be expensive but is unquestionably necessary, and the law requires truthful answers to the 2010 census form, as well as the ACS, for the 3 million households that receive it. The courts have consistently upheld the government's right to require answers to those questions—so complete your census.

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Interestingly enough, this is one of the marketing functions that may use the census data more directly. These departments are usually well-staffed with statisticians and other research professionals who can better leverage the census data in its raw form for trending and understanding the larger and long-term implications of the diversity in the U.S. population. As such, it is often the ancillary products and studies created by the Census Bureau that serve this need, more so than the decennial census itself. Strategists often need to look far forward into the future to help their companies stay ahead of changes in age, diversity, income, employment, or other trends in a population and future growth.

On the more tactical side, market researchers conducting a survey need to ensure their respondents are representative of the nation, the region, or the market they are surveying. As such, they will use census data (and private sector updates) to ensure they are reaching the right number of each population category such as Hispanic ethnicity or not, rich/poor, old/young, married/single, and so forth. Once survey responses are obtained, census-based data is used to weight and project the responses to the market(s) as a whole. Nielsen Media Research does exactly that as they recruit Nielsen Families to provide input on television viewership, and then use Nielsen Claritas demographic data to project those results to the nation and local DMA markets.

Oftentimes, a measurable portion of primary research does include qualitative data collection, which is not designed or intended to produce projectable results. In those instances, census data may still be used to determine the incidences of a particular demographic segment that a client may wish to target for custom research. That incidence information can then be used to determine how difficult, and therefore, costly, it will be to locate qualified respondents. In addition, if a representative sample will yield too small a sample for a particular segment of interest (e.g., households with a particular household income level) for analysis purposes, then a decision might be made to design the sample to seek out additional respondents that meet the criteria—that is, to augment the sample design to ensure an over-sample of the coveted demographic.

In a larger context, much of brand strategy is directed towards understanding which consumers are buying or not buying the product; competing products; and the brand category. Primary research can be conducted to sample and measure consumer behavior, and then project the results to the larger population. The Nielsen Homescan panel is a premier instrument within the consumer package goods industry, allowing companies such as Kraft and Proctor & Gamble to know which types of consumers are buying which types of products and refine their strategies accordingly. Segmenting consumers into those who buy a lot, buy a little, or buy not at all, and understanding **who** they are, is an important element of marketing research strategies.

Segmentation can be based on something as simple as households by age and income. For example, older and upscale consumers are the core of the new vehicle market in that they have the means to buy new vehicles, and also to buy more frequently than the younger middle-class. The implications of family composition are important in understanding who buys minivans and family sedans versus SUVs and sports cars.

Syndicated segmentation systems such as Nielsen PRIZM, classify consumers into segments based on their household demographics, the neighborhood in which they live, and their purchase behavior. Household demographics are obtained from the big-three compilers, but as we will see, even so-called household data has some dependency on census data (e.g., modeling a given householder's income). The neighborhood characteristics are rooted in census data (and subsequent updates), as are the geographic distributions of the segments used for ranking of market potential.

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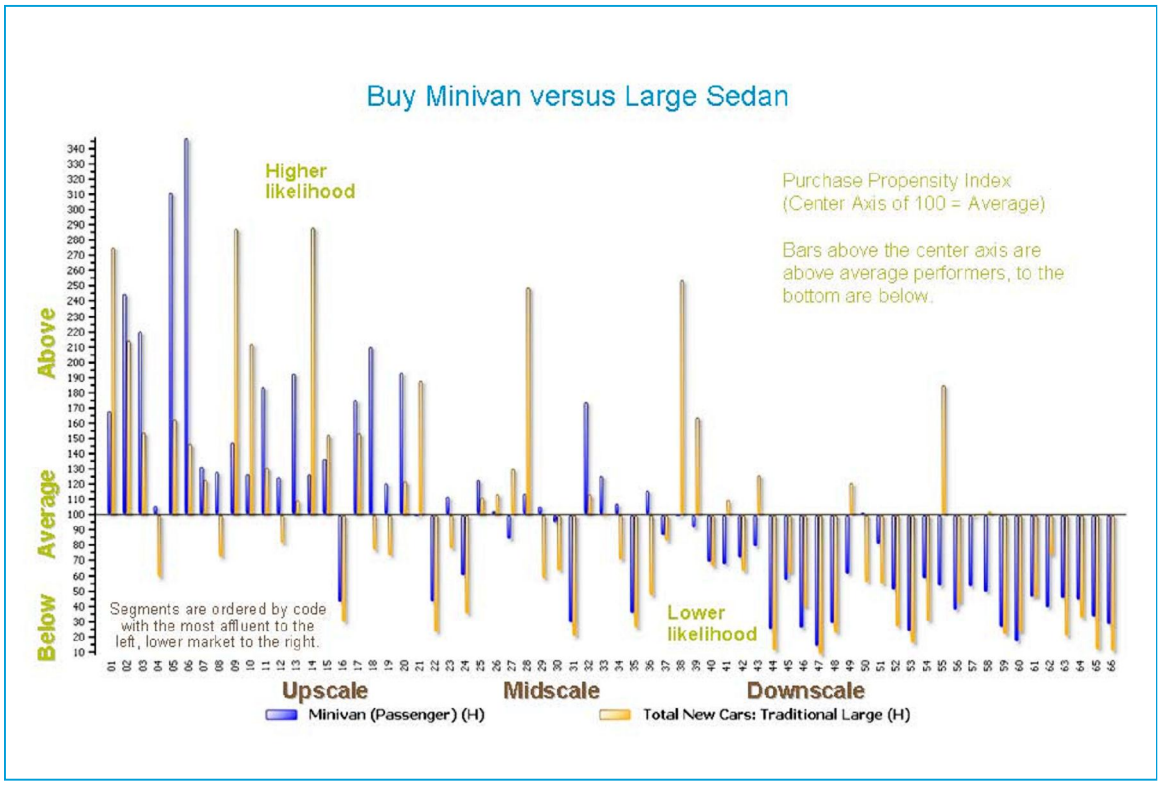


The advantages of a syndicated segmentation approach include the ease with which it can be appended to a customer file; the availability of counts by segment by geography for market analysis; the linkage provided to marketing databases used for media measurement, direct mail, and syndicated consumer research; and most recently, Nielsen PRIZM Digital for Internet ad targeting. Segmentation is a framework that can tie diverse marketing functions together, and leads to the next major marketing functions—media strategy, planning, and buying.

