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Candidate Information
Cosco Jones, a product of a single parent household has always looked up to his mother for inspiration. He is a proud member of the Pi Gamma Chapter of Omega Psi Phi Fraternity Inc. He completed undergraduate studies at Norfolk State University in 2007. He is very humble man who would like to thank the entire MLSOC Faculty and Staff for helping him receive such a prestigious degree. This project and report is dedicated to the late Kyle Jones and William Drake Jr. who died May 1, 2008 in a tragic car crash at the ages of 18 and 19 respectively.

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A Gap Analysis of Online Tools for the Non-Technical First-Time Homeowner

Cosco Jones

Project & Report
submitted to the faculty of the Virginia Polytechnic Institute
and State University in partial fulfillment of the requirements for the degree of

Masters of Science in Building Construction Science & Management

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Table of Contents

Abstract

Greening your home is definitely one of the leading trends in housing right now. Due to the recession Americans are facing during this time, everyone is trying to make smart investments; however, a vast amount of Americans do not where or how to begin this search. This paper will use six search terms and Google as a tool to find websites and evaluate them based on ten different attributes, target audience, and scope. The results will be evaluated using descriptive statistics. The findings suggest that certain key words such as "green" and "renovations" are more effective when searching for this information. Proper wording of search terms combined with a good combination of search terms can lead to an adequate amount of information that could allow an individual to prioritize their green home improvements based on household needs.

Introduction

Purchasing your first home is arguably one of the most important financial investment an individual makes in their lifetime. According to Elsenberg, the average age of a first-time homeowner is 33 years old (Elsenberg 2008). Homeownership has increased from generation to generation. Figure # 1 depicts homeownership rates broken down by race and generation.

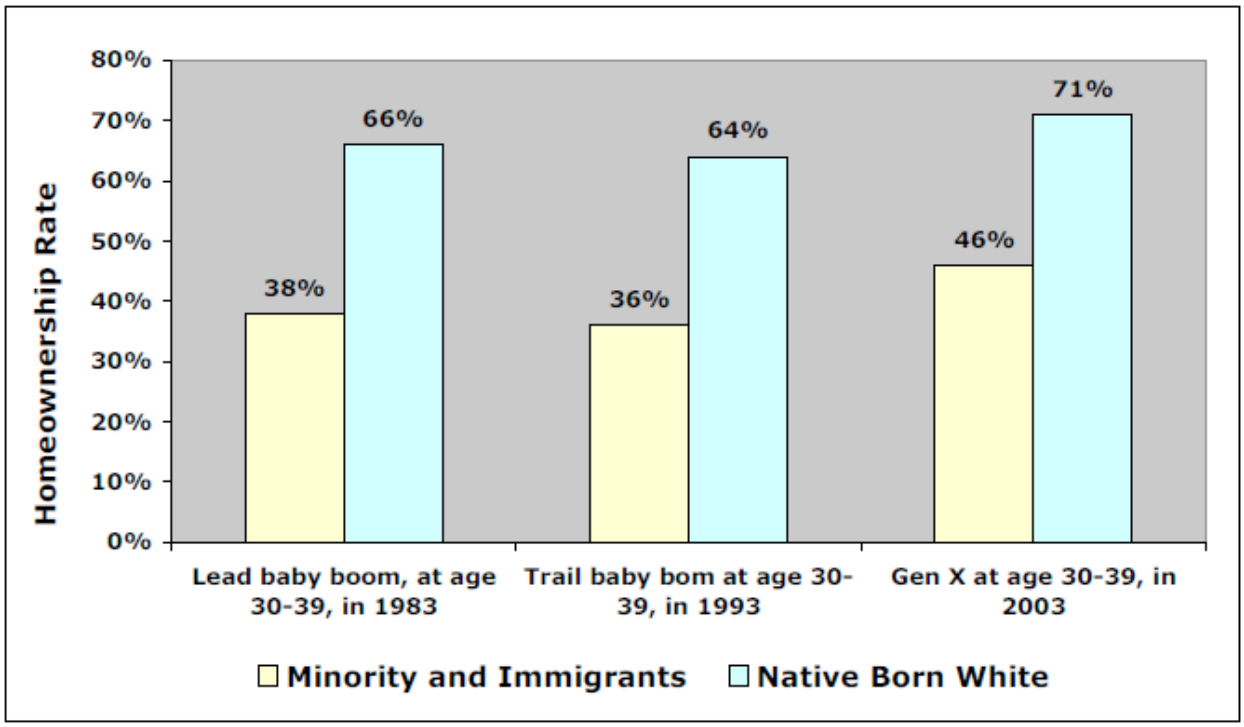


Figure #1: Homeownership Rate (Source: JCHS tabulations of 1983, 1993, 2003 AHS)

According to the American Housing Society, homeownership has increased from 1983 to 2003. Over that two decade span there was an 8% increase in minority and immigrant homeownership, as

well as a, 5% increase in native born white homeownership (AHS 1983, 1993, 2003). As of 2008, the first-time homeowner has an average income of $64,074 (Elsenberg 2008). This is compared with an average income of $40,340 in 1983; however, this statistics do not include inflation and are before the economic downturn (AHS 1983).

According to Bendimerad, the higher levels of homeownership and income will probably lead to an increase in the home remodeling market (Bendimerad 2005). According to Morris and Winter, residential improvements and/or renovations usually occur with space or quality as the driving factors (Morris & Winter 1978). Figure # 2 depicts the first time homeowner's main reason for buying a home.

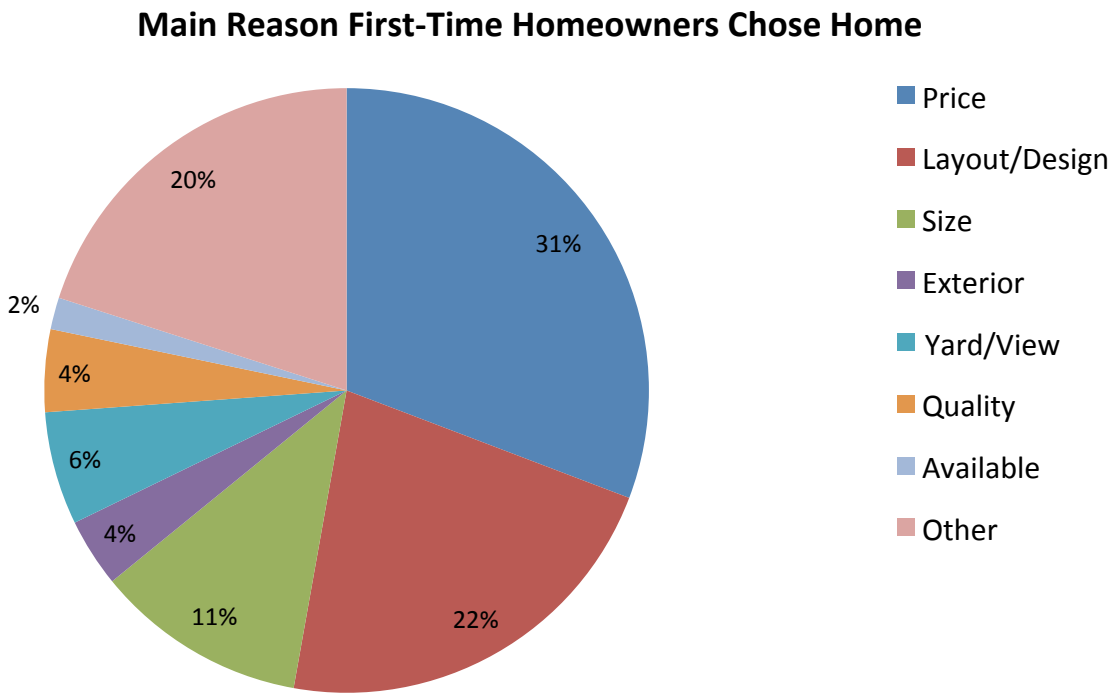


Figure # 2: Main Reason First-Time Homeowners Chose Home (Source:

Figure # 2 displays price being the main factor driving a first-time homeowner in their purchase. Therefore, if space and quality are the main factors driving a home renovation and/or improvement then only 15% of the first-time homeowners have satisfied those needs as a top priority in choosing a first home. Based on these statistics, up to 85% of the first-time homeowners may have a desire to make some type of home improvements and/or renovations. Figure # 3 shows Morris and Winter's causal model for influences on residential alteration as a housing adjustment behavior.

