

Final Report to the Foundation for Financial Planning:

Title: *AN INVESTIGATION OF THE QUALITY OF FINANCIAL
ADVICE OFFERED BY WEB BASED SOURCES*

From:

Conrad S. Ciccotello, JD, Ph.D

Associate Professor

Director of Graduate Programs in Personal Financial Planning

Department of Risk Management and Insurance

J. Mack Robinson School of Business

Georgia State University

P.O. Box 4036

Atlanta, GA 30302-4036

(404) 651-1711

cciccotello@gsu.edu

Russell E. Wood

Financial Planner

Homrich and Berg, Inc.

One Buckhead Plaza, Suite 530

3060 Peachtree Road

Atlanta, GA 30305

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AN INVESTIGATION OF THE QUALITY OF FINANCIAL ADVICE OFFERED BY WEB-BASED SOURCES

Summary:

Individuals increasingly rely on web-based sources for financial advice. But does the advice you get depend on the site you visit? Relying on standardized input data from three different family scenarios, we observe that the variation in advice across web-sites increases with client input complexity. Web advice dispersion also differs in magnitude across financial planning domains such as insurance, investments, retirement, income tax, and estate tax. ‘Live advisor’ financial solutions, however, are not always more consistent than those available on the web. Human advice varies less with client complexity, but in certain planning domains web advice has lower dispersion. The results suggest that client characteristics and planning domains matter in the development of efficient distribution mechanisms for financial advice.

1. Introduction

The world-wide-web has provided individuals with unprecedented access to financial advice. However, much remains to be learned about the advice that individuals receive from web-based sources. Early academic research, such as Grinder (1997), began this learning process by organizing the various web resources by financial function. Subsequently, financial magazine studies such as Rose and Daragahi (1999) have evaluated or ranked financial web sites. However, virtually all of the magazine studies rely on hard-to-quantify measures such as convenience or user friendliness. Academic research on the economics of the web, like Brown and Goolsbee (2000), has focused on issues such as the relationship between web access and the prices for financial products/services. Other academics, like Rajgopal, Venkatachalam, and Kotha (2000) have examined whether stock market performance of web firms relates to the “experience” that their customers have on the firm’s site.

While financial magazine articles that rank web site studies are interesting, they are not very scientific. On the other hand, the academic research on web pricing impacts is rigorous, but it has addressed issues other than those related to quality of advice. An underlying assumption is that the quality of the advice available on the web is constant in cross section and relative to that offered by live advisors. Perhaps that assumption is reasonable, but to our knowledge, there has been no research directly on point. This paper fills a gap in the literature by investigating the quality of financial advice provided by web-based sources.

Does an individual who visits multiple web sites tend to get the same (or similar) financial advice from each? How does web advice compare to ‘live’ advice? Understanding these issues is important to both individual consumers and to the financial services industry. Societal and governmental trends point toward the continued privatization of financial decisions

and the need for comprehensive personal financial planning. Models for the delivery of planning advice to middle class consumers generally involve both a human and a web component (Marer, 2000, Longo, 1999). Although some consumers may resist using the web for financial dealings, Mantel (2000) finds that consumers will adopt advanced technology when it is in their interest to do so. Reflecting the views of many financial industry observers, Barreto (2000) argues that online advice and guidance tools for consumers will continue to “proliferate rapidly.”

Since the web is playing an increasing role in the delivery of financial advice, more needs to be understood about the advice available through that medium. To that end we examine how financial advice varies by consumer. For example, low net worth consumers may get more consistent advice using the web than high net worth consumers do. We also test whether web sources offer more consistent advice on some types of questions. The web might offer very consistent advice on the amount of life insurance that an individual needs, for example. On the other hand, web advice could vary widely across sites if an individual sought to obtain an optimal asset allocation for her investment portfolio.

Aside from insurance and investment questions, an individual may use the web for other financial advice. Our study thus comprises the major domains of personal financial planning, including insurance, investments, retirement planning, income, and estate taxes. Relying on standardized client input data from three scenarios, we observe several empirical regularities. The dispersion of web financial advice from independent sites increases as client net worth increases. Not surprisingly, financial advice becomes less of a commodity as the situation becomes more complicated. Among the categories of questions, web advice exhibits the lowest dispersion on issues such as the amount of benefit from a conversion from Traditional to Roth IRA, and the amount of life insurance needed. Higher variation is apparent for questions

involving the proper asset allocation for an investment portfolio, size of retirement nest egg, and estate tax estimation.

We also observe that the web offers less independence across sites than is first apparent. In some areas, such as disability insurance in particular, a single calculator powers the majority of sites. So if a consumer believes that changing web sites from one company to another provides an independent ‘second opinion,’ he could be mistaken. Individuals using several web sites to compare results should be careful in assuming that the advice they obtain across sites is independent.

Along with examining the nature of web advice itself, we also compare web advice to that provided by a sample of ‘live advisors.’ We find that live advisors offer more consistent advice across consumers, handling client complexity better than the web. But live advisors are only more consistent with certain types of questions. Advisors show less dispersion in investment and estate tax questions, but more dispersion with life insurance estimates and Roth IRA Conversion questions.

The rest of this paper is organized as follows: Section 2 introduces the data and methods. Section 3 provides the results and discussion. Section 4 offers a summary and conclusions.

2. Data

2.1 Case and Financial Issue Data

We begin with the development of client financial and personal profiles. The goal is to test scenarios that represent clients with different levels of wealth and financial complexity. Mindful of the potential for bias involved with creating our own scenarios to test, we began a search for independent input scenarios. We are very grateful to Dalton Publications for allowing us to use three of the cases in their textbook, *Cases and Applications*.