## National Media Strategy

Media planning and buying is a very complex discipline, and one that The Nielsen Company specializes in via Nielsen Media Research, Nielsen Online, and Scarborough Research. In short, marketers need to determine the media that is best suited to reaching their target audience—and of course, that will provide the most "bang for their buck."

Typically, companies weigh pros and cons and eventually settle on a target for marketing their brand or product. For some, that might be a broader target such as "Females, Age 25-54", but for others it can be very specific. The challenge for the marketer is to balance the specificity of the target with the effective reach (or number of potential consumers) that will be watching, listening, or reading a given media channel. At the most strategic level, the marketer needs to determine the media mix across all available media. This can cover a broad gamut of sources including: television channels such as national and local networks and niche cable channels; print media channels such as newspapers, magazines, and outdoor billboards; more direct routes such as Internet advertising and email and direct mail campaigns; as well as any other means available for reaching the right consumer with the right message at the right time. This can be a daunting task and one where the application of demographics, and therefore census data, is essential.

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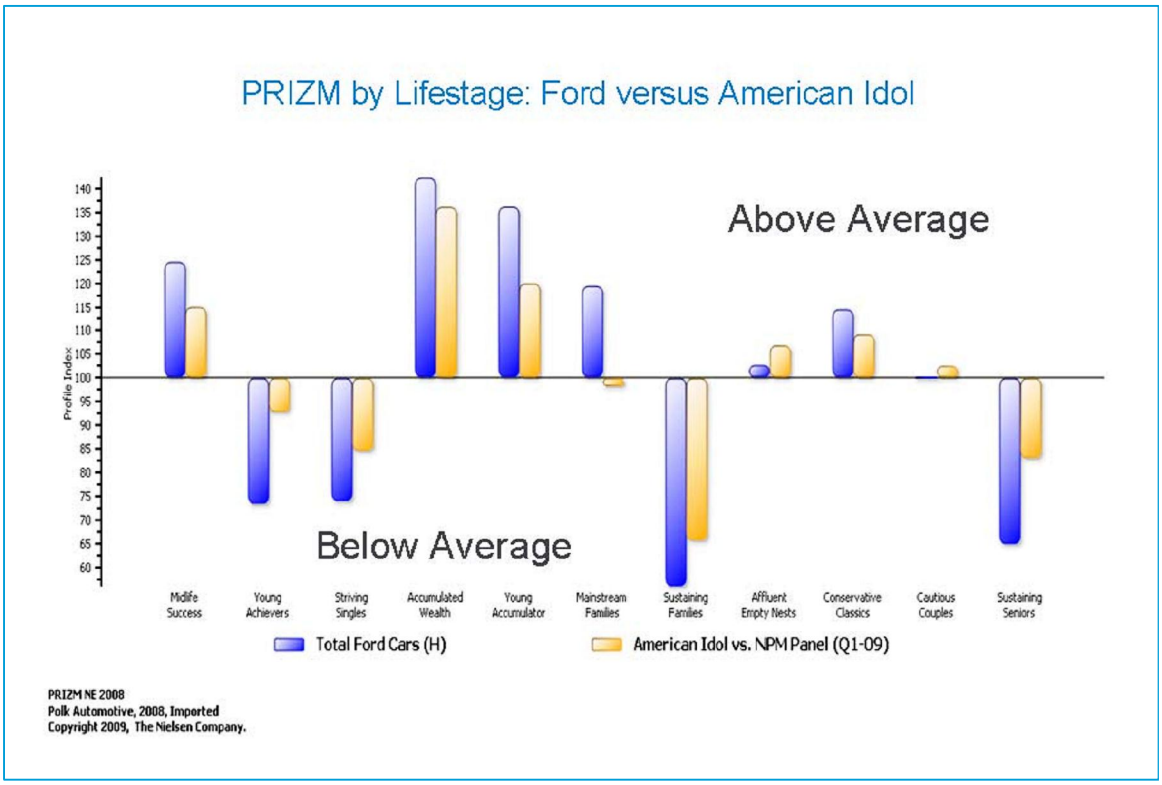


Because all media measurement is done via research panels—relatively continuous groups of consumers completing research surveys, the accuracy of which are dependent on the survey providers' sampling plan, weighting, and projection techniques—census data play a key role in ensuring the panel is representative of the market being measured. In this manner, a panel of several thousand consumers can be used to estimate national and local readership for specific magazines, viewership for television day parts, and other media measurements. That is the magic of statistics, but it is dependent on having an accurate foundation for selecting, weighting, and ultimately projecting the sample of the population being surveyed onto the nation as a whole.

Other activities in media strategy, planning, and buying may use census data to prioritize markets for expenditure and investment. Demographics can also drive the cost of the media. Typically, a program with lower viewership may still attract a premium price if its audience is younger, because they may be harder to reach or more sought after by advertisers.

A relative newcomer to the media world is the Internet, which is considered both a medium as well as a channel. As a medium for reaching potential customers, Internet advertising can be highly targeted due to the abundance of behavioral data (in the form of click stream information) that is available. In addition, consumer panels have been established to track usage, and therefore create a database not unlike television and radio ratings. Nielsen Online maintains such a panel of thousands of consumers who have agreed to have their use of the Internet tracked and monitored for the good of market research (as well as a small incentive for participating.) As with other panels, this data must also be representative of the universe for which it is intended, and census-based data plays a role in crafting the sampling plan, as well as projecting results. An additional complexity is that to use the Internet, the consumer must have access to it, so rather than evaluating and measuring all households, this panel is measuring only Internet-enabled households—a somewhat smaller universe than census households as a whole, because not all households use the Internet.