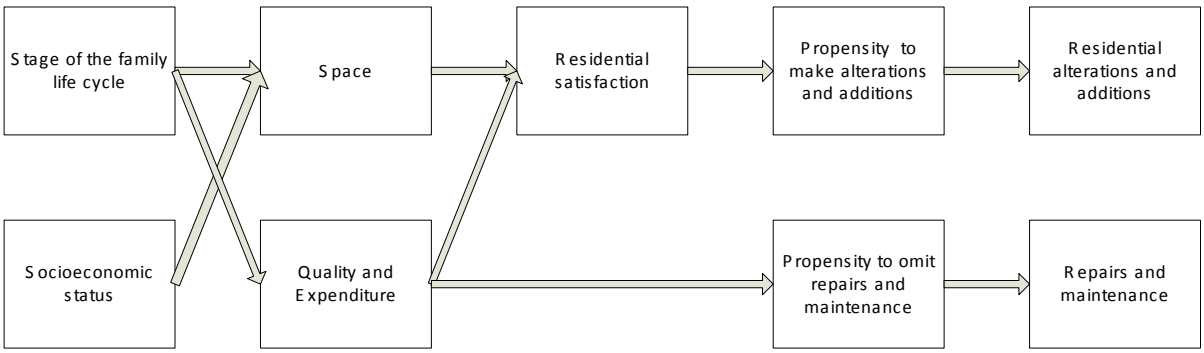


Figure #3 Causal Model of Hypothesized Influences on Residential Alteration as a Housing Adjustment Behavior (Source: Housing, Family, and Society by Morris 78)

Figure # 3 is a basic flowchart showing influences in a household that causes the homeowner to make home improvements and/or renovations. Kevin Park states that ,"the demographic characteristics of the homeowner, such as age, income, and race, are used as predictors of the level and type of home improvement expenditures" (Park 2008). According to Bendimerad, the peak remodeling ages occur between 35-45 (Bendimerad 2005). Moreover, younger households are more likely to engage in Do-It-Yourself Improvements and/or Renovations, while older households tend to hire professional help (Bendimerad 2005).

Due to the recent economic conditions, President Obama passed The American Recovery and Reinvestment Act of 2009. This act includes the Residential Energy Efficiency Tax Credit, The Residential Renewable Energy Tax Credit, and First-Time Home Buyer Tax Credit. The Residential Energy Efficiency Tax Credit

is a 30% tax credit with a $1500 cap given to a homeowner who makes energy efficiency improvements in the building envelope of an existing home and/or high-efficiency cooling, heating, and water-heating equipment. For example, a homeowner who spent $1,000 on insulation, $800 on an energy efficient water heater, and $2,000 on energy efficient windows would qualify for a $1,140 tax credit through the Residential Renewable Energy program. The Residential Renewable Energy Tax Credit is a 30% tax credit without a cap for homeowners who invest in renewable energy. For example, a homeowner who spent $24,000 investment in order to install solar-powered electricity would qualify for a $7,200 tax credit through the Residential Renewable Energy Tax Credit. The First-Time Home Buyer Tax Credit gives a first-time home owner a tax credit for up to $8,000. This is an example from www.federalhousingtaxcreditcredit.com :

> "Just as an example, assume that a married couple has a modified adjusted gross income of $160,000. The applicable phaseout to qualify for the tax credit is $150,000, and the couple is $10,000 over this amount. Dividing $10,000 by the phaseout range of $20,000 yields 0.5. When you subtract 0.5 from 1.0, the result is 0.5. To determine the amount of the partial first-time home buyer tax credit that is available to this couple, multiply $8,000 by 0.5. The result is $4,000."

These incentives are enough to make a renter want to achieve the American Dream and become a homeowner especially when combined with state and local incentives as

well. Table #1 shows employed persons by occupation, sex, and age.

Table # 1 Employed persons by occupation, sex, and age (Source: Bureau of Labor Force Statistics)

HOUSEHOLD DATA
ANNUAL AVERAGES

HOUSEHOLD DATA
ANNUAL AVERAGES

9. Employed persons by occupation, sex, and age

(In thousands)

Occupation	Total		Men				Women			
	16 years and over		16 years and over		20 years and over		16 years and over		20 years and over	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
Total	146,047	145,362	78,254	77,486	75,337	74,750	67,792	67,876	64,799	65,039
Management, professional, and related occupations	51,788	52,761	25,593	25,948	25,426	25,807	26,195	26,813	26,003	26,637
Management, business, and financial operations occupations	21,577	22,059	12,375	12,647	12,332	12,618	9,203	9,412	9,172	9,388
Management occupations	15,486	15,852	9,686	9,925	9,652	9,903	5,800	5,926	5,774	5,907
Business and financial operations occupations	6,091	6,207	2,688	2,721	2,681	2,715	3,403	3,486	3,398	3,481
Professional and related occupations	30,210	30,702	13,218	13,301	13,093	13,189	16,992	17,401	16,831	17,249
Computer and mathematical occupations	3,441	3,676	2,560	2,765	2,546	2,752	881	911	877	907
Architecture and engineering occupations	2,932	2,931	2,511	2,536	2,501	2,527	421	395	420	393
Life, physical, and social science occupations	1,382	1,307	792	704	787	702	591	603	587	598
Community and social services occupations	2,265	2,293	890	909	879	903	1,375	1,383	1,365	1,374
Legal occupations	1,668	1,671	809	803	808	801	858	867	854	866
Education, training, and library occupations	8,485	8,605	2,267	2,234	2,240	2,205	6,218	6,371	6,139	6,301
Arts, design, entertainment, sports, and media occupations	2,789	2,820	1,476	1,471	1,435	1,434	1,313	1,349	1,277	1,313
Healthcare practitioner and technical occupations	7,248	7,399	1,913	1,878	1,897	1,865	5,335	5,521	5,311	5,497
Service occupations	24,137	24,451	10,337	10,471	9,284	9,463	13,800	13,980	12,548	12,734
Healthcare support occupations	3,138	3,212	338	359	317	343	2,800	2,853	2,726	2,775
Protective service occupations	3,071	3,047	2,380	2,352	2,330	2,292	691	695	643	650
Food preparation and serving related occupations	7,699	7,824	3,354	3,443	2,644	2,773	4,345	4,381	3,546	3,567
Building and grounds cleaning and maintenance occupations	5,469	5,445	3,280	3,254	3,106	3,077	2,189	2,192	2,123	2,130
Personal care and service occupations	4,760	4,923	986	1,064	887	979	3,774	3,859	3,510	3,611
Sales and office occupations	36,212	35,544	13,264	13,067	12,495	12,317	22,948	22,477	21,559	21,199
Sales and related occupations	16,698	16,295	8,424	8,221	7,960	7,781	8,275	8,073	7,360	7,200
Office and administrative support occupations	19,513	19,249	4,840	4,845	4,535	4,536	14,673	14,404	14,199	13,999
Natural resources, construction, and maintenance occupations	15,740	14,806	15,078	14,181	14,614	13,806	662	626	618	590
Farming, fishing, and forestry occupations	960	988	759	780	682	688	201	208	172	181
Construction and extraction occupations	9,535	8,667	9,276	8,448	9,004	8,267	258	219	248	213
Installation, maintenance, and repair occupations	5,245	5,152	5,043	4,953	4,928	4,851	202	199	198	196
Production, transportation, and material moving occupations	18,171	17,800	13,983	13,820	13,518	13,357	4,188	3,980	4,070	3,879
Production occupations	9,395	8,973	6,563	6,313	6,423	6,172	2,832	2,661	2,783	2,615
Transportation and material moving occupations	8,776	8,827	7,420	7,507	7,095	7,186	1,355	1,319	1,286	1,265

NOTE: Updated population controls are introduced annually with the release of January data.

The arrows on the table above, point to the occupations that may have the expertise to make sound decisions on prioritizing green home improvements. Concepts such as energy efficiency and renewable energy are a part of a larger body of practice known as sustainable or green

building. However, as the recent subprime lending scandal has shown, a vast majority of the American population does not have the financial literacy in order to make a sound decision concerning this matter. Figure # 4 shows the foreclosures started from 1998-2007.