Summary information about the cases appears in Table 1. The Brady's (Mike and Carol) are each 37 years old. Mike earns \$70,000 a year as bank vice president, and the couple has a net worth of approximately \$200,000. Tom and Sue Smith are ages 47 and 50, respectively, with a \$550,000 net worth. Between the two, they earn \$124,000 a year. Tom is an executive in a closely-held firm while Sue is an administrative assistant. The Remington's (Wallace and Kitty) are both age 65. Wallace is a partner in a securities firm, where he plans to sell his interest. The couple has a net worth of about \$15M. Each of the cases has approximately ten pages of detailed facts and financial exhibits.

We then develop six financial questions that cover a wide range of financial advice. The areas roughly correspond to the knowledge comprised under comprehensive personal financial planning: retirement, insurance (life and disability), investments (asset allocation), income tax (Roth IRA Conversion), and estate tax. Examples will include such questions as "How much additional wealth will we need at retirement to fund our retirement goals?" "What should our asset allocation be for our investment portfolio?" and "How much additional life insurance should this wage earner have?" The questions are outlined in Table 2.

2.2 Web Financial Advice Sources

We next obtain a sample of web-sites to address each of the questions. Our goal is to simulate a process that an average person would use to find web-based financial advice. We begin by selecting an independent search engine evaluator, searchenginewatch.com. We chose searchenginewatch.com based on its established efforts to both evaluate search engines and educate the public about search engine use. The site lists the top 24 web search engines based on

size, reputation, and dependability of results. Among the engines listed there are both crawlers and directories.¹

Using the list of the 24 best search engines as a guide, we visited 13 different Metacrawlers recommended by searchenginewatch.com to determine which used the largest number of the target search engines. We selected webinfosearch.com, which utilized 23 out of the top 24 search engines. We then began our search by creating a phrase or word group that generally described the search topic because search engines generally search for individual words or phrases, and not complete sentences. For example, the retirement question search phrase was “Retirement Planning Needs Calculator” as opposed to “How much do I need to meet my retirement goals?” After inputting the search phrase, we obtain a list of sites for each question.²

The Appendix shows the sites identified for each question. Some of the sites in the study are less well known and some very recognizable sites are not included. This was due to the use of an independent search methodology, and the fact that many of the more popular sites contain a myriad of financial planning information, but they do not contain tools and/or calculators that could be used in our study. Much of the information provided on the web offers instruction or opinion but does not produce a definitive answer.

Upon further investigation of the sites themselves, we also learn when a site is redundant or does not address the form of question we asked. The former occurs when the same underlying calculator powers two sites. In this case, we eliminate the second and any subsequent sites from the analysis. The latter situation, not answering the question we asked, is most common in the retirement question. Some sites compute the annual additional savings for retirement, as

opposed to the additional lump sum necessary at retirement. If the site does not directly address the question we ask, we drop it from the analysis.³

2.3 Live Advisor Data

For the “live advisor” portion of the study, a sample of graduate students in personal financial planning at a large state university in the Southeastern United States will be asked to respond to the same questions as developed above after having been given the identical client data. The students are all members of the capstone (final) class in a CFP™ Board Registered Masters of Science Program, ensuring an even level of educational preparation.

3. Results

3.1 Web Advice

Table 3 provides a summary of the web advice by family scenario. At this stage, there are several observations. The range of advice, defined as the high answer minus the low answer, is quite large in all three family scenarios. For the Brady retirement, the mean estimate of additional funds needed (at retirement) is about \$1.4M, while the range is nearly \$2.8M. Recommended exposure to US equities for the Brady family investment portfolio averages about 57.6%, but the range is 60%. The dispersion does not abate as we move from the Brady to the other family scenarios. For example, the range on the Smith retirement question is nearly \$5M.

Table 4 displays the coefficient of variation (CV) for each of the questions. The CV deflates the standard deviation by the mean in order to allow a comparison of variation when responses have different mean values. Below each CV on the table is the standardized CV. We compute the standardized CV by dividing by the smallest CV for that question. Standardized CV

thus has a minimum value of one. The results generally show that the smallest standardized CV is in the Brady case. Brady is the case where the couple has the lowest net worth and simplest financial scenario. For a given question, moving from Brady to Smith to Remington usually results in higher CVs. Most standardized CVs are roughly 10-20 percent higher across cases. In the case of life insurance, for example, the Smith CV is fourteen percent higher than the Brady CV is.

This result supports the assertion that the web handles simpler situations better than complex ones. Advice is more of a commodity when a situation is less complex. But the interesting feature of Table 4 is that it permits an evaluation of how greatly dispersion varies across input scenarios. In many cases, the standardized CV for Smith is only slightly different from that of Brady. The Smith's are a couple with over a half-million dollars in net worth. One inference from this result is that web advice quality does not deteriorate rapidly over middle to upper-middle class consumers.

The estate tax results appear to be an anomaly in Table 4. In this case, the Brady results have the highest CV. There is significant disagreement among the web computational sources regarding whether any estate tax would be due at the death of either Mike Brady or Tom Smith. Several estate tax calculators provide a zero estimate for tax due, but some do not consider the unlimited marital deduction, which may explain this result. Unlike the Remington case, where the mean estate tax estimate is about \$3.98M, the average estimates in Brady and Smith are \$6.4 thousand, and \$17.7 thousand, respectively. The resulting CVs in these cases are quite large.