Ad targeting on the Internet can now use a combination of behavioral data (e.g., did you visit a travel site such as Expedia) and demographics (e.g., are you a young single or an empty nest couple) to target ad insertions. While the behavior of perusing travel sites indicates an interest in travel regardless of the demographic to which they belong, perhaps the young single would be more likely to respond to an ad for a fun-ship, party cruise, whereas the empty-nest couple would be more receptive to an ad for a relaxing and luxurious trip. Nielsen PRIZM Digital now provides

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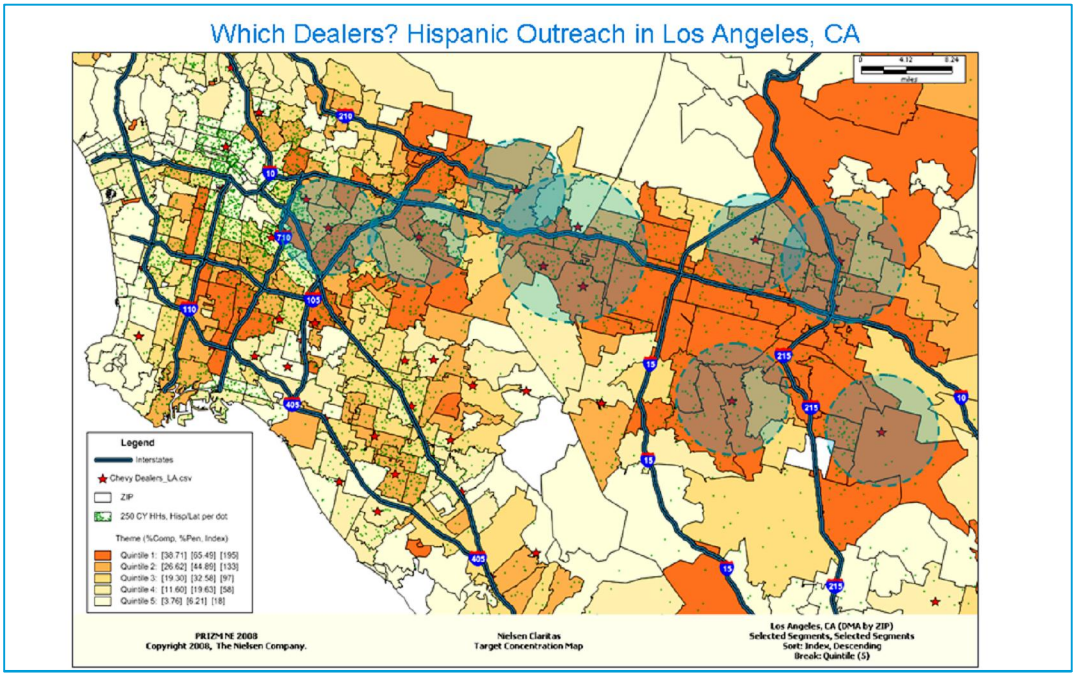
Internet ad targeting capabilities through a wide partnership of companies who obtain registered users, which then enables them to PRIZM™ code the consumer in order to deposit a "PRIZM cookie" onto the user's machine. This cookie can subsequently be read by the advertising network to vary ad insertion in order to better align the message with the consumer demographic.

## Local Market Promotion

Local Market Promotion is a marketing function that is highly dependent on (updated) census data, given its focus on the local and micro market, rather than the nation or large regions thereof. An obvious example might be outdoor media placement. Marketers need to know what billboard locations hold greater potential for being viewed by those consumers who are most likely to be interested in the product being sold.

The same is true for local cable-TV advertising. It is common to see local spots inserted on niche cable networks for local venues such as restaurants or car dealers. Demographics play a role in determining the network, cable system, and time slot that is best for that insertion.




While local newspapers have their share of recent challenges as advertising media, they remain a very target-able media in that most have "zones" where they can either insert your ad or not depending on the specific market you want to reach. Marketers can choose the zones in which to have the ad placed, and that selection is typically based on the types (a.k.a. demographics) of consumers who live in those zones and subscribe to the paper.

Direct marketing plays an important role in generating traffic to store locations for the latest sale or new product introduction. As previously mentioned census data plays a role in creating many of the so-called household elements available from the list compiler for the selection of addresses for a direct mailing campaign. Geo-demographic data plays a more direct key role in saturation mailings by allowing the advertiser to select specific and complete carrier routes or ZIP+4s to either include in the campaign or not.

Up until now, we have not discussed the other important business use of the census—the cartographic foundation it creates. This is critical for many reasons, and arguably just as important as the census itself. Without a stable, consistent, and well-structured cartographic foundation, the Census Bureau would find it nearly impossible to distribute, collect, tabulate, and release census results. Of course, census data is released at the state and county level, but it is the lower levels of geography—census tracts, block groups and blocks—that are essential not only for creating Congressional districts but also for tactical marketing applications. These are the "small areas" of the oft-

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mentioned small-area updates, and they form the kernel for applications in market analysis, product distribution, and site evaluation.

Small-area geographies are instrumental for local market promotional activities. For example, a retailer may want to know the number of consumers (and their demographic make-up) that lies within a 10-minute drive of a store location. The mathematics of such a calculation are too complex to cover here, but they rely upon data at the block and block group levels. Once this information is determined and the target defined, the marketer may move on to other activities—direct mailing to target households, buying space on billboards or bus shelters within the designated area, or inserting ads in the local newspaper or cable channels serving the area—that best reach those constituents who live around their stores.

As one might imagine, this type of market intelligence can be just as valuable to the ad seller as to the ad buyer. The ad seller has inventory they must sell to advertisers and they use census-based data to better position their media as a "good buy" for reaching the advertiser's most likely consumers. While demographics play an important role in that equation, so do estimates of consumer demand and expenditure—which are statistical models applied to census-based demography. For example, the Nielsen Consumer Buying Power database provides estimates of demand for hundreds of merchandise line items and retail store types. Using such a database, the ad seller can quantify the potential of the market served by their media and the advertiser can benchmark the performance of a specific store against the market or trade area as a whole. This is a perfect example of a "third-party" use of census data that may not at first be apparent to the advertiser but is nevertheless valuable to their marketing strategies.