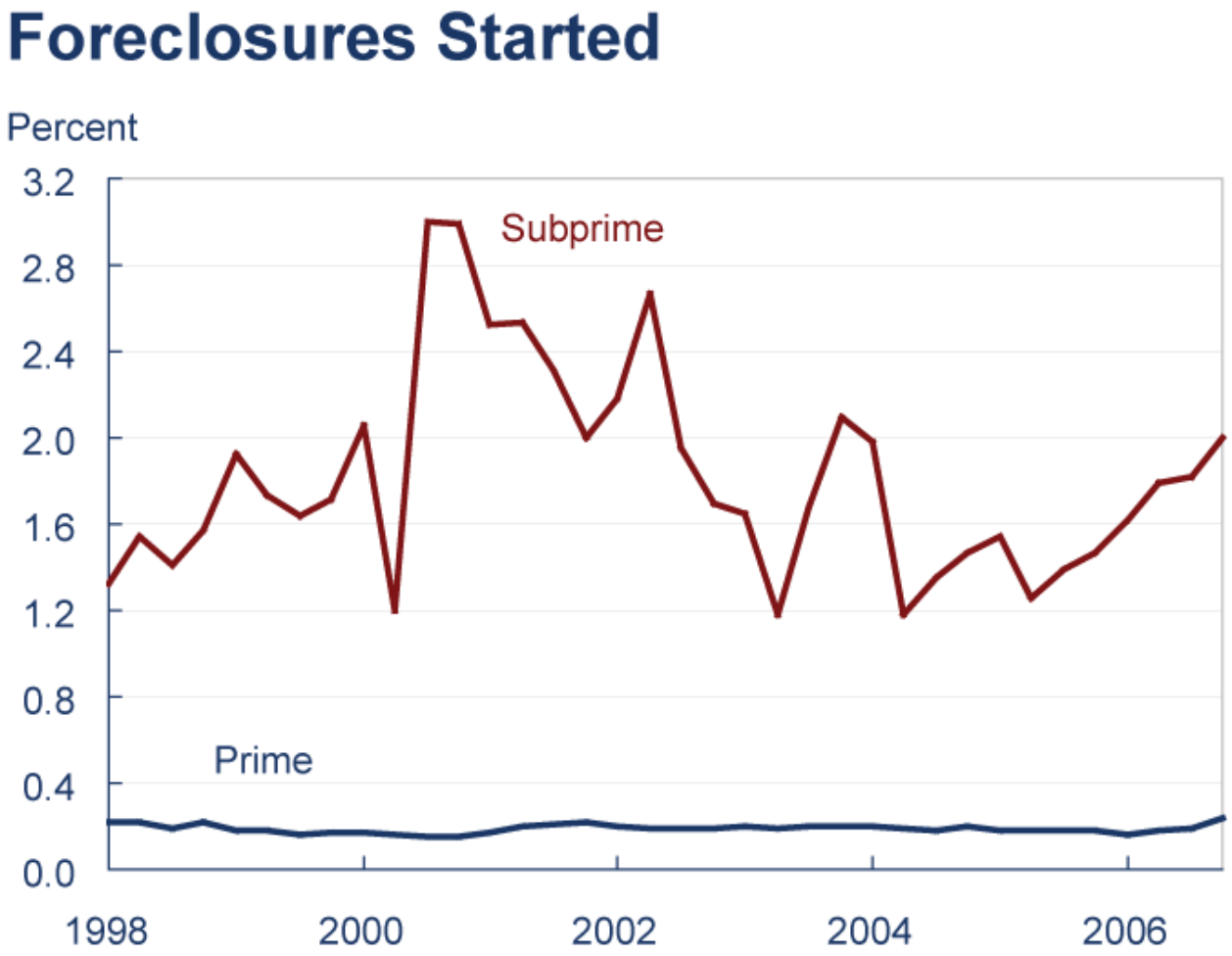


Figure # 4 Foreclosures Started (Source: Mortgage Bankers Association)

Thus, the problem statement is as follows:

Non-technical first-time homeowners have strong incentive to improve sustainability of housing, however; their lack

of expertise to effectively prioritize potential projects leaves them with no guidance in this area without making unnecessary expenditures.

Background

There are numerous tools that a first-time owner can use in order to prioritize their home improvements and take advantage of the incentives that exist. Information is the factor that contributes to the gap between the market's and the owner's valuation of home improvements and/or improvements (Gyourko and Saiz 2003). For example, a major investment in low flow water fixtures throughout the house may be known precisely to the present homeowner, but not to prospective first-time owner (Gyourko and Saiz 2003). A vast amount of publications have been printed in the area of greening a home, green remodeling, selecting green materials, and the list goes on. However, since the diffusion of the computer and internet access into homes and schools, search engines have become the reference of choice. Figure # 5 shows the presences of internet in households based on age. The statistics account for every individual in a household.

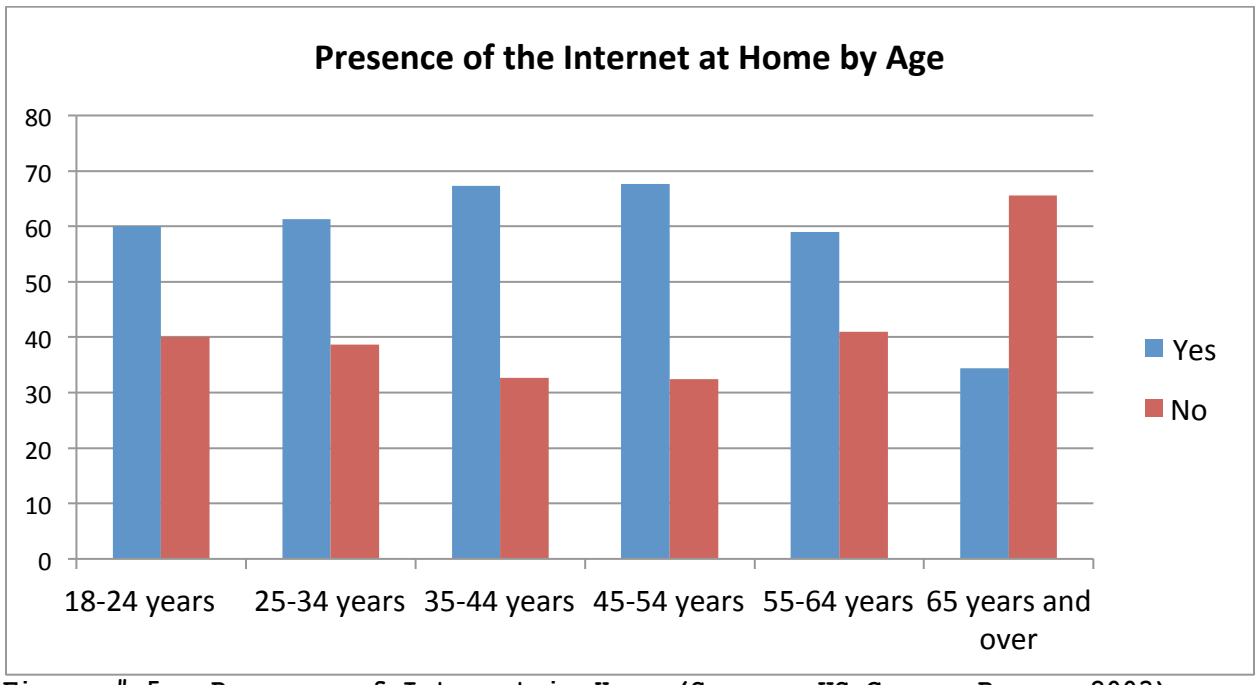


Figure # 5: Presence of Internet in Home (Source: US Census Bureau 2003)

Based on these statistics, well over half of all individuals owning a home between the ages of 18-55 have the presence of the internet in the home. Furthermore, the average age of the first-time homeowner is 33 years old and the peak remodeling ages are between 35-45 years old. These statistics suggest that a majority of the homeowners in this demographic have access to the internet in the home. Therefore, a search engine such as Google would be the most feasible method to use in order to find a useful online tool. An online tool can be defined as any tool found on the internet that helps an individual make a formal or informal decision based on the resources provided. The following excerpt is a brief explanation of how Google works from http://www.google.com/corporate/tech.html:

> "The software behind our search technology conducts a series of simultaneous calculations requiring only a fraction of a second. Traditional search engines rely heavily on how often a word appears on a web page. We use more than 200 signals, including our patented PageRank™ algorithm, to examine the entire link structure of the web and determine which pages are most important. We then conduct hypertext-matching analysis to determine which pages are relevant to the specific search being conducted. By combining overall importance and query-specific relevance, we're able to put the most relevant and reliable results first."

Of course, a Google search can identify thousands of online tools in seconds. However, Google is only as useful as the search terms that are entered. Non-technical homeowners would not know that green home and sustainable home is not the same thing. The United States Green Building Council explains a green home as follows, "Compared to a conventional home, a green home uses less energy, water and natural resources; creates less waste; is smartly located and built with as little impact on the land it sits on as possible; and is healthier for the people living inside." In contrast, sustainable homes are described by Newton House on 4/1/09 with the following conditions:

> "1. Climate appropriate passive solar design which minimizes the need for artificial heating and cooling,
>
> 2. Site protection in design and during construction,
>
> 3. Exclusive use of products which are recycled or made from renewable resources,

4. Management of own waste on site, including greywater and black water,

5. Produce and efficiently manage electrical power,

6. Collect and efficiently manage water resources,

7. Provide food resources from a permaculture garden, and

8. The house shall become part of the local ecosystem."

A similar situation occurs with other terms such as residential vs. home as well as, improvements vs. renovations. During this paper the author has taken a non-technical perspective and will use each pair of terms above interchangeably. Thus, the author's research question is as follows:

How much information does a Google search provide to support a non-technical first-time homeowner in prioritizing home improvements based on individual household needs?