Table 5 illustrates the average CV by area, giving each family scenario result equal weight. This result provides an assessment of the dispersion of advice by area. The table shows that the web offers the most consistent advice on the Roth IRA conversion and life insurance

estimate questions. On the other hand, disability insurance estimates and estate tax computations exhibit the highest average CVs.

3.2 Independent Sites

Table 6 shows the percentage of redundant sites (those that are powered by the same underlying calculator). In some areas, such as the disability insurance and the Roth conversion estimate, redundancy is quite high. The same calculator, for example, powers over half the disability sites, and nearly half of the Roth conversion sites.⁴ On the other hand, we found no redundancy at all in the life insurance or estate tax sites.

Redundancy occurs for several reasons. On the Roth conversion, for example, *Calbuilder* constructed the calculator used in 12 out of the 31 sites.⁵ At the bottom of each calculator, *Calbuilder* places a tag line, where they take credit for creating the calculator. Also, site visitors can notice that the address line starts out www.calbuilder.com when the link is selected. For example, if a person selects the link to the Roth calculator on the Kiplinger sites, she will be taken to the *Calbuilder* site (as opposed to another page on the Kiplinger site).

Calbuilder sells calculators in order to make a profit. Sites that purchase the calculator get to place their name at the top of the *Calbuilder*-created site in order to personalize it, but the actual calculators provide identical answers across sites. Since the various sites are paying for the calculator, they usually do not mention that their calculator is actually not on their site.

For disability insurance, 13 out of 25 sites were redundant in that they were merely links to the identical site (www.life-line.com). In contrast to the *Calbuilder* situation, most of the sites stated up-front that they were merely providing a link to a disability insurance calculator at

another site. Even if this was not stated, once the calculator link was selected it returned to the familiar web page at life-line.com.

A few sites were redundant in that they were located at www.member.cunamutual.com. This is a site from a mutual association of about 200 credit unions around the country. Since many credit unions are small, and cannot afford a powerful web presence, they have banded together. The central site provides several tools that can be incorporated into the relatively simple web-sites used by its members. For example, a site for a small credit union may be a simple single page. On that site, the credit union has a link that states something like “click here to determine your disability insurance needs.” When the link is clicked, the user is taken to the Disability Insurance calculator located on the association’s web page.

3.3 Web Versus Live Advice

Table 7 provides a summary of the advice provided by the live advisors. Notions that live advisors provide extraordinary precision can be quickly dispelled. The range of advice is quite large. To examine how web and live advice compare, we perform two analyses. First, Table 8 shows how web versus live advice dispersion is related to family scenario. In the Brady case, the ratio of CV (web) to CV (live advisor) is less than one. However, in the Smith case, this ratio climbs to about 112%.

Increasing variation in web advice relative to live advice is linked to greater client complexity (Brady to Smith). As the situation becomes more complex, advice becomes less of a commodity and less consistency across web sources is observed. However, the ratios in both Brady and Smith are both close to one, suggesting that web advice is a reasonable proxy for live advice over this range of client.

Table 9 shows how web and live advice dispersion compares across domains. Web advice is relatively more consistent in the Roth IRA conversion and life insurance need questions. Asset allocation, disability insurance, and estate tax estimation favor live advisors. Retirement needs estimation is about equal in variation between live and web advice.

3.4 Implications for Consumers

The findings have several consumer implications. The first is that the advice on the web is not monolithic. It has variance, and that variation differs across client complexity and type of question. However, live advice has variance too. The quality of the advice that live advisors provide is less sensitive to client complexity, but more variant in some financial planning domains.

On the whole, web advice stands up quite well in terms of quality for middle market consumers. In the Brady case, for example, the average CV in web advice across domains is actually lower than that of the live advisors. The ratio climbs in the Smith case, but at 112% it is not very different from unity. The results suggest that the web can be a useful tool to obtain advice, as well as education, for a wide range of consumers. Consumers must be mindful of the appearance of independence, however. In certain domains, a single calculator dominates.

3.5 Implications for the Financial Planning Industry

This paper's results can contribute to the ongoing discussion about the design of a financial planning delivery capability that integrates web and live advice. A very brief search of the professional literature reveals numerous efforts by financial service providers to build this type of capability. Two examples include Jacobius (2000), who discusses the joint effort by

Mellon and MPower, and Trombley (2000), who examines the venture between ETrade and Ernst & Young.

This paper examines two key dimensions that have design impact. The first is client net worth. The results suggest that the web can do a very reasonable job providing advice to middle market clients such as the Brady's, who have a net worth of around \$200K. Since having clients with lower levels of net worth (lower levels of investment assets) generally means that a planner must have more clients, the ability to use web-based scale is critical to a profitable operation. Our results lend support to using the web as part of the delivery mechanism for financial advice to the middle market.

While our findings support the web as an opportunity for live planners to better support their clients, Bowen (1999) portrays the web as more of a threat. Our results show that, even for clients such as the Smith's (net worth over \$500,000), the ratio of variation in web to live advice is very close. If live advisors are not adding quality relative to the web, their business could be threatened. However, one positive aspect of these results for the industry is that they suggest that an interactive web/live advisor combination could be quite successful with many clients. Consistent with Jovin (1999), the web offers live planners a complementary advice tool, as well as the ability to educate and communicate with clients.

The Remington findings, however, reinforce that the high net worth client will typically be served best by customized mixes of live and web advice. As Prince and File (2000) argue, these "private wealth" clients have idiosyncratic issues that demand individual attention. In these cases, the web should be more of a communication tool than an actual advice source.

