

USING THE U.S. CENSUS BUREAU'S ONLINE "AMERICAN FACTFINDER" SITE TO
VISUALIZE AND ANALYZE SITE LOCATION ISSUES IN A RETAIL ENVIRONMENT:
AN ASSESSMENT AND APPLICATION

Ronald S. Rubin, University of Central Florida
College of Business Administration
4000 Central Florida Blvd.
Orlando, Florida 32816-1400
407-823-2682
rrubin@bus.ucf.edu

ABSTRACT

This paper illustrates how the U. S. Census Bureau's "American FactFinder" web site can be used to visualize and analyze census data for decision-making in a small business environment. The site allows users to make informed decisions based on the diverse demographic and economic information presented in two formats: tables and maps. By visualizing and analyzing spatial locations it is possible to determine market areas that are underserved and determine areas that have demographics that a small business prefers. As an illustration of its application, the "American FactFinder" database was used to help identify a new site for a gourmet restaurant.

EXECUTIVE SUMMARY

The purpose of this paper is to show how the U. S. Census Bureau's "American FactFinder" web site can be used to visualize and analyze census data for decision-making in a small business environment. The site offers users a detailed breakdown of U. S. demographics, and allows users to make accurate and informed decisions based on the diverse demographic and economic information. The site is an interactive tool for providing quick and easy access to census information. It is a free service available to anyone who has access to the Internet. The information available is derived primarily from the 1990 and 2000 decennial censuses of population and housing, the 1997 and 2002 Economic Census, the American Community Survey conducted from 1996-2004, and the Population Estimates Program. In addition to these primary sources, the site is updated regularly with information from smaller surveys, which are conducted by the Census Bureau on an ongoing basis. The site permits users to obtain information in two formats: tables and maps. Tools help one create various tables – either from predefined templates or using ones own preferences – and generate maps illustrating data and statistics. Other sections allow one to research industry and business facts and economic census data. The site also allows one to access data using a variety of methods. Items labeled "quick" help one locate data or generate reports with only a couple of mouse clicks. Other methods help one perform more detailed research or construct more complicated queries. By visualizing and analyzing spatial locations it is possible to determine areas that are underserved and determine areas that seem to have a predominant demographic that a small business prefers. As an illustration of its application, the "American FactFinder" database was used to help identify a new site for a gourmet restaurant.

INTRODUCTION

Many business problems explicitly or implicitly require that geography (space) be taken into account. Consider the following everyday business questions:

- Where are my customers located?
- Which market areas offer the greatest potential for growth?
- Where should I target my direct mailing to get the most from my marketing dollar?
- What media channel will reach the audience I am targeting?
- Where should I open new sites?

These questions illustrate how spatial considerations are part of many common business problems. A complete list would cover several pages and be outdated as soon as it was published. Nevertheless, such is the growing use of spatial analysis in all types of decisions for all kinds of industries.

Our current traditional analytical techniques handle the “who”, “what”, “when” and “how” questions that characterize things such as customers. Data needed to discover who are buying what product on what day through what channel is captured with virtually every transaction. The traditional means of presenting such data have been columnar tables, either printed or viewed on the computer screen in spreadsheet fashion, or simple graphs and charts like histograms or pie charts (Gonzales, 2003a). But these traditional analysis tools fall short in answering the tougher question of “where”, for example, where customers live in relation to their purchase. Interrelationships that might otherwise be difficult to describe or explain are often readily understood when visually presented. The visualization helps the analyst interrogate the data, while also serving as an excellent means of explaining the information to a broader audience, including managers, loan officers and customers. But, the “where” variable is vastly under used in business decisions (Gonzales, 2004). Spatial data enhances the “who” by creating new information content as well as directly enabling analysis for the “where”. Today, given the complex interrelationships of multidimensional data, excluding geographic (spatial) information in the analytic landscape, business decisions making is compromised. Only by spatially enabling your information can you better manage and/or counsel an enterprise (Gonzales, 2003b). It is the visualization of spatial relationships that delivers accurate, high impact informational content, enabling decision makers to gain a fast understanding of the crucial issues that lie just beneath the surface of the obvious data. The role of spatial analysis in business is too important to be left to specialists. Everybody, managers and counselors, needs access to the geo-spatial information.