Research Objectives and Approach

The primary objective is to evaluate the resources out there on line for non-technical first-time homeowners. The design of this research is modeled after the study of commercial-scale decision support tools conducted by Keysar & Pearce (2007).

The second step was to classify the websites based on target audience and scope. These criteria will be defined later in the paper as well.

The third step was to get a third party to validate the author's website ratings and classifications for interrater reliability in order to ensure that the research approach was sound and easily repeatable.

The fourth and final step was to draw conclusions about the comprehensiveness of resources available to first-time, non-technical homeowners through Google to support effective decision making.

Figure # 6 will describe the research approach taken will performing this research.

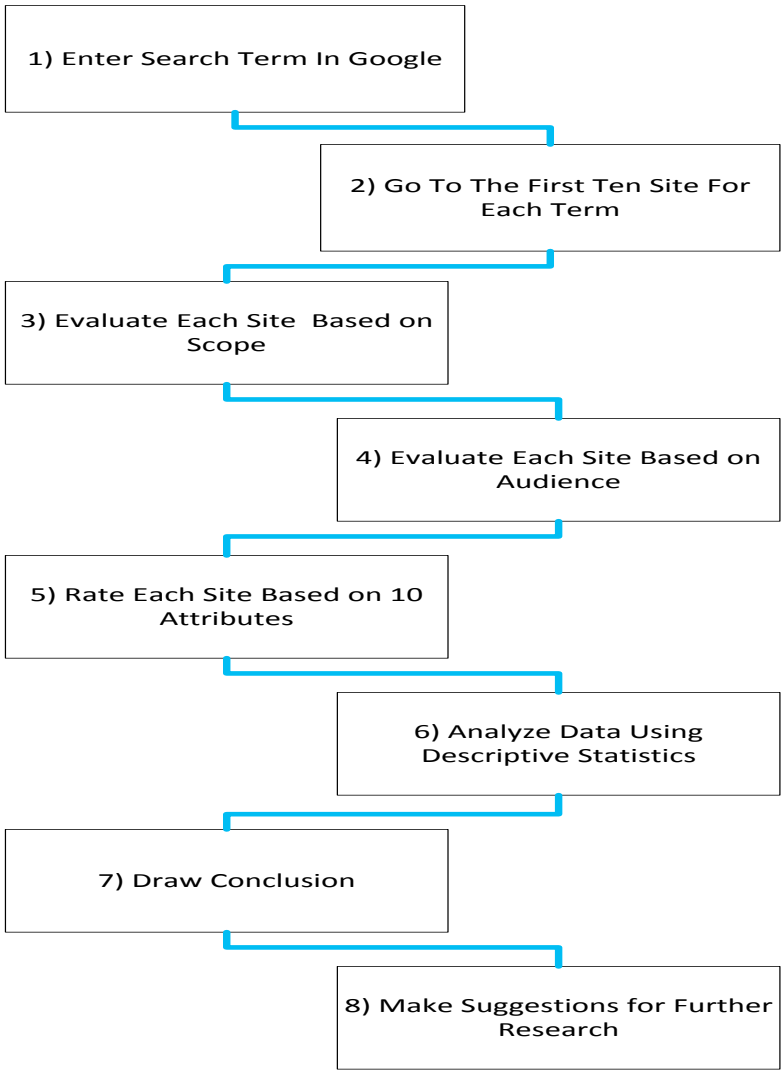


Figure # 6: Research Approach Flowchart

Methodology

Definitions

The author's sample consisted of 60 different websites, the top ten for each of the six combinations of search terms, as generated by the "Google" search engine. These websites were classified by scope, target audience, author type, and ten

different attributes that were used to measure the extent to which these websites could be used as a resource. Other columns were used to mitigate redundancies in the search engine, such as repeat links. Furthermore, as items were classified, anytime that one of the keywords used to classify the websites was used it was automatically put in category.

Scope Column

The Scope Column was classified into five different categories which are Products, Sales, Information, Professional Networking, and News Articles. The author defined the Scope as a general description of the contents/topics on the website. For example, a website that is an e-store would have received a "P" for products and an "S" for sales in the Scope Column.

Products are defined as building materials, services, or merchandise that have been highlighted or reviewed on the website. For example, a website that contained a list of green building materials with end user reviews would have received a "P" for products in the Scope Column.

Sales are defined as any websites with products for sale, shopping carts, or quote forms included on the website. For example, if a website had products/services for sale and an individual can make the purchase on that website without being

linked to an e-store, then the website received an "S" for sales in the Scope Column.

Information was defined as any data, document, video, event, or written description that was not a news article. For example, a website with the title of "Ten Steps to Greening Your Home" would have been classified as an "I" for information in the Scope Column.

Professional Networking was defined as any website with links and/or a directory to building professionals. For example, if a website had a data entry form for an individual to find a contractor in there area, then it would have been classified as a "PN" for professional networking in the Scope Column.

News Article was defined as a document with an author that has been published from a creditable source. A credible source would have been a newspaper, book, scholarly journal, and/or magazine. For example, if a document with the title "Ten Steps to Greening Your Home" by John Doe that was published in the Green Living Magazine, then it would have received an "N" for news article in the Scope Column.

If a website had a rating system reference, then it would receive an "R". Rating system references are defined as links

and/or references to rating systems such as LEED Homes, Earth craft, H.E.R.S., etc.

Target Audience

The Target Audience Column consisted of four different categories which were Owner, Builder, Architect, and Comprehensive. The Target Audience is defined as a specific group or individual that the website is aimed at appealing to. For example, a website that content consists of "Ten Steps to Greening Your Home" would receive an "O" for owner in the Target Audience column.

If a website had the owner as the target audience, then it would have been worded from an owner's perspective and used layman's terms instead of standard terminology. For example, any website that used possessive language and/or simple terms to describe products, systems, or methods would have received an "O" for owner in the Target Audience column.

If a website had the builder as the target audience, then it would have included building codes, been worded from a builder's perspective, and used standard terminology. Furthermore, if a website that had key terms like building, contractor, or trades on it would have also qualified. For example, if a website had a tab that said "Best Practices in

Green Building", then it would receive a "B" for builder in the Target Audience Column.

If a website had the architect as the target audience, then it would have included designs, been worded from an architect's perspective, had product selection, and used standard terminology. For example, if a website has a tab that says "green design", then it would have received an "A" for architect in the Target Audience Column.

If a website had a comprehensive target audience then it would have been well rounded and included information that helped the owner, the architect, and the builder. For example, if a website contained case studies and/or do it yourself videos, then it would have received a "C" for comprehensive in the Target Audience Column.

Search Strategy

Google assisted the author in developing a list of websites that contained information on the four categories that were mentioned above. The following terms were used in these searches:

- "Green Home Improvements"
- "Green Residential Improvements"
- "Green Home Renovations"

- "Sustainable Home Improvements"
- "Sustainable Residential Improvements"
- "Sustainable Home Renovations"

The author checked the first ten different websites that appeared from each term above. The terms "different websites" were used in order to mitigate confusion with the first twenty-five links because some search results may have had more than one link to the same website. Moreover, repeat links were not included in the sample. After the repeat links and bad links were eliminated, the sample included a total of 52 web sites/online tools.

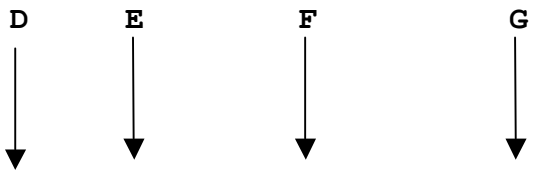
Classification Strategy

Websites were classified into three different categories that were called low, medium, and high to represent the utility of their information for non-technical, first-time homeowners. The websites were evaluated based on ten different attributes that such a user would have been looking for on the website. The ten attributes were as follows:

1. Frequently Asked Questions Section (FAQ's)
2. Tips
3. Walkthroughs
4. Online Calculators/Estimators
5. Instructional Video
6. Product Reviews

7. Room/ Project Specific Case Studies
8. Professional Help
9. Financial Advice (Financing and Incentives)
10. Investment Information (Cost Info, ROI, Lifecycle Cost)

If a website had three or fewer of these attributes, then it was considered to have a low rating. If a website had four to six attributes, then it was assigned a medium rating. If a website had seven or more attributes, then it was considered to have a high rating. Furthermore, as items were classified, any time that one of the keywords used to classify the websites was used, it was automatically counted in that category. A website was considered to be the same if the root domain name did not change. For example, www.vt.edu/ and www.vt.edu/student_life would have been considered to be the same website. Figure # 7 is an explanation screen shot to help visualize the process.