The other dimension examined is the financial planning domain. Table 9 shows that, relative to live advice, the web does the best job on Roth conversion and life insurance need

questions. Based on these results, either the tax or insurance area might be a good candidate for web interface with clients. Interestingly, King (2000) discusses how Fidelity has recently launched its own insurance quoting site. Retirement planning variation is nearly equal across family scenarios, suggesting that retirement calculators may offer a reasonable web interface, for middle market clients in particular. Disability estimates are also close in variation.

Live advisors tend to be more consistent with estate tax estimates. However, the envisioned “repeal” or exemption increases could move estate tax issues away from the middle class. In the “private wealth management” situations, like the Remington’s, where estate taxes will remain a significant issue, live advice continues to be warranted.

Portfolio allocation is perhaps the most interesting of the domain area findings. A first impression of the issue may be that the web would do a consistent job with this task. Live advisors may tend to have particular types of investment bias that the web would not have. The findings, however, suggest the opposite. Live advice on portfolio allocation is much more consistent than that available on the web. The implication is that live advisors should pay more attention to this facet of advice for their clients, even at the middle market level.

3.6 Limitations of the Study

This study has a number of limitations. Two in particular lend themselves toward a bias that makes the web results appear more uniform than they might have been in practice. Strict control of the entry variables in the study masks the problems that actual consumers may have with data omissions or entry errors. Complicated navigational demands or technical analysis systems on financial web-sites may also overwhelm consumers.⁶

On the live advisor side of the study, student participants faced a survey-type instrument. Relative to an actual planning scenario with a live client, several biases are possible. Student participants could have been confused about the questions and unable to probe the “live client” for more information. Several students remarked that it was difficult to get a feel for the client from written information alone. Or, students could have lacked motivation to thoroughly prepare the answers relative to a live scenario. Given these issues, the variation in live advice may be upward biased.

On the other hand, live advisors could be less likely on a survey to base their results on efforts to promote certain products or services to clients. In practice, such an incentive could impact advice. The variation in live advice could have a downward bias in the study to the extent that a promotion mentality pervades actual financial advice.

The relatively small number of live advisor responses is another limitation. With added statistical power, more precise statements could be made. However, adding live advisors arguably adds heterogeneity. The advantage of this group of live advisors is a relatively uniform level of preparation in financial planning.

Lastly, the paper is limited in its ability to characterize clients. Financial complexity is a difficult concept to measure. We rely on net worth, which is measurable, but an imperfect proxy for complexity. Also we cannot capture other interesting segmentation possibilities among clients, such as psychographic. It may be that wealthy people are less fearful of the web, because they have had greater access to it, for example. Our client data would not capture such linkages.

4. Conclusion

Our goal in undertaking this research is to provide an assessment of the quality of financial advice being offered by web-based sources. Relying on standardized inputs from several client profiles, we observe that web advice increases in dispersion as client inputs become more complex. Live advice is less sensitive to client complexity. Across financial planning domains, several additional patterns emerge. Web advice is more consistent on questions related to life insurance needs, and tax benefits (from a Roth conversion) than live advice. Live advice has lower dispersion on estate tax and asset allocation questions.

Our research should benefit the individual by systemically examining the web as an outlet for financial advice. By objectively assessing the strengths and weaknesses of web advice relative to “live” advice, the research offers consumers of financial goods and services insight into search strategies. In sum, our findings suggest that for middle market consumers, the web is a reasonable outlet for financial advice.

The research also has implications for financial service providers that are interested in designing the linkages between their web and live advisor resources. As such, the research will impact the design of the personal financial planning function (and hence the financial services industry). Our results suggest that web resources can do an efficient job in some areas, such as insurance and income tax. Other areas, such as estate tax and asset allocation, should continue to have a significant amount of live advisor input.

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www.searchenginewatch.com

Table 1

Summary of Client Input Scenarios

The following are summaries of the standardized input case facts taken from the Dalton Cases and Applications text.

<p>Brady</p> <p>The Brady's are both 37 years old. Mike is a bank vice president who earns \$70,000 annually. Carol is a full-time homemaker. The Brady's have two children, ages six and three. Carol is expecting their third child. The Brady's are homeowners (with mortgage) and have a current net worth of approximately \$200,000.</p>
<p>Smith</p> <p>Tom Smith is a 47 year-old executive with a closely-held corporation. Tom's salary is \$100,000 per year. Sue Smith is 50 years old; she currently works as an administrative assistant earning \$24,000 annually. Sue has two children from her first marriage. They are ages 16 and 12. Tom and Sue have a two-year-old daughter. The Smith's are homeowners (with mortgage) and have a current net worth of approximately \$550,000.</p>
<p>Remington</p> <p>Wallace and Kitty Remington are both age 65. Wallace is a partner in a securities firm. Wallace plans to sell his interest in the firm in the near future and work as a consultant. Kitty is a socially active volunteer. The couple has 5 children, ranging in age from 18 to 39, and 14 grandchildren. The Remington's have a primary residence and two vacation homes (all with mortgages). Their net worth is approximately \$15,000,000.</p>