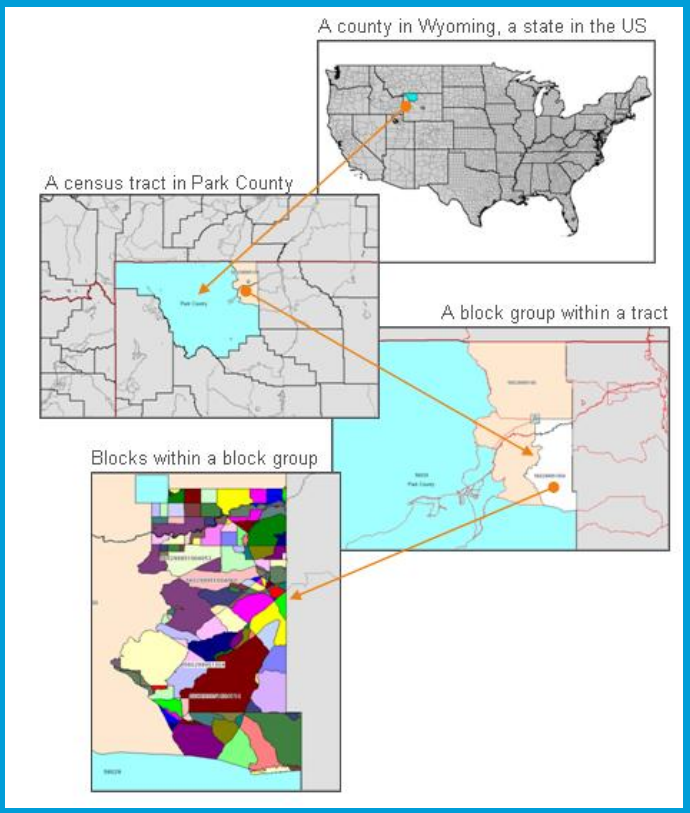


## The Cartography of Census

Census demography is important, but so too is census geography, because it provides a standard and constant cartographic base in which to allocate data to the constantly changing postal codes, etc. The USPS defines around 632,500 carrier routes (the route served by an individual mail carrier) and just over 41,000 ZIP Codes—only 30,000 of which are considered residential in nature. Further, there are over 50 million postal ZIP+4s, with approximately 29 million of those defined as residential. Postal ZIP Codes, Carrier Routes, and ZIP+4s are created and maintained by the USPS solely to facilitate mail delivery—not marketing. As such, they are not necessarily representative of neighborhoods, and they can change quite frequently as the needs of the USPS change.

Once a decade the Census Bureau slices-up the nation's states and counties into lower-level geographies, which typically respect major road networks, bodies of water, and political jurisdictions that often define natural boundaries of a neighborhood. This cartographic base is instrumental to America's marketers because it provides the underpinnings for all geo-demographic applications and most GIS mapping.

In Census 2000, the bureau carved-up the 3,141 counties in the United States into 65,322 tracts; 208,667 block groups; and 8,017,735 blocks. It is easy to think of a block as an urban geography bounded by four streets. That works well in cities with a traditional grid pattern, but less so in suburban and rural areas. However, the general concept is the same, even for those suburban blocks that confine cul-de-sacs and winding lanes or town home communities. In rural areas, a block can be many miles in size, but in all cases the census is trying to achieve a relatively uniform population for blocks of approximately 30 to 50 households and 80 to 120 persons.




In the census geographic hierarchy, blocks fully nest into block groups, which average approximately 500 households, and block groups fully nest into tracts. Tracts average 1,700 households and fully nest within counties. The Census Bureau reports most census findings for these levels, including the rich detail of the so-called long-form (SF3) data on income, education, commuting patterns, and the like. For Census 2010, the long form has been eliminated and is being replaced by the American Community Survey (ACS). For more information about the ACS, there is a census publication, co-authored by Nielsen Claritas Chief Demographer Ken Hodges, on what the business community needs to know about the ACS.

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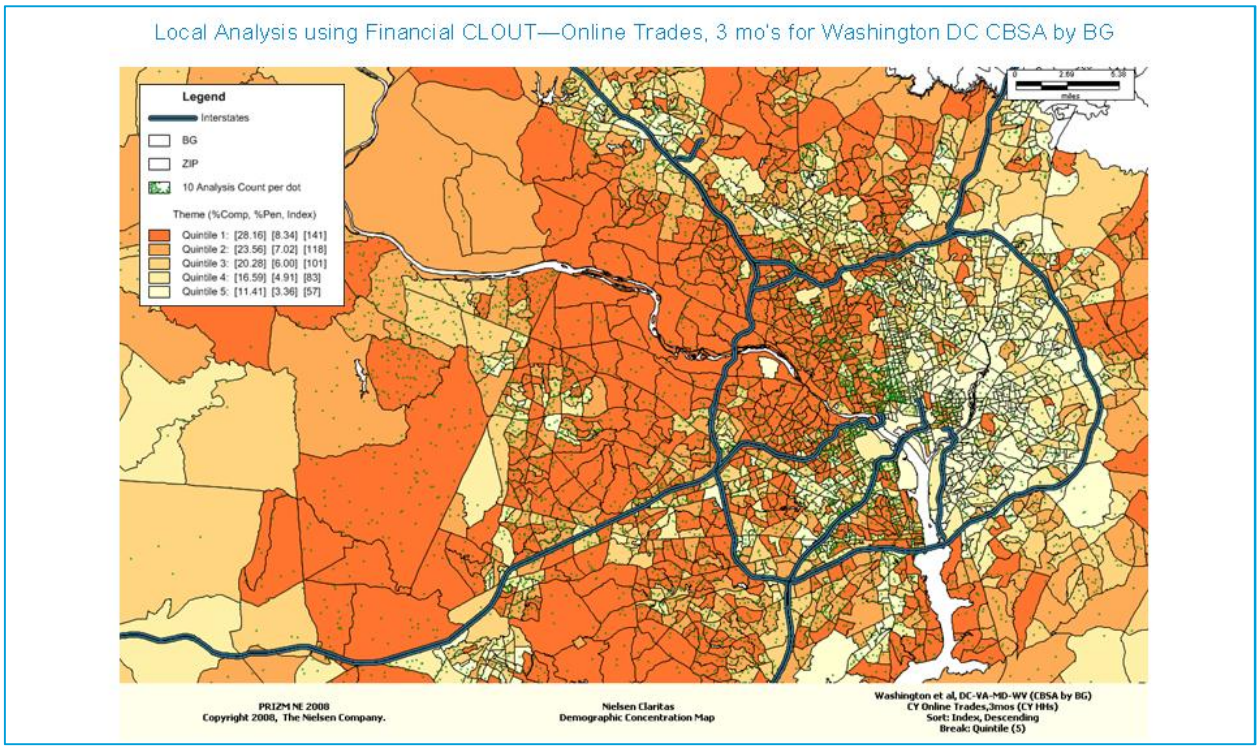
## Product Distribution

The goal for many product distribution applications is to quantify consumer needs—and therefore demand—and determine proper inventory levels that drive the product distribution strategy. While prior sales are always a key element in predicting future sales, there is also typically a role for demographics and geography in this process, if for no other reasons than to aggregate and benchmark prior sales activity.