H

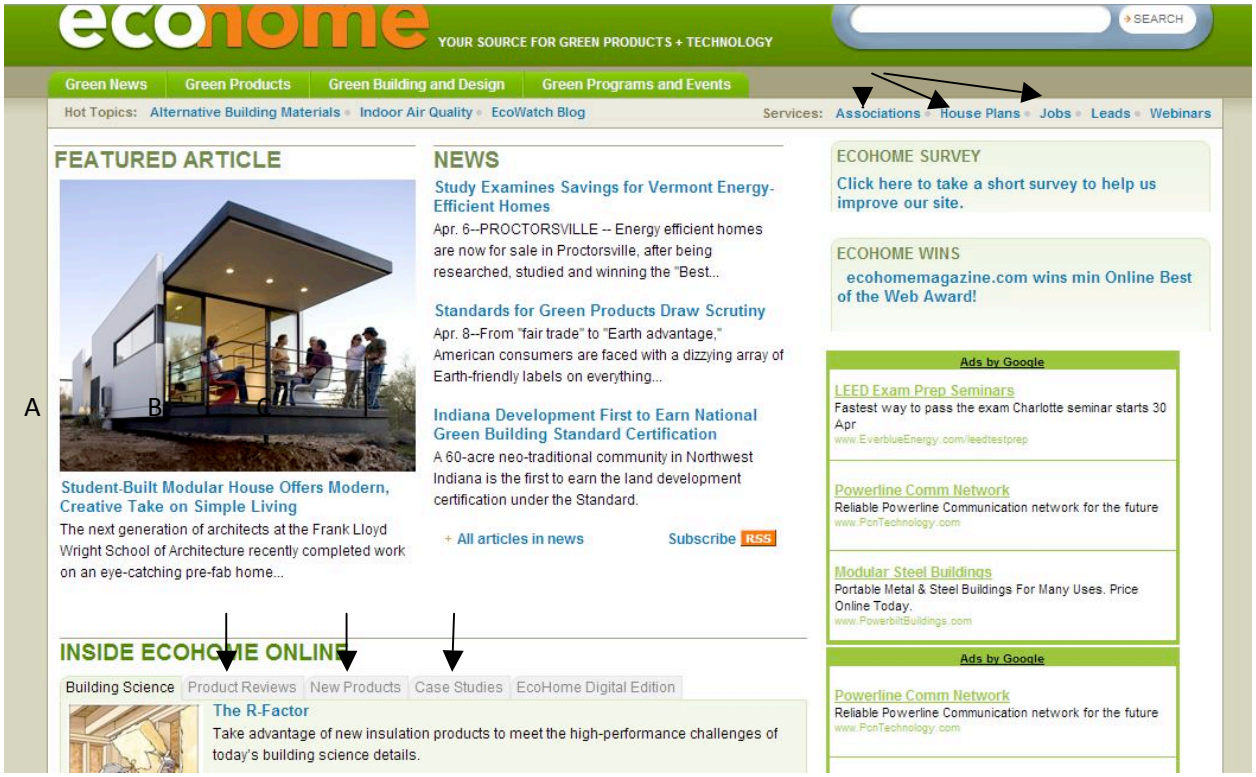


Figure #7 Explanation Screen Shot (Source: http://www.ecohomemagazine.com/)

Screenshot Explanation

The letters "A", "C", and "F" on the screen shot were examples of keyword identification for the scope column and certain attributes. The target audience was considered to be comprehensive due to keywords like building science (builder), green building & design (architect), and green programs & events (owner). The letter "H" was an example of resources that were not on the actual site. For example, when an individual clicked these links the basic domain of the website changed; therefore, any information found after clicking the link was not considered to be on the original site that was found by the Google search.

In the scope column, this website received the letters "P", "I", "N", and "R". Overall, the website contained five out of ten attributes and received an "M" for medium rating. The four attributes that were identified are as follows: Tips, Walkthrough, Product Reviews, and Investment Info.

Attribute Examples

Frequently Asked Questions were defined as the area on a website that had a link labeled "frequently asked questions" or FAQ's.

Tips were defined as specific pieces of information intended to advise an individual on a topic with no sequential preference/logic to the order in which they are given. For example, a website with information such as "Little things to do in order make your home greener" where the items on list were in no particular order of importance or sequence would have been considered to be a tip attribute.

Walkthroughs were defined as specific pieces of information intended to advise an individual on a specific topic with a sequential preference/logic. For example, a website with information such as "Ten steps to make your home greener" would have been considered to be a walkthrough attribute, since the term "steps" implies a sequence or logical order.

Online Calculators/Estimators were defined as an online tool that allowed an individual to input values/quantities and receive an accurate output that is applicable to a process. For example, if a website contained an online tool that allowed an individual to input the amount of square feet they were painting and the tool had an output that told them how many gallons of paint were required to complete that process, then that would have been considered to be an online calculator/estimator attribute.

Instructional Videos were defined as videos that gave a detailed description of a process. For example, if a website had a video that showed how to build a deck step by step, then it would have been considered to be an instructional video attribute.

Product Reviews were defined as opinions given on a specific item by individuals that have used the item. For example, if a website had a product that an individual could have rated and/or written a review about after using it, then it would have been considered to be a product review attribute.

Room/Project Specific Case Studies were defined as detailed information given on a specific area and/or site that was intended to be used as a reference for similar projects. For example, if a website contained a list of case studies for home

improvements categorized by rooms, then it would have been considered to be a room/project specific case study.

Professional Help was defined as any directory/database of Architecture, Engineering, or Construction (AEC) professionals used for quotes and/or a professional opinion. For example, if a website contained a list of local contractors for specific jobs, then it would have been considered to be a professional help attribute.

Financial Advice was defined as any information given on incentives, grants, financing options, and/or tax credits. For example, if a website has information tax credits an individual would qualify for by installing their product, then it would have been considered to be a financial advice attribute.

Investment Information was defined any information given on green features, cost, return on investment, and lifecycle cost. For example, if a website has products with prices, then it would have been considered to be an investment information attribute.

Results/Findings

Overall, sixty different web sites/online tools were looked at. There were six web sites/online tools that were repeat links as well as, two bad links. The following paragraphs

describe the distribution of web sites in terms of target audience, scope, attribute frequency, and usefulness ratings.

Figure # 8 depicts the percentage of the target audience based owner, builder, architect, or comprehensive.

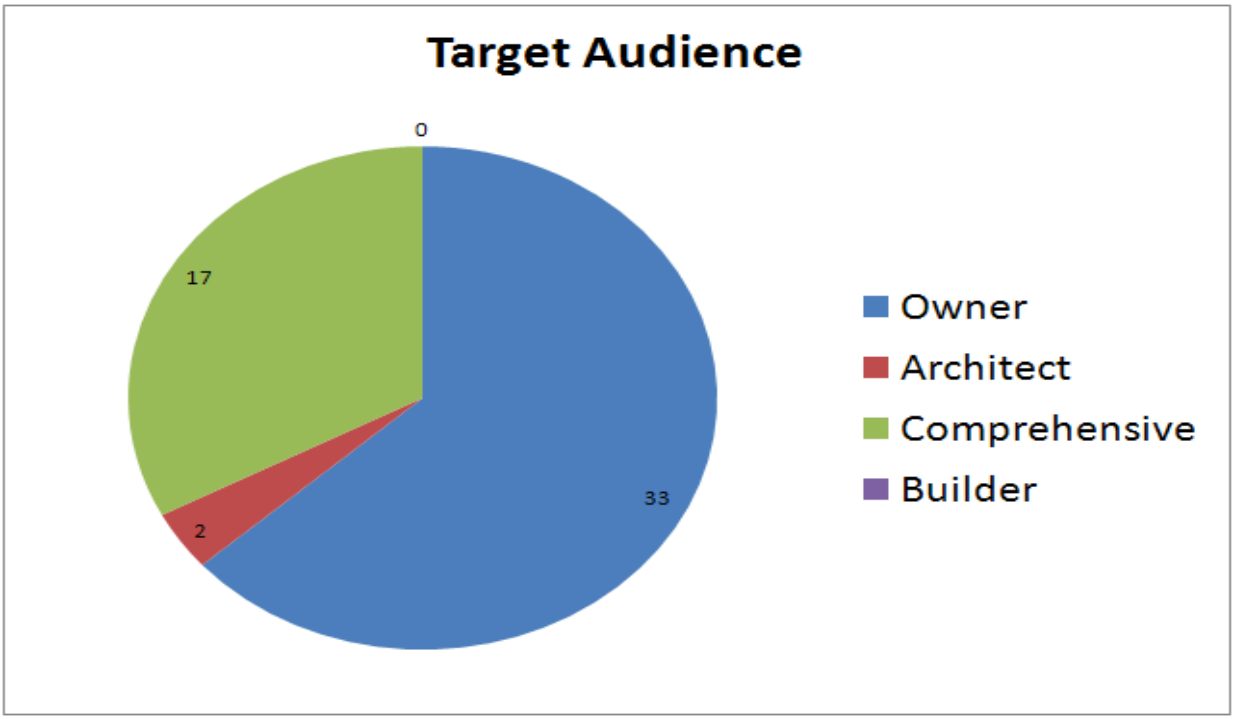


Figure # 8: Target Audience Percentages

As seen above, 33 of the online tools target audience were directed towards the owner. Seventeen of the online tools were considered to be comprehensive, while only two online tools were directed exclusively towards the architect, and zero were directed just at the builder.