Table 2

Input Questions

<p>Retirement:</p> <p>How much additional savings (lump sum) in dollars will each couple need at retirement to fund their retirement goals?</p>
<p>Insurance:</p> <p>How much additional life insurance protection (lump sum) in dollars does the higher wage earner in each family need?</p>
<p>How much additional long-term disability income insurance protection in dollars (per month) does the higher wage earner need?</p>
<p>Investments: Asset Allocation</p> <p>What should each couple's asset allocation be for their investment portfolio? Answer in percentage terms that sum to 100 and limit the options to the major asset classes [U.S. stocks, international stocks, bonds, and cash].</p>
<p>Income Tax:</p> <p>How great is the after-tax advantage (express disadvantage as a negative number) in dollars at retirement if the higher wage earner converts his Traditional IRA to a Roth IRA now?</p>
<p>Estate Tax:</p> <p>How much federal estate tax would be due if the higher wage earner died today?</p>

Table 3

Summary of Web Results by Family Scenario

This table shows the results from web sources for six different personal financial planning questions. The panels represent the Brady, Smith, and Remington scenarios, respectively. Dollar responses are in thousands, investment allocations are in percentages. N is the number of web sites for each particular question.

A. Brady

Area (N)	Mean	Range (High -Low)	Standard Deviation
Retirement \$ (23)	1400.6	2797.4	770.0
Life Insurance \$ (44)	1088.4	2895.9	480.2
Disability Insurance \$ (9)	2.3	3.3	1.0
Investments: Asset Allocation %			
US Equity	57.6	60.0	18.7
International Equity	10.7	23.1	9.3
Bonds	23.0	40.0	10.4
Cash (11)	8.7	21.0	7.9
Roth IRA Advantage \$ (19)	52.9	65.2	17.7
Estate Tax \$ (21)	6.4	134.5	29.4
B. Smith			
Retirement \$ (23)	1852.9	4996.2	1073.0
Life Insurance \$ (44)	646.0	1185.3	320.4
Disability Insurance \$ (9)	0.7	5.8	1.9
Investments: Asset Allocation %			
US Equity	60.4	50.0	16.5
International Equity	12.0	29.0	10.6
Bonds	19.1	23.6	7.3
Cash (11)	8.5	30.0	10.1
Roth IRA Advantage \$ (19)	11.0	19.1	5.0
Estate Tax \$ (21)	17.7	162.8	45.1
C. Remington			
Investments: Asset Allocation %			
US Equity	32.6	60.0	19.1
International Equity	7.4	18.0	6.8
Bonds	33.2	55.0	17.9
Cash (11)	26.8	100.0	30.7
Estate Tax \$ (21)	3982.3	5389.7	1807.2

Table 4

Dispersion of Web Results by Family Input Scenario

This table shows the coefficient of variation (CV) for the web results by question for each of the three family scenarios. The standardized coefficient is shown in parenthesis as the value divided by the minimum for each question. The three families have increasing net worth and complexity moving from Brady through Remington. In the investment (asset allocation) question, the total portfolio CV is an equally weighted average of its asset component CVs. N is the number of web sites per question.

Area (N)	Brady	Smith	Remington
	Coefficient of Variation (Standardized Coefficient)		
Retirement (23)	0.55 (1.00)	0.58 (1.05)	
Life Insurance (44)	0.44 (1.00)	0.50 (1.14)	
Disability Insurance (9)	0.43 (1.00)	2.71 (6.30)	
Investments: (Asset Allocation)			
US Equity	0.32 (1.19)	0.27 (1.00)	0.58 (2.15)
International Equity	0.87 (1.00)	0.88 (1.01)	0.92 (1.06)
Bonds	0.45 (1.18)	0.38 (1.00)	0.54 (1.42)
Cash	0.91 (1.00)	1.18 (1.30)	1.14 (1.25)
Total Portfolio (11)	0.64 (1.00)	0.68 (1.06)	0.80 (1.25)
Roth IRA Advantage (19)	0.33 (1.00)	0.45 (1.36)	
Estate Tax (21)	4.59 (10.20)	2.54 (5.64)	0.45 (1.00)

Table 5

Ranking of Advice by Financial Planning Domain

This table shows by area the average of the coefficient of variation for each of the questions asked. The average is taken over the family scenarios.

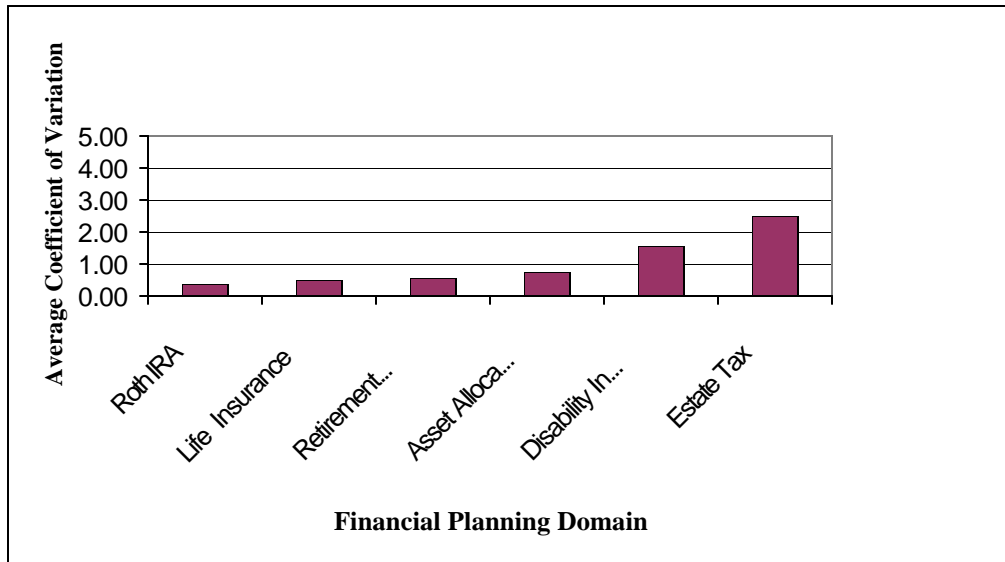


Table 6

Percentage of Redundant Web Sites

This table contains the percentage of the sites identified for each question that are powered by the same underlying calculator.