Because the U.S. Census Bureau understands that there are individuals who need detailed statistical and geographic information to help in analysis and decision-making, the Census Bureau developed the “American FactFinder” Web site (www.factfinder.census.gov), which is an Internet tool for access to current demographic, economic, and geographic data. The purpose of this paper is to show users how to obtain data from the American FactFinder web site and to illustrate its use and value as an analytical tool through an SBI application, identifying a new site for a gourmet restaurant.

DEMOGRAPHIC AND GEOGRAPHIC INFORMATION MADE EASY

American FactFinder is an interactive database search engine provided by the U.S. Census Bureau that provides easy access to the most authoritative source for local, state and national

demographic information. The site can help an individual quickly find population, housing, industry, and business statistics on your area of interest from the 1990 and 2000 Census or more recent surveys and reports.

Not only does the site present a great depth of information, it also presents this information in a variety of formats. The site allows one to quickly scan demographic information with maps that present Census data as broad as the nation or as focused as individualized census blocks, and everything in between (See Figure 1). The diagram shows the many geographic types for which data are available from the U. S. Census Bureau. With connecting lines, the diagram shows the hierarchical relationships between geographic types. For example, a line extends from states to counties because a state is comprised of many counties and a single county can never cross a state boundary. If no line joins two geographic types, then an absolute and predictable relationship does not exist between them (U. S. Census Bureau, American FactFinder, 2005).

The map portion of American FactFinder – thematic maps, reference maps, and geographic address searching capabilities - was developed by Environmental Systems Research Institute (ESRI). To support data visualization and site navigation, ESRI developed for American FactFinder a range of geo-spatial features, including map-based geographic selection to support data queries, reference maps to visually identify survey boundaries, thematic maps to aid data visualization, and geo-coding services to support search-by-address queries (ESRI 1999). American FactFinder allows you to access data using a variety of methods. Items labeled “quick” help you to locate data or generate reports with only a couple of mouse clicks. Other methods help you perform more detailed research or construct more complicated queries.

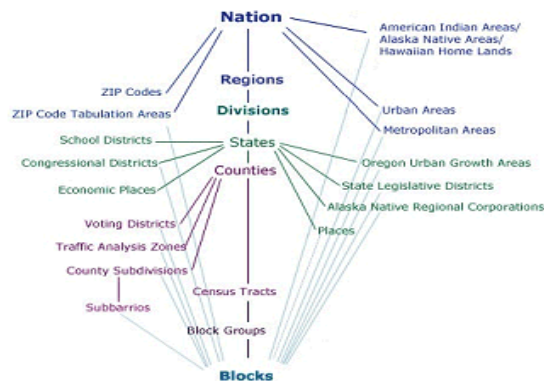


FIGURE 1. Relationship Among the Various Census Geographies.

Source: U. S. Census Bureau, American FactFinder.

http://factfinder.census.gov/jsp/saff/SAFFInfo.jsp?_submenuId=aboutdata_3&_pageId=geography

VALUABLE SITE FEATURES FOR THE SMALL BUSINESS MANAGER/COUNSELOR

The American FactFinder home page is shown in Figure 2. The home page is set out in an easy-to-use format, especially considering the amount of data that are available. For ease of navigation, the FactFinder site contains direct links to various options for extracting data. Users can extract the desired data in tabular form or have the data displayed in maps. Searching for

data is straight forward, as FactFinder allows users to extract data using the topic links, by searching with a key word or place name, or by using the “Basic Facts” user interface. The page is organized with general information on the right and a menu on the left. From the menu, users can select among many different Census products in order to obtain data for various geographies. New users will find data and maps on the most popular topics for their area by clicking on the following buttons at the left of the FactFinder home page:



FIGURE 2. American FactFinder Home Page.