Demographics are often the foundation for creating syndicated or custom estimates of demand for a wide range of products and services. The Nielsen Consumer Buying Power database provides estimates for hundreds of merchandise line items (ranging from dairy products to sheets and linens to housekeeping and automotive services) and retail store types (grocery stores, books stores, etc.) Nielsen Financial CLOUT and Nielsen Insurance CLOUT provide similar usage and consumption (balance or premium) estimates for banking, investment, and insurance products. The Nielsen Retail Market Power product goes one step further by combining business firmographic data with consumer demographics to estimate both supply and demand. This helps marketers identify gaps in supply versus demand and to benchmark store performance.

Activities in this area are also useful in planning logistics, such as developing delivery routes and merchandising plans, which some might also call channel management. Merchandising is the art of ensuring that the right products are in the right stores at the right time to avoid over- or under-supply situations. Nielsen Spectra has developed applications to assist consumer package goods marketers to optimize their shelf-space management programs. A simplified example might be for domestic versus imported brands of beer. As could be expected, the demographic profile of Pabst Blue Ribbon drinkers is quite different than that of Guinness drinkers. That distinction can be used to determine how much shelf space should be devoted to different brands or categories, based on the composition of households within the trade area for a given store. These types of applications help to ensure the right product is on the shelves in the right store, and can even effect placement and promotional activity within the store itself.

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In a similar fashion, demographic-based models were created to help a major automotive manufacturer optimize the inventory of a new front-wheel drive vehicle, replacing its former rear-wheel drive model. Relying solely on data about where the prior model was sold would have led to overages and shortages in inventory within certain markets. However, demographics of previous buyers in conjunction with information about buyers of competitors to the new model were used to rank markets across the U.S. for initial vehicle allocations, thereby reducing dealer floor-planning costs.

## Channel Management

This is likely the most obvious marketing activity for the use of census and update demographic data: determining demographic characteristics of the customer base and the necessary store locations to best reach them. From a real estate perspective, demographic data is often used to "sell" a potential lessee on the merits of a given shopping center or other location. Many characteristics of a potential store location are important in predicting the likelihood of success for that location. These elements include visibility, ease of ingress and egress, and concentration of competitors. However, the demographics of the consumers within the trade area boundaries of a potential store also play a crucial role. The holding capacity (i.e., the number of stores) is often predicated on the growth or decline of small area geographies and markets. Like real estate, growth potential is all about location, location, location.

Updated demographic data supports a range of activities within the Channel Management domain that attempt to quantify the opportunity and need for opening new stores, realigning stores, or closing stores, as well as offer opportunities for benchmarking performance and generating traffic to support franchisees. Demographics are also useful in understanding channel interaction—in-store versus catalogue versus Internet—as the best means for moving merchandise to different consumer types.

The first step in leveraging geo-demographic data is to understand the demographics that drive your business. In many cases, customer files can be coded and profiled to determining the demographics that matter; however, many retailers lack comprehensive customer files. As such, an important step often centers on identifying over- and under-performing stores, and then looking for patterns in the demographic composition of their trade areas. For example, perhaps the best stores have an abundance of blue-collar families; therefore, areas with significant populations of blue-collar workers could be considered a driver for future site selection. In addition, proximity to consumers, in terms of drive or even walk time, is important, as is the concentration of competitors in the area.



## Growth Comparisons Between Markets



Growth at the local level can vary greatly based on location. As an example, let's examine growth in the Cleveland, OH and Phoenix, AZ Designated Market Areas (DMAs) in the years between Census 2000 and the 2009 update.

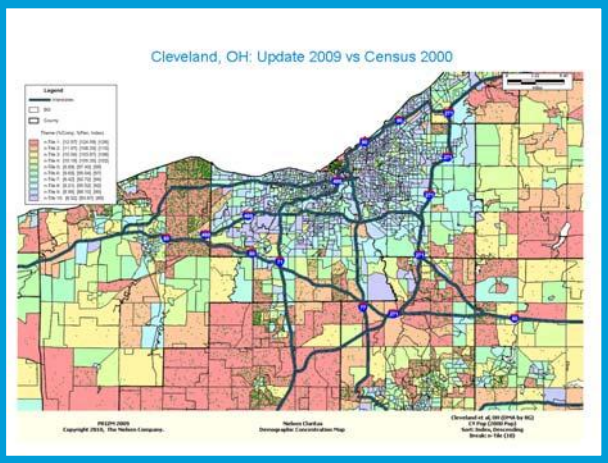
During Census 1990, Cleveland was the larger market, starting the decade with a population of nearly 3.8 million. This then increased modestly to 3.9 million by Census 2000. However, the market declined slightly throughout the next nine years, dropping to a population of 3.85 million in the most recent update. That is a drop of 1.6% over the nine-year period, compared to an average growth for the nation of nearly 9%.

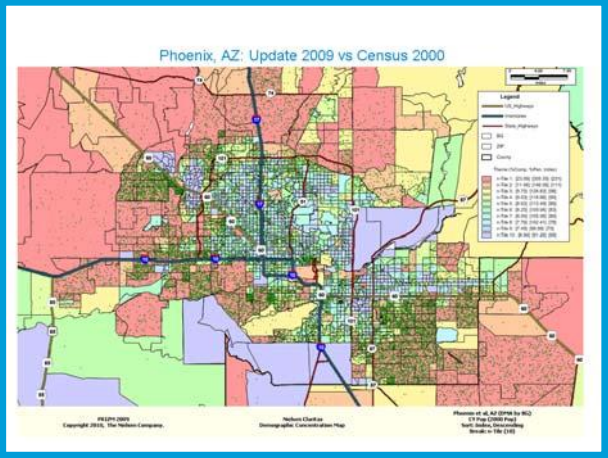
Phoenix, Arizona is nearly the mirror-opposite of Cleveland, with the population increasing from just over 2.7 million in Census 1990 to 3.9 million in Census 2000—making it approximately equal in population to Cleveland at the beginning of the millennium. However, the Phoenix television market experienced rapid growth throughout the past nine years, and is now at a population of 5.16 million as of the 2009 update—a growth rate of nearly 32% or approximately 3.5% per annum.

These growth and decline trends are expected to continue into 2014 with Cleveland showing a decline of 0.2% per annum and Phoenix tapering a bit in its rapid growth to about 3% per annum, which is still three times the national average. However, future growth projections for Phoenix will continue to be adjusted based on the results of Census 2010 which will be more indicative of factors occurring as a result of recent economics.