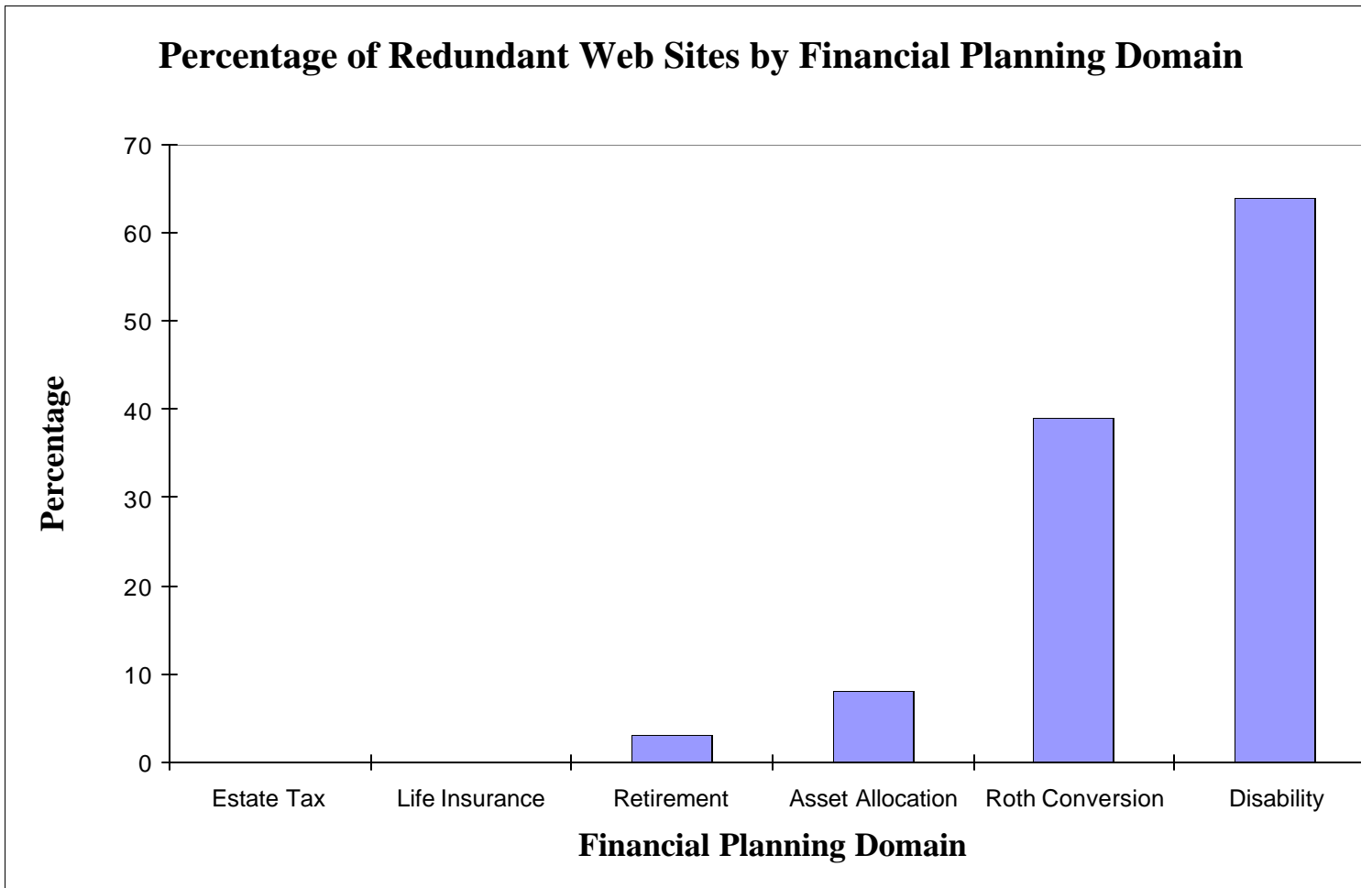


Table 7

Summary of Live Advisor Results by Family Scenario

This table shows the results from ten live advisor responses for six different personal financial planning questions. The panels represent the Brady, Smith, and Remington scenarios, respectively. Dollar responses are in thousands and investment allocations are in percentages.

A. Brady			
Area	Mean	Range (High -Low)	Standard Deviation
Retirement \$	1262.3	2247.4	706.0
Life Insurance \$	838.1	1196.4	375.6
Disability Insurance \$	1.8	2.7	1.1
Investments: Asset Allocation %			
US Equity	65.5	30.0	9.3
International Equity	13.0	20.0	5.9
Bonds	12.5	25.0	8.2
Cash	8.0	10.0	3.5
Roth IRA Advantage \$	36.0	129.1	45.1
Estate Tax \$	0.0	0.0	0.0
B. Smith			
Retirement \$	1564.1	2445.1	932.3
Life Insurance \$	768.1	1700.0	487.2
Disability Insurance \$	1.2	5.0	1.9
Investments: Asset Allocation %			
US Equity	57.5	30.0	10.1
International Equity	13.0	20.0	5.9
Bonds	19.5	35.0	10.4
Cash	9.0	15.0	4.6
Roth IRA Advantage \$	11.2	28.0	12.1
Estate Tax \$	27.4	273.9	86.6
C. Remington			
Investments: Asset Allocation %			
US Equity	40.0	35.0	11.8
International Equity	9.5	15.0	4.4
Bonds	35.0	30.0	11.1
Cash	15.5	30.0	8.3
Estate Tax \$	2115.7	7856.4	2563.2