Source: U. S. Census Bureau, American FactFinder. <http://factfinder.census.gov>

FACT SHEET: The Fact Sheet is an easy, one-stop spot to find basic Census data including total population, age, race, housing, education, language, economics, and homes. It includes highlights from the 2000 demographic profiles.

PEOPLE: This module gives more in-depth information than the Fact Sheet. Here you will find data on: age and sex, population counts, estimates, and projections, housing, group quarters, urban vs. rural, aging, disability, education, language, school enrollment, gender, employment, income, poverty, occupation, ancestry, foreign-born population, race and ethnicity, household, marital status, transportation, and veterans.

HOUSING: Use the Housing module to find home values, ownership, and mortgage information.

BUSINESS & GOVERNMENT: This module helps you find data on business and industry, foreign trade, governments, and housing starts.

Experienced users will want to choose their data sets available by clicking on:

DATA SETS: If the information you are looking for cannot be found in the above sections, you may need to use the Data Sets module to find detail tables on all the surveys done by the Census Bureau. Data Sets are given for:

Decennial Censuses – 1990 – 2000

Decennial Supplementary Surveys –conducted annually from 2000- 2002

American Community Survey conducted annually beginning in 1996

Economic Censuses and Surveys – 1997

Population Estimates – conducted annually beginning in 2000

Depending on the data set chosen, different table and mapping options will appear to the right of the page. The Census Data Sets provide the widest array of options:

Detailed Tables, Geographic Comparison Tables, Quick Tables, and Custom Tables provide data arrayed in tabular form suitable for downloading or pasting into a spreadsheet or other document.

Reference Maps and Thematic Maps provide a visual display of geographic boundaries and data comparisons across selected geographies (e.g., counties within a state or census tracts within a county). These maps and legends may also be downloaded, printed, or copied and pasted into a report.

MAPS & GEOGRAPHY: The menu also permits users to access the mapping module directly. As can be seen, the home page for American FactFinder is set out in an easy-to-use manner.

APPLICATION OF AMERICAN FACTFINDER

The following discussion illustrates the way American FactFinder can be used by a small business, an entrepreneur and gourmet chef interested in finding a site for a new gourmet steakhouse restaurant. The aspiring entrepreneur noticed the lack of high-end gourmet restaurants in the geographic area of interest, Orlando, Florida. His concept for his restaurant included serving the finest aged, corn-fed USDA Prime beef. Additionally, the menu will include other meat entrees, a variety of fresh-cooked vegetables, including seven kinds of potatoes, salads, homemade desserts and an extensive selection of over 100 domestic and imported wines complete with an ambience that other restaurants would aspire. However, the area does have several well known steak houses, including Charley’ Steak House, voted as one of the top ten best steakhouses in America by Tom Horan’s Top Ten Club from 1995 –2005; Ruth’s Chris Steak House, a nationally known chain; Del Friscos Steak and Lobster, well known locally as a fine restaurant, among other competitors.

For his new restaurant to be successful the venture would need to be located in a high-income area. When the entrepreneur came to the SBI program he had already found several potential restaurant locations that were available in the geographic area, but he was unsure of which site locations would be in close proximity to his appropriate clientele. To help the client, American FactFinder was used to analyze the comparative merits of his several potential restaurant locations.

HOW TO TARGET POTENTIAL CUSTOMERS

Research began by looking for basic demographic information for each of the Orlando area 5-digit ZIP Codes where restaurant locations were available. The Fact Sheet was used which gave basic information on each of the locations the client was considering. The data table included the population count, median household income, education level, and average household size. See Figure 3 for an example of the Fact Sheet for ZIP Code area 32789.



FIGURE 3. Fact Sheet for ZIP Code Area 32789

This data was then linked to the thematic map format to more easily identify patterns across the multiple geographic areas the client selected. The thematic maps indicated differences in median income across the various ZIP Codes under consideration. One ZIP Code area, 32789, had the highest median income in the group of locations under consideration. According to the 2000 Census, ZIP Code 32789 had a median household income of \$45,795, slightly higher than the national median of \$41,994. However, the thematic map of median household income (Figure 4) indicated that there were segments of the area with significant median household incomes ranging from \$53,750 to \$174,169, well above the national average. Further analysis also indicated that the median age in 32789 was 39.7 years – slightly older than the national average of 35.3 years – a desirable demographic, for older individuals eat out more and could patronize a high-ended restaurant (O’Donnell, 2005).