As a result of declining population and rapid expansion of other markets, the Cleveland DMA dropped in its national ranking from the 12th largest in 1990 to 19th in 2009. However, even within an overall market decline, there are pockets of growth. Conversely, even within a booming market such as Phoenix (rising from the 20th largest market in 1990 to 11th largest in 2009), there are declining or slow growth areas to re-examine.

The following exhibits show growth rates for the Cleveland DMA and the Phoenix DMA from Census 2000 until current year population counts in 2009.




The Cleveland market shows declining or below national average growth nearly everywhere except the far western suburbs in eastern Lorain County and to the south in Medina County. Phoenix shows growth nearly everywhere except in the older, center city areas to the north of downtown, north of Route 60 in Mesa, as well as few remote rural areas—the Salt River and Gila reservations. Growth and decline are highly localized phenomena, and it is this local characteristic of growth that makes update demographics for small areas so important to marketers and site location specialists.

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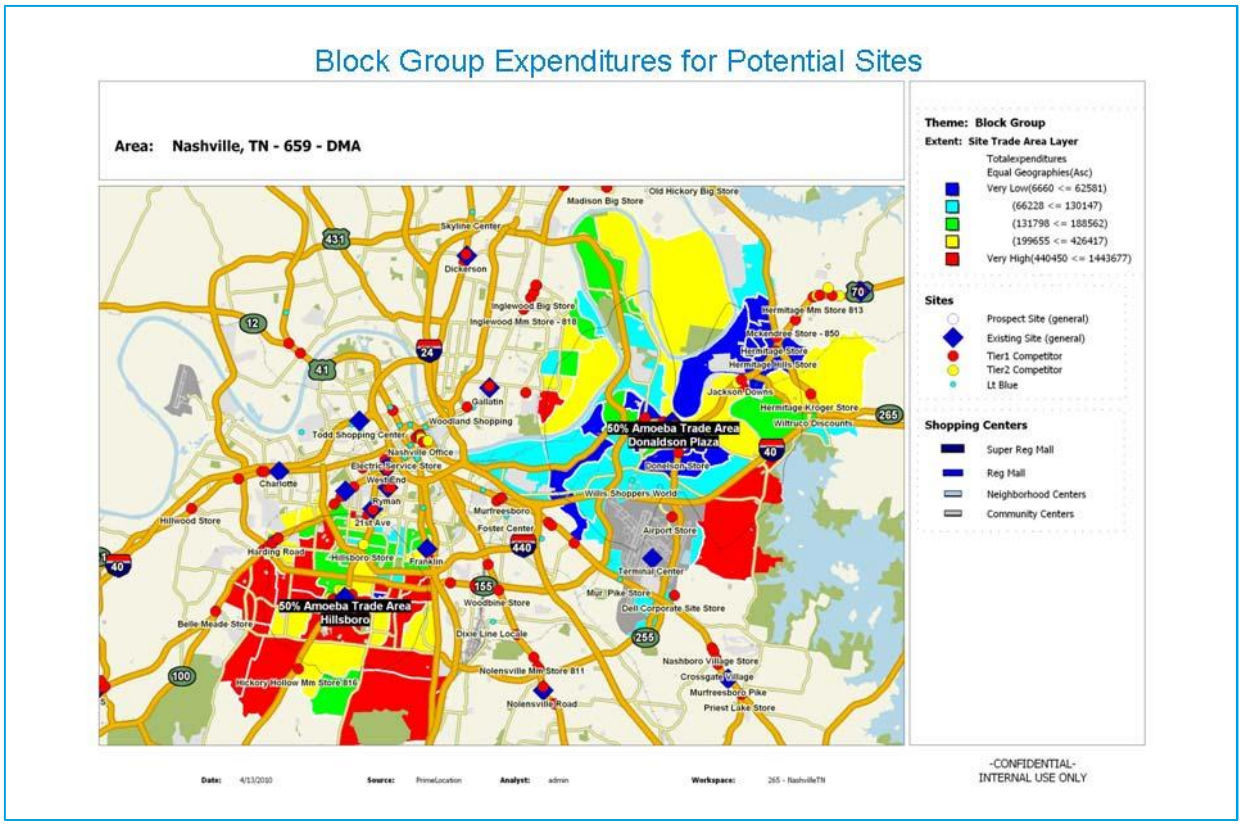


Once again, the census provides a consistent geographic framework, via blocks and block groups, with which to not only evaluate potential sites, but also aggregate demographic and other data into trade areas regardless of how they are defined. Applications in this area were the key drivers for the private sector to begin producing annual updates of small area demographics beginning in the mid-1970s.

## Customer Relationship Management

Database marketing and direct mail are likely the most sophisticated (marketing) uses of demographic data and statistical techniques. Most of the activities in this area are driven by so-called household or individual level data—the core of which is information about age, estimated income, family composition, and home ownership—because these elements drive so much of what consumers need and buy.

However, what many in this sector often do not realize is the dependency that these items may have upon census and updated small-area demography. First, it is important to realize that the census does not release **any** data at a household or individual level within the respondent's lifetime. After 72 years, the census does release individual census records to the National Archives, where they are used primarily for genealogical research. As such, there is no direct link between census data and the household-level data available from companies such as Experian or Equifax, among others. These compiled files are sourced to data that is available within the public domain, such as birth, marriage, and death certificates and mortgage and deed information, as well as data from (some) state departments of motor vehicles and telephone directories. Increasingly, this data is being more restricted. However, the basics of age, presence of children, and home ownership are widely available and yield high match rates when appended to customer files.