Table 8

Comparison of Web versus Live Advice Dispersion by Family Scenario

This table shows the ratio by family scenario of the coefficient of variation (CV). The ratio is CV (web advice) divided by CV (live advice). The ratios give equal weight in their construction to each of the CVs for the financial domain questions in insurance (life and disability), Roth IRA, retirement, and asset allocation. Estate tax is not included since its CV is undefined in the Brady scenario.

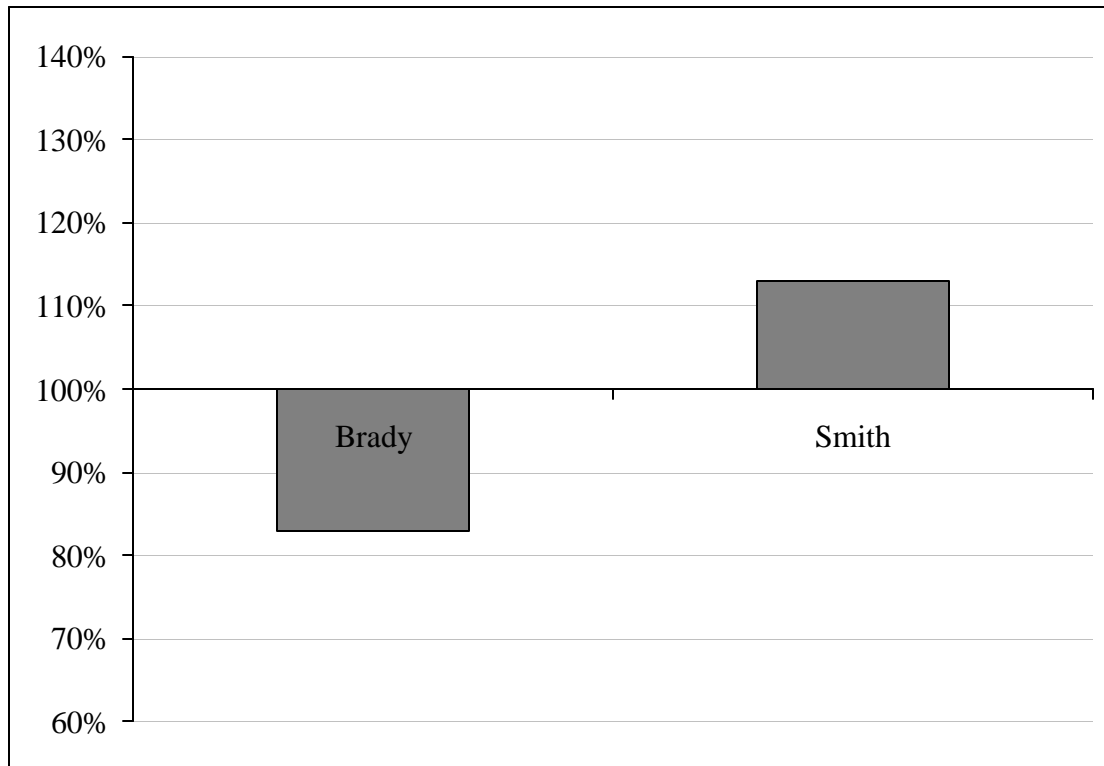
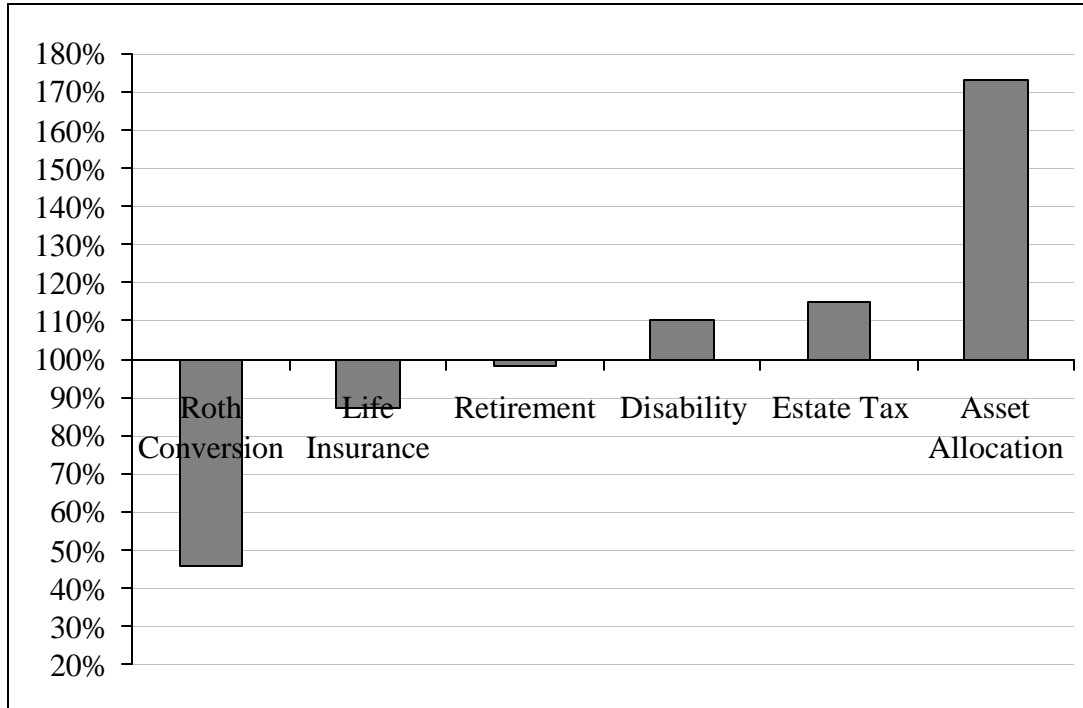