Figure # 9 depicts the results dealing with the scope classification.

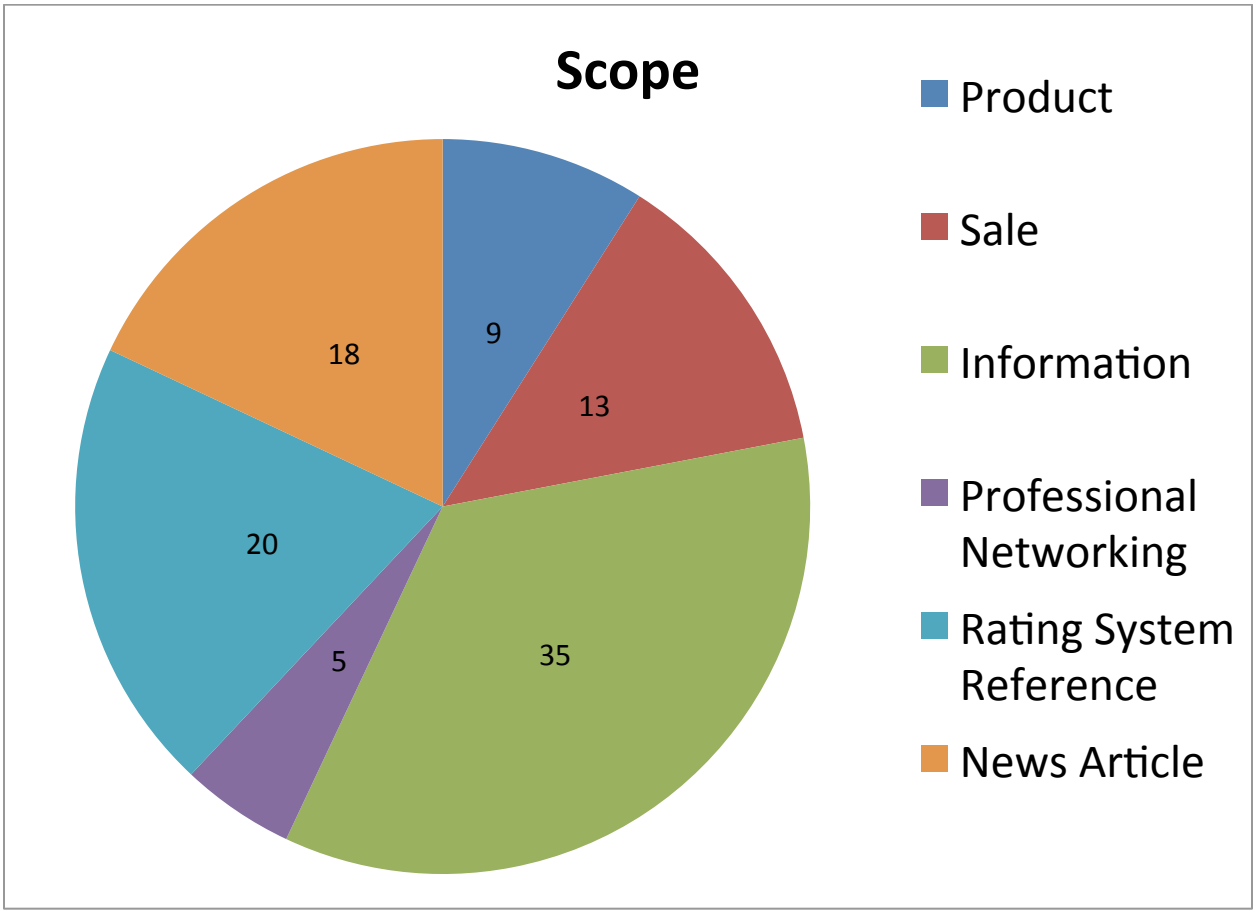


Figure # 9: Scope Classification Results

As seen above, information was the most frequent scope or purpose of the online tools with a count of 35. Rating system references and news articles came in second and third with a count of 20 and 18 respectively. Sales, products, and professional networking came in fourth, fifth, and sixth with counts of 13, 9, and 5 respectively. It should be noted that some sites were counted more than once if they had more than one purpose or scope.

Figure # 10 depicts the frequency of attributes for each online tool.

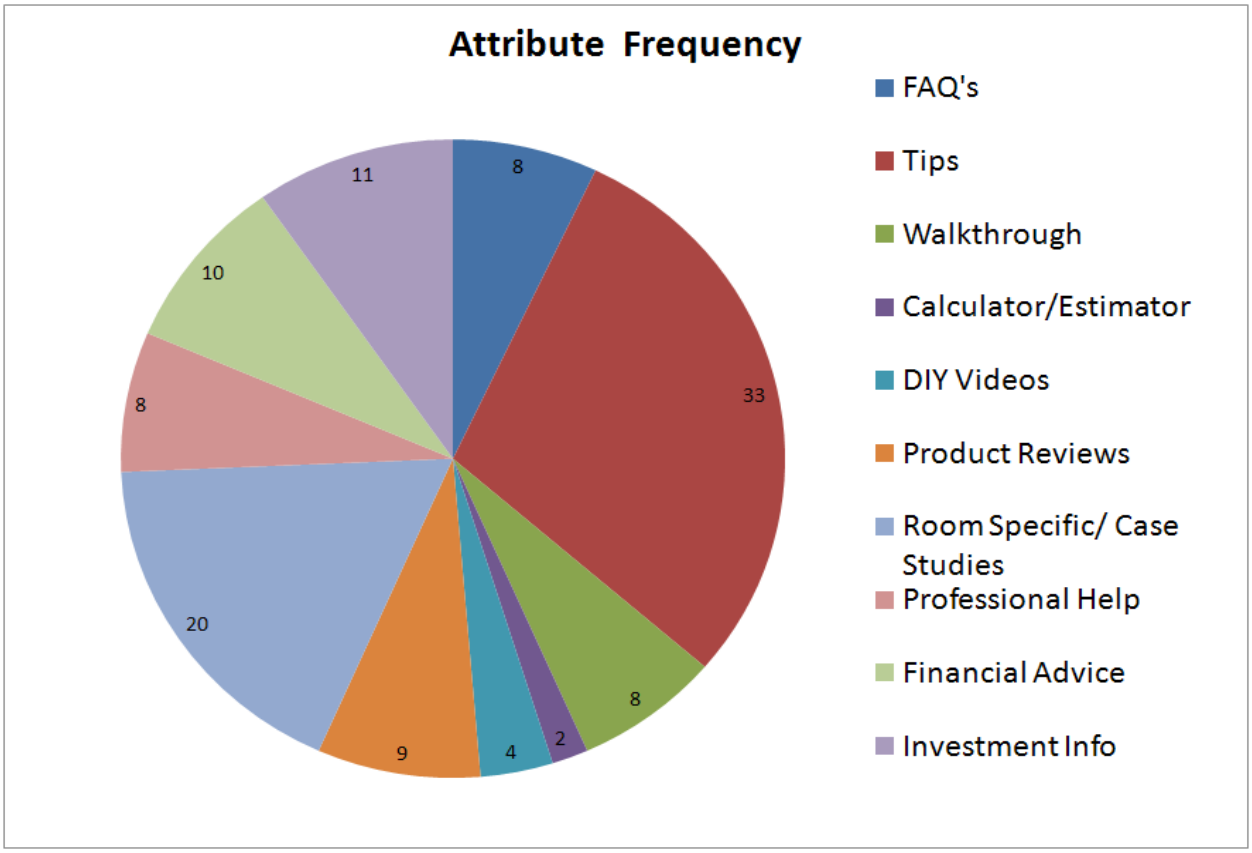


Figure # 10: Attribute Frequency

The rankings for frequency in the context of attributes of each online tool are as follows:

1. Tips (33)
2. Room Specific/Case Studies (20)
3. Investment Info (11)
4. Financial Advice (10)
5. Product Reviews (9)
6. Walkthrough (8)

6. Professional Help (8)

6. FAQ's (8)

9. DIY Videos (4)

10. Calculator/Estimator (2)

Figure # 11 shows the distribution of ratings from the sample.