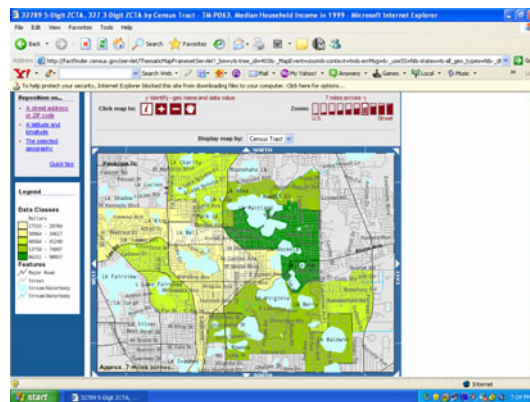


FIGURE 4. Thematic Map of Median Household Income for ZIP Code 32789

ANALYZING SITE LOCATIONS

The next task was to choose the specific restaurant location within the selected ZIP Code. The Census Bureau has data available for more small geographic areas that permitted further analysis of median household incomes in the immediate neighborhood of each potential restaurant site. Now using FactFinder’s search-by-address tool, we were able to display a map of ZIP Code 32789 subdivided by census tract, each of which included an average of 4,000 inhabitants. The reference map for 32789 illustrates geographic boundaries along with selected features, such as streets and major highways, helping the user better visualize the location (See Figure 5).

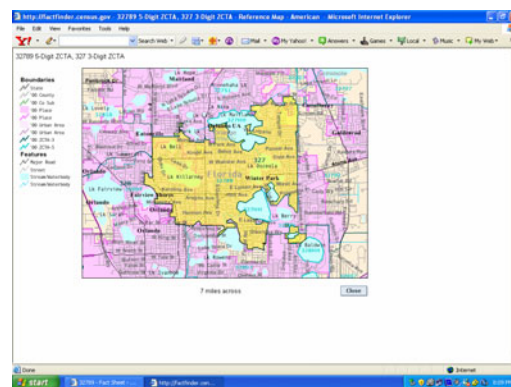


FIGURE 5. Reference Map Illustrating Geographic Boundaries with Selected Features.

These reference maps allow one to easily find and compare the physical features of the possible restaurant neighborhoods. In reviewing the maps of each potential area, one map of median income (QT-P33) for 32789 showed a census tract #160.01 near one of the potential restaurant locations with a median household income significantly higher than the other possible locations, strengthening our conclusion for a particular site (See Figure 6).