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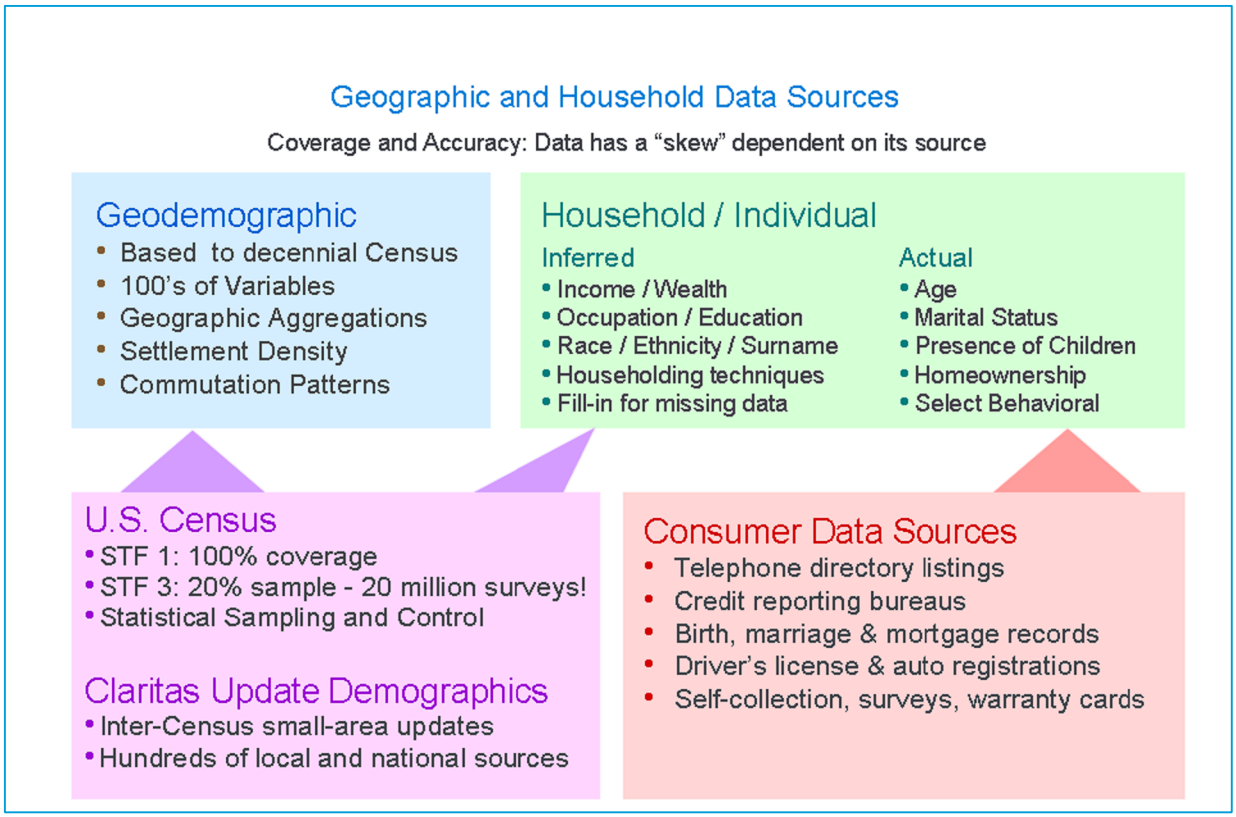


Where census and updated demographic data play a large role is in the estimation of householder income and the fill-in when household items are missing. Household income is an extremely important predictor variable for most consumer marketers, but **is it never actual income data**, as this data is sensitive and only reported by the employer to the IRS and Social Security. While not collected in the census short-form (which goes to 100% of respondents), it has been asked on the former long-form (which went to approximately 20% of respondents in former census years) and now on the ACS. While income data is not released on an individual basis, the census does report income ranges for small areas such as block groups, and these inputs are important benchmarks for statistical models that estimate household income. These estimates of income can then be used to select lists for direct mail or to append data to a customer file.

As an example of the importance of income data, even if a marketer knows nothing else, the median income at the block-group level is a reasonable approximation of household income, because the housing location is often dictated by what households can or cannot afford to pay for rent or a mortgage. That knowledge, when combined with information about whether the home is rented or owned; recent sales/appraisal values for homes in the area; the types of vehicles owned; and household age information, can lead to a fairly accurate prediction for income range. Other data can then be blended in as well to yield even more powerful measures of wealth, income, and affluence that, although not exact, are highly predictive in ranking the likelihood of one household versus another to buy a product, allowing for the creation of an optimal target list.

The other area where census data plays a role in Customer Relationship Management (CRM) is in filling-in for missing elements. While data about home ownership can be obtained via mortgage records, there are of course owners who do not have a mortgage. In fact, compilers tend to indicate a national ratio of about 50% or so for homeownership even though the national average nearly topped 70% prior to the Great Recession of 2009. As such, there needs to be a means to fill-in for the missing data. For example, a list selection could be predicated by "known homeowner" versus "likely homeowner" or "likely renter." It is highly unusual to know for sure that a household is a renter but rather a non-owner. Census data can be useful for narrowing these indicators further. This is true for "known family with children" versus "unknown" as well as a good many other characteristics. Ethnicity models are driven by census race and ethnicity concentration in the block or block group in addition to characteristics of the

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individual's surname. Database marketing would suffer greatly without the availability of census demographics and geography. This interdependency is also one of many reasons why compiler files could not supplant the census itself as they would have a recursive dependency on one another.

In wrapping up the customer-centric marketing cycle, CRM in turn leads full circle back to strategic planning. In fact, strategic planning activities benefit greatly from knowledge of the customer, which is often fed by data originating within the CRM database. As such, Nielsen considers these marketing functions as a customer-centric circle, with no distinct beginning or end, precisely because marketing activities may begin at any point. Census data and subsequent updates play a key role in nearly every marketing discipline, and the efficiency of the American marketplace would suffer greatly without the decennial census and subsequent, private-sector updates.

## Census 2010: Change is Coming

The importance of the census to marketing likely began with the emergence of a mass consumer market in the early 20th century. However, other than large-area macro statistics, there was limited use of the data until computerization began in the 1970s. This coincided with the decline of the mass market of the 1950s and the emergence of niche markets as well as the explosion of consumer choice in both products and media. This cycle has only increased with the emergence of cable television and more recently, the Internet.

From the marketer's perspective, the importance of the census really took hold in the 1980s with the emergence of GIS software from companies such as ESRI and MapInfo. This technology brought the census to life in terms of data visualization, market ranking, and modeling. In addition, companies such as Nielsen Claritas used the census to group consumers into marketable segments with catchy nicknames like *Blue Blood Estates* and *Shotguns & Pickups*. This enabled the marketer to take advantage of census data without having to be a demographer, statistician, or database expert.

The introduction of Nielsen PRIZM in 1976 changed the target marketing paradigm, and has spawned many imitators, both in the U.S. and across the globe. PRIZM changed the way marketers thought about the consumer and how tactical programs could be targeted to reach an increasingly fractured marketplace. It also helped to engrain the use of census data among marketers. Nielsen Claritas coined the term "You Are Where You Live" as well as the following four, now ubiquitous, marketing questions:

- Who are my targets?
- What are they like?
- Where do they live?
- How can I reach them?