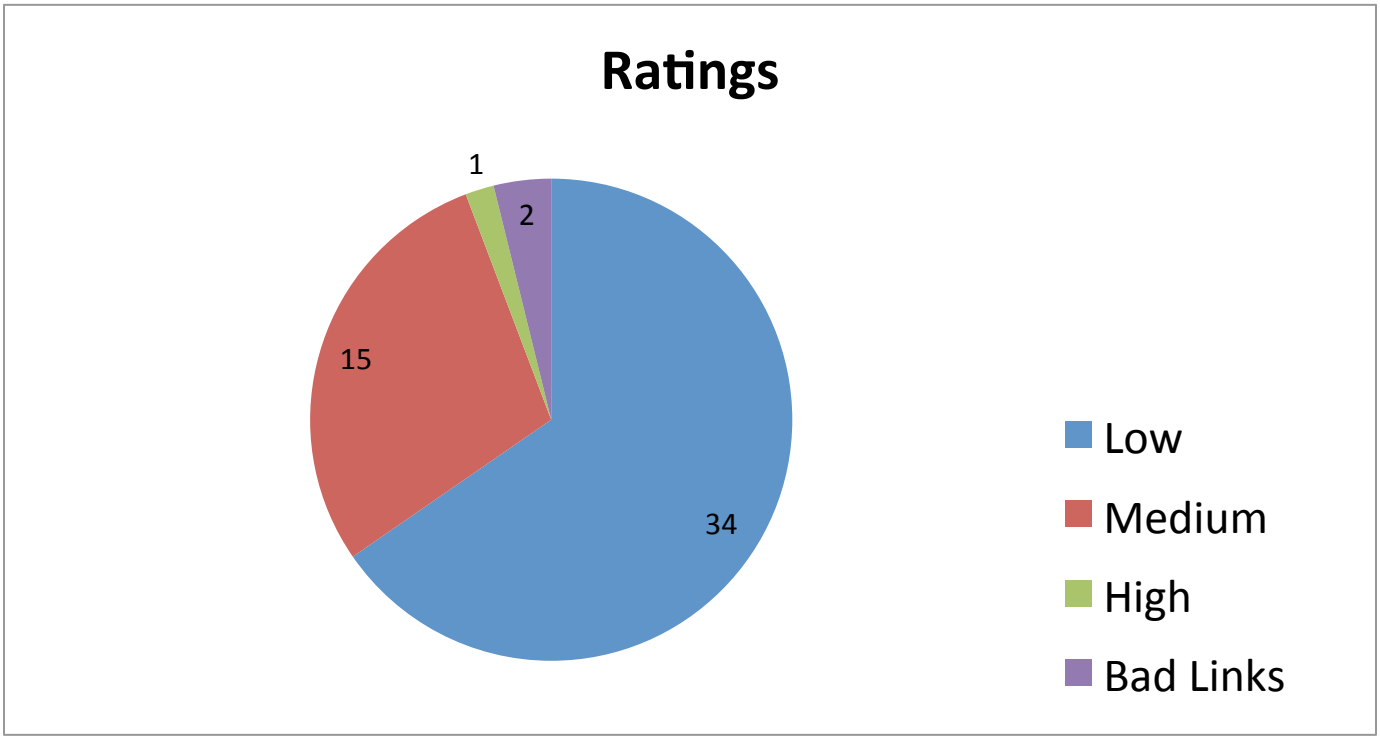


Figure #11: Ratings Results for Online Tools

As seen above, online tools with a low rating were the most frequent of the sample with a count 34. Medium rated online tools came in second and high rated came in third with 15 and 1 respectively. There were also two bad links as well as, six repeat links in the sixty website sample.

Figure # 12 is a stacked bar graph comparing usefulness ratings for the sample of websites. This graph shows the comparative usefulness for websites returned by each search term based on percentages.

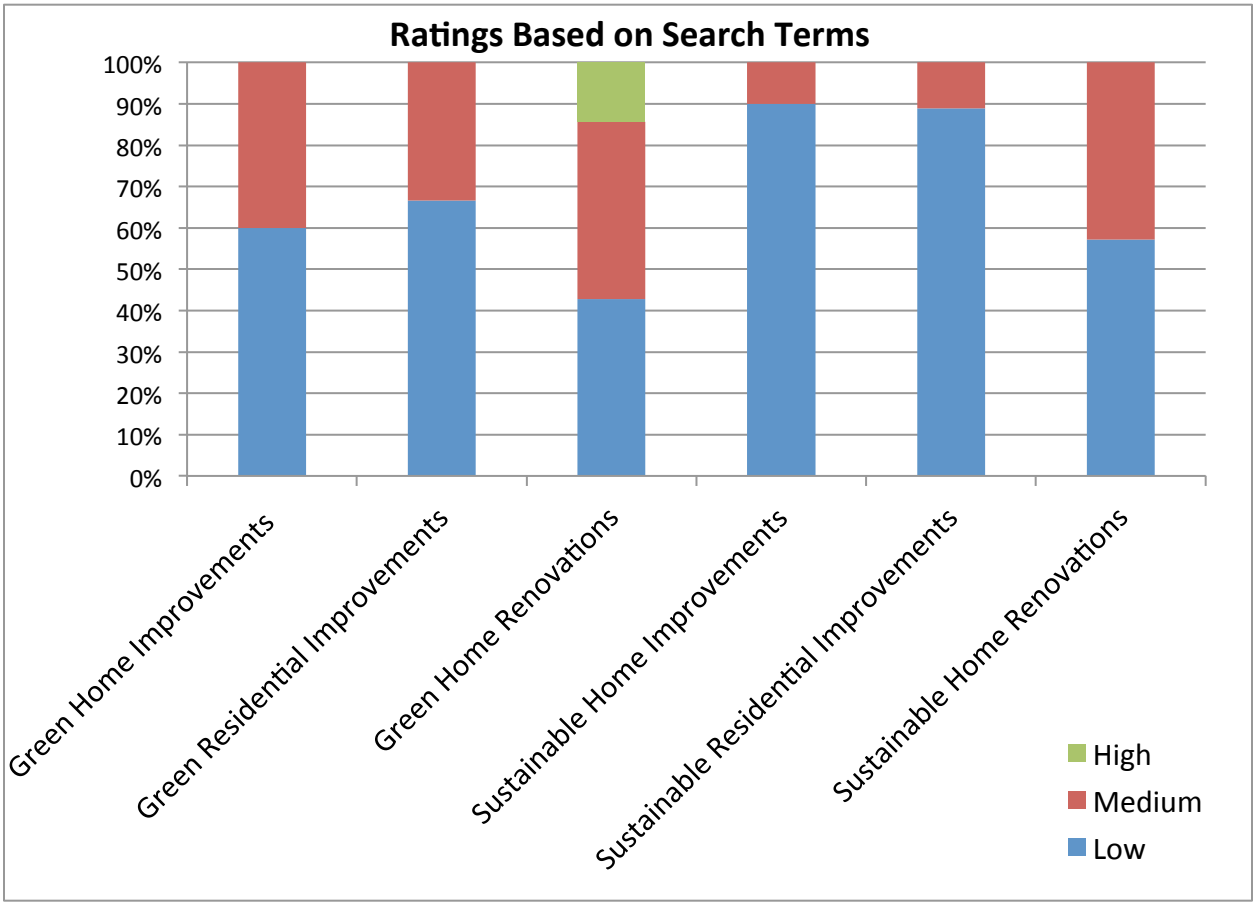


Figure # 12: Ratings Based on Search Terms

Figure # 13 is a stacked bar graph comparing target audiences for the sample of websites. This graph shows the target audience for web sites returned by each search term based on percentages.