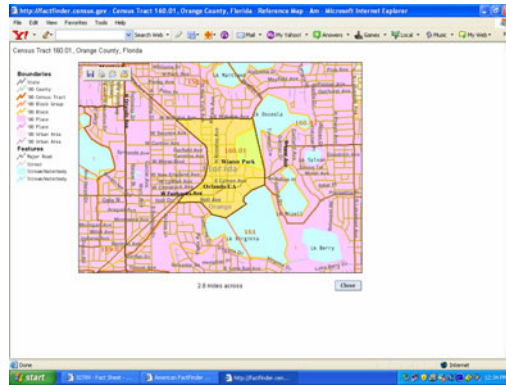


FIGURE 6. Map of ZIP Code 32789 and its Related Census Tract

ASSESSING THE COMPETITIVE ENVIRONMENT

To assess the competitive environment in the Orlando area, several sources were used in addition to American FactFinder. Before one can use FactFinder for this task one needs to identify a North American Industry Classification System (NAICS) code for the industry. Having a NAICS code makes it easier to find competitors, business statistics, and financial ratios, and it is used by FactFinder. The Web site to find the appropriate code is www.census.gov/epcd/www/naics.html. To find the code for the restaurant industry type a key word(s), such as restaurants or eating places, in the Enter Keyword box and click NAICS Search. Then, click on the NAICS code that matches your business type. A NAICS code definition page will display. The appropriate code for the clients type of business is 722110, representing full-service restaurants. FactFinder's Business and Government page was now used to learn more about the restaurant competitive environment. Restaurant industry highlights – including data on annual revenues, number of locations, and number of employees – were available from the 2002 Economic Census Quick Reports. An analysis of full service restaurants in Orange County revealed that there were 659 establishments (See Figure 7). A further analysis was conducted for each of the ZIP Code areas of interest. One ZIP Code of interest, 32789, revealed there were 43 establishments (See Figure 8). Also, data from the County Business Patterns section of FactFinder showed the growing state of the restaurant business in Orange County (See Figure 9). To assess the locations of his potential competition Google Maps was utilized. Entering the key word restaurants yielded several pages of maps showing the locations of all known restaurants in the area. Figure 10 illustrates an example of the results of the search for his competitors.

FORECASTING FUTURE GROWTH

Another important factor to take into consideration in analyzing a restaurant site location is a forecast of future growth based on population trends. The client wanted to see how the population for the county, cities, and towns had changed (and will change through estimates) between 2000 and 2005 to identify trends affecting his potential site. FactFinder supplied

Winter Park. The table shows a population growth pattern for the area. This information can be used to substantiate a forecast of future revenue growth for the planned restaurant.

The outcome of the case: To help convince potential backers of his new restaurant the thematic maps, the reference maps and all related statistical tables were downloaded for insertion into his business plan. The analysis did narrow his site location to one particular ZIP Code, 32789. The results of the analysis are now in the hands of the financial backers.

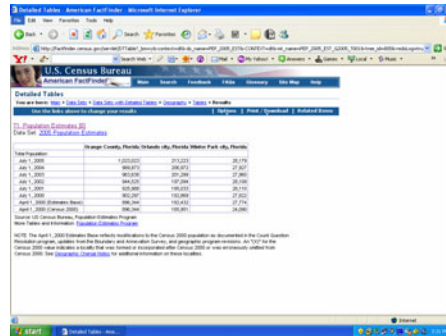


FIGURE 11. Map of Population Estimates for the Geographic Area of Interest

DISCUSSION AND CONCLUSION

In the late 1990's the U. S. Census Bureau began to understand that there were hundreds of thousands of individuals who had great ideas yet needed detailed statistical and geographic information to help in analysis and decision-making if these ideas were to come to fruition. To help these individuals, the Census Bureau developed the American FactFinder web site, which has become the Census Bureau's main Internet tool for access to current demographic, economic, and geographic data.

This paper presented an overview of the features available to the general public and illustrated how it can be used to visually represent and analyze data through a SBI case application. As to American FactFinder's strengths, both reference maps and thematic maps are interactive; you can zoom, pan, and search by address to find your area of interest; you can customize the boundaries (such as whether or not to display and label city boundaries); and you can customize other features and the title of the map. The maps are seamless. The maps are in color. You can print the maps out or you can save the maps and legends as .gif files. Statistical data can be integrated into the thematic maps. And, finally, and not insignificantly, it is freely available on the web.

On the other hand, Fact Finder is not perfect. For instance, the map colors in reference maps and Basic Facts-maps are not customizable. The map sizes are about 4" X 5". This size may be small for many needs, especially if the user needs a map of a large geographical area. Because the maps are in color, a good thing, you need a color printer to print them out to take advantage of the visual impact of the mapped data.. And finally, both the Internet and FactFinder can be slow depending on the time of the day it is accessed. However, Fact Finder is excellent for four types of queries: to locate, to compare, to develop thematic maps and to identify small geographic market areas.

Use of the Internet at the Census Bureau is still experimental, but thus far, the experiment has been a success. Numerous opportunities exist now and in the future for using the Internet to both help fulfill the Census Bureau's mission and introduce a more customer-oriented design to ongoing census processes (Anderson, 1988). The American FactFinder site is fulfilling both of these issues.

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