The company used the paradigms resulting from these questions to structure its applications and consulting activities. While PRIZM was originally constructed for postal ZIP Codes, it soon moved to smaller geographic levels, such as census block groups and Postal ZIP+4s, as increasingly powerful computers allowed the company to build, and clients to take advantage of, increased granularity. The PRIZM system is now available at the household level, in addition to its geographic assignments, and is used by hundreds of clients and partners nationwide.

The census is about to undergo the most significant change since computerization. Since 1940, the census has been fielded in two parts. A short-form went to the entire population and asked approximately a dozen questions about basic demographics. A longer form went to only a sample of the population; the target sample was 20% but typically 16% received and responded. This longer form asked detailed questions on education, income, and homeownership, as well as specific characteristics of the residence in terms of plumbing, appliances, and the like. This long-form data was then statistically projected to all block groups, and could be used by marketers for the applications cited above.

For Census 2010, the Census Bureau eliminated the long form. In an attempt to boost response levels and lower costs, Census 2010 only consists of the short form that captures the basics. But federal, state, and local governments still require the more detailed data because the allocation of many of their federal funds are congressionally mandated to be based on those measures. That data will be collected in a different fashion via the American Community Survey (ACS). The ACS covers similar content as the previous census long form but is conducted on a

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rolling monthly basis to nearly a quarter-million households. Thus, in one year's time the ACS surveys about 3 million households nationwide. This rolling one year of data is then released for states and large cities and counties (with over 65,000 in population) on an annual basis.

Where the ACS gets complicated is in providing this wealth of demographic data for the small area geographies, namely block groups. To answer that concern, the Census Bureau began planning for this transition by starting the ACS in 2005. By combining five years worth of ACS data (or about 15 million surveys) into one sample, the Census Bureau could release the data for small area geographies without compromising consumer privacy or statistical reliability. The general idea was to save money in regards to the decennial survey by spreading the long-form data collection over a longer, continuous cycle, while providing more timely characteristic data.

ACS—collected over time, not a single snapshot

Table 2. **Release Schedule for ACS Data**

| Data product | Population threshold | Year of Data Release 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|
| | | Year(s) of Data Collection | | | | | | | |
| 1-year estimates | 65,000+ | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| 3-year estimates | 20,000+ | | | 2005–2007 | 2006–2008 | 2007–2009 | 2008–2010 | 2009–2011 | 2010–2012 |
| 5-year estimates | All areas* | | | | | 2005–2009 | 2006–2010 | 2007–2011 | 2008–2012 |

*Five-year estimates will be available for areas as small as census tracts and block groups.
Source: U.S. Census Bureau.

- ACS provides "period estimates" that are not a "point in time"
  - Census: April 1 of the census year
  - ACS: Data not for a specific date; span of months or years
- Options for 1-year, 3-year and 5-year data; interpretation complicated

ACS—not one release, rather multiples over time

Table 1. **Major Geographic Areas and Type of ACS Estimates Received**

| Type of geographic area | Total number of areas | Percent of total areas receiving . . . 1-year, 3-year, & 5-year estimates | 3-year & 5-year estimates only | 5-year estimates only |
|---|---|---|---|---|
| States and District of Columbia | 51 | 100.0 | 0.0 | 0.0 |
| Congressional districts | 435 | 100.0 | 0.0 | 0.0 |
| Public Use Microdata Areas* | 2,071 | 99.9 | 0.1 | 0.0 |
| Metropolitan statistical areas | 363 | 99.4 | 0.6 | 0.0 |
| Micropolitan statistical areas | 576 | 24.3 | 71.2 | 4.5 |
| Counties and county equivalents | 3,141 | 25.0 | 32.8 | 42.2 |
| Places (cities, towns, and census designated places) | 25,081 | 2.0 | 6.2 | 91.8 |
| Townships and villages (minor civil divisions) | 21,171 | 0.9 | 3.8 | 95.3 |
| ZIP Code tabulation areas | 32,154 | 0.0 | 0.0 | 100.0 |
| Census tracts | 65,442 | 0.0 | 0.0 | 100.0 |
| Census block groups | 208,801 | 0.0 | 0.0 | 100.0 |

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As such, the Census Bureau is now in a continuous data collection cycle for the prior long-form census data, and will release it across three time periods for different levels of geography. Data is released on a yearly basis for states and large cities/counties having at least 65,000 or more persons. Three years worth of ACS data is combined and released for smaller cities/counties with at least 20,000 or more persons. Five years of ACS data are combined and released at the block-groups level—thereby substituting the former long-form or 20% sample data with this new construct.

The advantage for marketers is in increased frequency and timeliness of the data, while the disadvantage is in complexity. As you can imagine, combining surveys collected over a period of 60 months is an arduous task, with significant implications for interpretation and usability. Contrary to prior census long-from data, the ACS is not a single snapshot in time, but rather a rolling 12, 36, or 60 months of data. For example, questions on income are asked of the household for the previous 12 months rather than as an annual salary, and combining income data collected over a five-year period must be adjusted in some form to reflect constant dollars. In addition, the net sample size, even for the ACS five-year data is somewhat smaller than the traditional decennial long form.

Most marketers need not worry about the impacts of the ACS, as the private sector demographic data providers will handle those details. This has always been a major benefit to acquiring geo-demographic data for marketing application from companies such as Nielsen. Client companies can experience the benefits of ACS, in terms of timeliness and updated characteristics, without the hassles and complexity of implementation. Nielsen is midway through a multi-million dollar investment in re-engineering its demographic update process to accommodate Census 2010 and the ACS.

## Conclusion

In short, most businesses use census data, whether or not they realize it, because the data is most often obtained in an indirect manner. Many business users may not recognize the role the Census Bureau plays in carving up the country into statistically reliable and stable units of geography—a critical construct for use in GIS and site evaluation. While perhaps not the original intent of our founding fathers, the census has become an instrumental tool in driving efficiency and productivity in the American marketplace, and provides competitive advantage over other world economies. It is one of the many reasons that the American marketplace remains the most dynamic and innovative in the world. America remains the best place to research and introduce new products and services and quickly gain feedback as to the success of the product, or in some cases, the need to re-tailor the product.

Think about that as you complete your own census form. You are helping America to compete and innovate, especially over and above other countries that do not make an investment of this magnitude or employ such controls to ensure an accurate count of their population. Of course this benefit only applies to companies that use it. Be smart: as an individual, complete your census form; as a business, make use of it—it is your money and your investment in America.