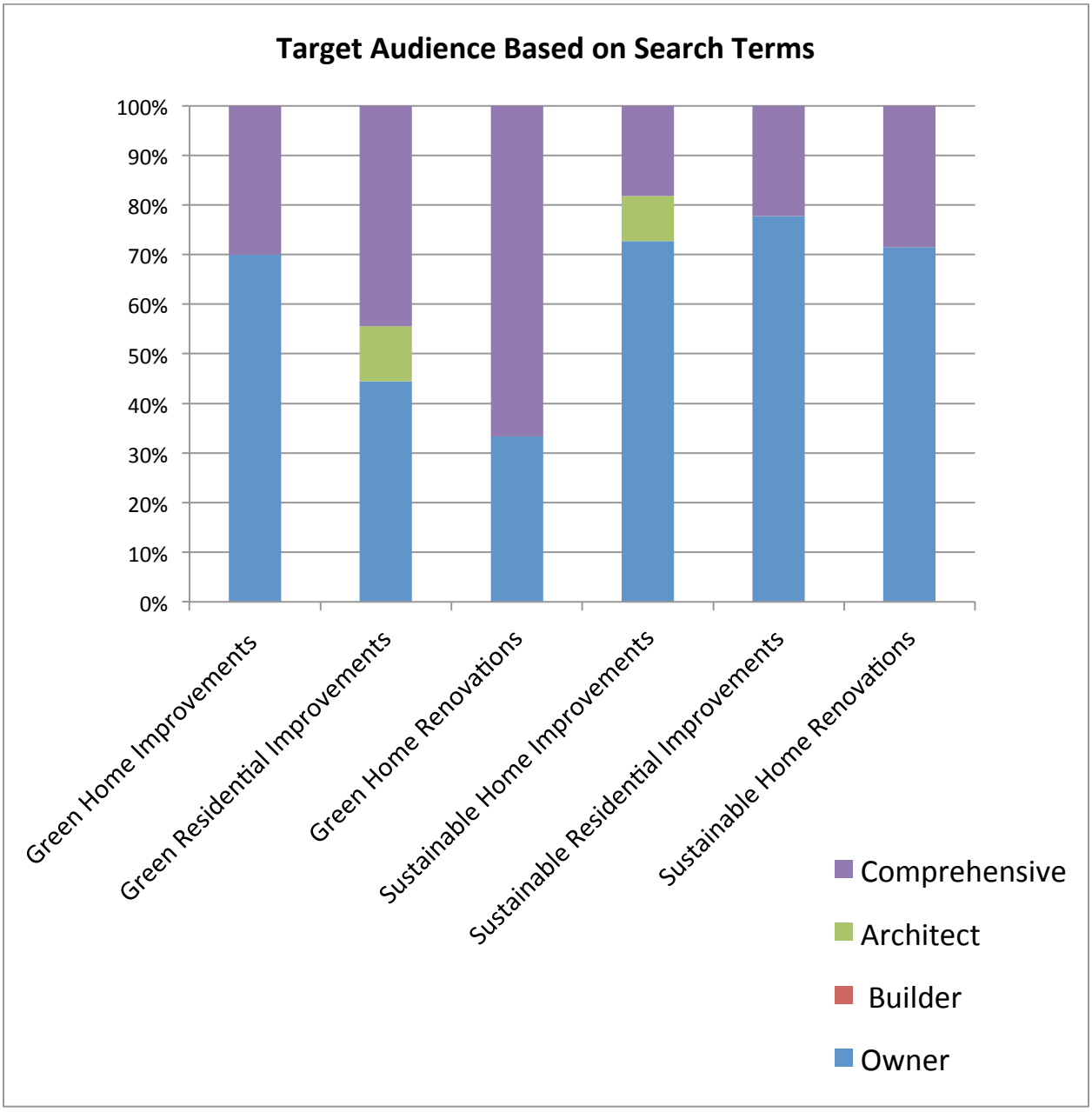


Figure # 13: Target Audience Based on Search Terms

Figure # 14 is a stacked bar graph based comparing scope or the sample of web sites. This graph shows the scope for web sites returned by each search term based on percentages.

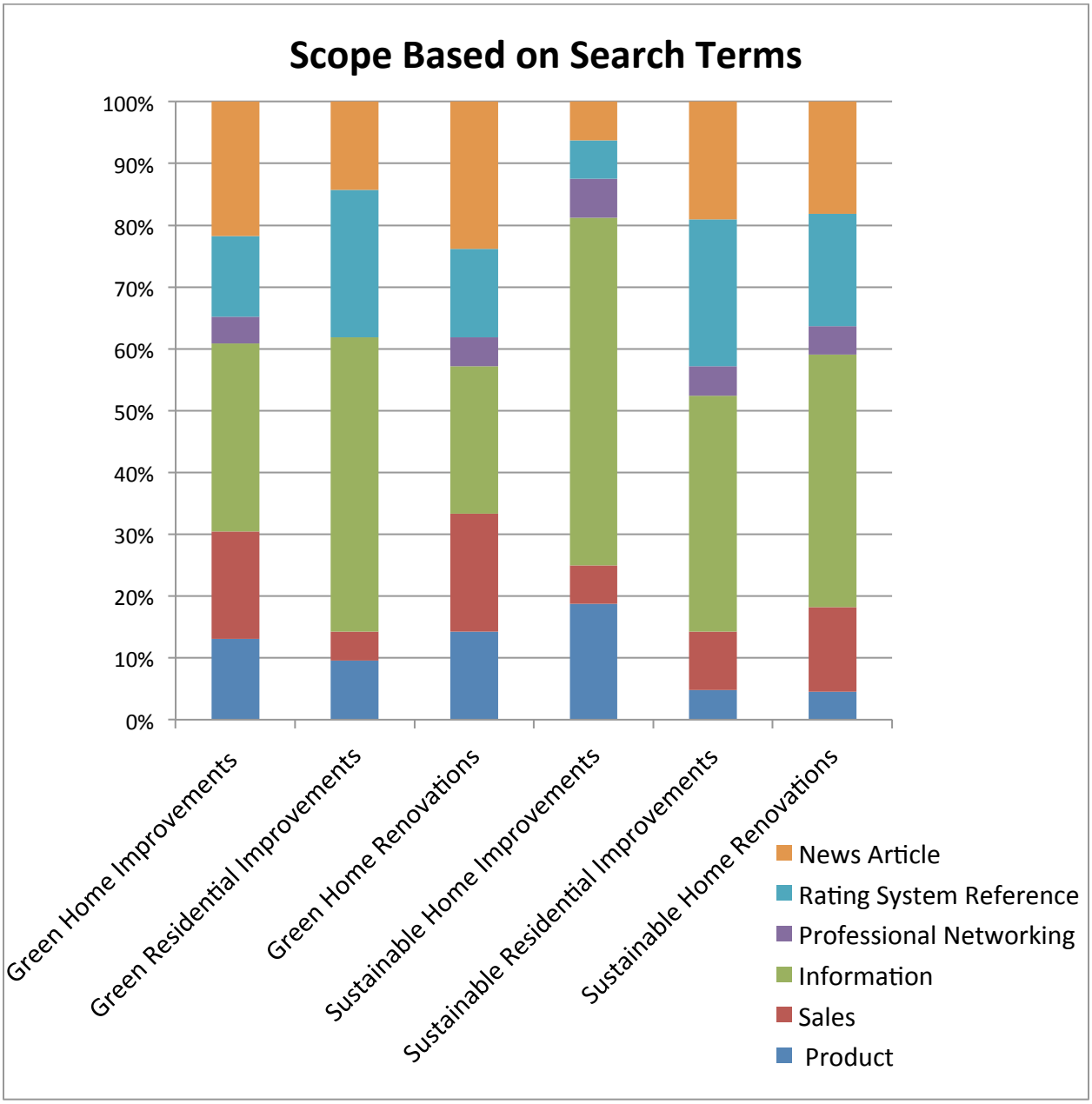


Figure # 14: Scope Based on Search Terms

Conclusions

In conclusion, there is a vast amount of online tools that can be found using Google. By using a variety of search terms and thoroughly going threw website the non-technical first-time

homeowner can find all the information needed to make sound decisions based on their household needs. However, room for improvement still exists

Based on the descriptive statistics derived from the data a number of conclusions can be drawn. Assuming that more information made easily accessible by Google will be helpful to non technical first-time homeowners; however, there is a definite need for more in comprehensive, detailed websites, as only one of the web sites in the sample had at least seven of the attributes needed in order to receive a high rating. Furthermore, there were not any online tools that had the builder as the exclusive target audience in this sixty website sample. Professional networking websites were also lacking in the sample.

Based on the search term data, the search terms beginning with "green" brought out more online tools with medium ratings. On the other hand, the search terms beginning with "sustainable" produce more online tools that received low ratings. The word "renovation" also produced the most online tools with medium ratings. Overall, the most useful search term was "Green Home Renovations" because it produced the only website with a high rating which was Green Building Resources.

Suggestion for Future Research

When conducting further research on this subject the future researchers could do the following in order to improve upon the findings:

- Use a survey to find most common search terms used by non-technical users seeking information about green or sustainable home improvements
- Use a survey to find most requested and or helpful online tool attributes for this audience
- Use a different search engine
- Use a bigger sample
- Use additional search terms such as "energy efficient" to capture more detailed facts of green and sustainable building.

These steps would help to explore a broader spectrum of tools that first time homebuyer might find in their search, and would provide a better understand of what types of information are most useful for this audience. This information could then guide the developers of future tools to integrate the information most useful for their target audiences.

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