Table 9

Comparison of Web versus Live Advice Dispersion by Financial Planning Area

This table shows the ratio by financial planning area of the coefficient of variation (CV). The ratio is CV (web advice) divided by CV (live advice). The ratios give equal weight across family scenarios in their construction to each of the CVs for the financial domain questions in insurance (life and disability), Roth IRA, retirement, asset allocation, and estate tax (excluding the Brady case).



Appendix: List of Web Sites by Question

Retirement

fincalc.com/afretin.htm	transamerica.com	farmersinsurance.com	home.wingspanbank.com
fidelity.com	schwab.com	kiplinger.com	dionmoneymanagement.com
nfn.com	nbfunds.com	dcihome.com	banksite.com
americanfunds.com	nasd.com	onmoney.com	retirement.russell.com
mostchoice.com	newyorklife.com	usnews.com	founders.com
columbiafunds.com	estrong.com	waddell.com	cigna.com
olac.com	putnaminv.com	womensfinance.com	americanexpress.com
johnhancock.com	troweprice.com	valic.com	oppenheimerfunds.com
eurekafunds.com			

Life Insurance

finaid.com	quoteadvantage.com	cnalife.com	tiaa-creff.org
bygpub.com	genam.com	quotekey.com	amterm.com
accuterm.com	freelifequote.com	insweb.com	economylifeinsurance.com
allquotesinsurance.com	1stquote.com	quotenavigator.com	accuquote.com
cwinsurance.com	newyorklife.com	life-line.org	moneycentral.msn.com
metlife.com	garden-state.com	intelliquote.com	lifenet.com
kwot.net	insureshoppe.com	life-insurance-term-insurance.com	
justaquote.com	sunlife-usa.com	hutchinsoncreditunion.com	
ter-life-insurance-4u.com	termonly.com	termlifepros.com	reliaquote.com
pgafinancial.com	ntktermifeinsurance.com	budgetlife.com	byfsc.com
nams.com	iqoute.com	spectruminsurancegroup.com	
phillyquotes.com	proterm.totalsw.com	westernreserve.com	

Disability Insurance

life-line.com	northwesternmutual.com	nfn.com	macatawaagency.com
smartmoney.com	4bestquotes.com	tcu.edu	moneyadvisor.com
cyberconnect.com	moneycafe.com	gaudreaugroup.com	venezia-insure.com
hfgroup.com	firstcommunity.com	moneyclub.com	andrewsfcu.org
ss-cu.org	sunfcu.org	planplus.com	smith-fought.com
stockzoo.com	4disabilityinsurancequotes.com	fpa.net	financialserv.com
		member.cunamutual.com	

Investments: Asset Allocation

wingspanbank.com	johnhancock.com	valic.com	finportfolio.com
fidelity.com	schwab.com	gefn.com	smartmoney.com
moneycentral.msn.com	estrong.com	oakwoodcapital.com	transamerica.com

Income Tax: Roth Conversion

vanguard.com	algerfunds.com	firstamericanbank.com	calcbuilder.com
austin360.com	roth.upi-net.com	fidelity.com	calvertgroup.com
gocarolinas.com	wzzk1047.com	realpittsburgh.com	ocnow.com
news-journal.com	gjsentinel.com	nbfunds.com	sandiegoinsider.com
smartmoney.com	msco-cpa.com	estrong.com	ccbonline.com
statefarm.com	prudential.com	wellsfargo.com	kiplinger.com
cnnfn.com	quicken.com	moneycentral.com	schwab.com
mutuals.com	4anything.com	mony.com	

Estate Tax

banksite.com	thehartford.com	tamu.edu	willsandprobate.com
lifenet.com	rowbotham.com	statefarm.com	estateweb.com
fidelity.com	transamerica.com	agedwards.com	sunlife-usa.com
smartmoney.com	estateplanning.com	riddleandbrazil.com	capitalplaninc.com
marcweissman.com	florida-probate.com	newyorklife.com	mikecollins.com
florida-trust			

Notes:

¹ There are two basic types of search engines: crawlers and directories. Crawlers involve programs that actually dial up to millions of sites a day, scan their information, and log it for reference. An example is WebCrawler.com. Directories are human-compiled lists or indexes of the web. Sites are listed according to the description produced by various individuals. This could be someone working at the search engine, an independent reviewer, or the consensus of mass input. An example is Yahoo.com. Since there are so many sites, and also very many search engines, Metacrawlers have been created. These are basically search engines of search engines. They allow a user to search the results of several search engines simultaneously from one web site.

² Links to sites do change. We were generally successful in finding the site if the initial search led to an expired link.

³ Eight of the sites we found addressed a different question from the one we asked.

⁴ The disability question provided two seemingly contradictory results. The question yielded high dispersion, yet many of the sites are redundant. This can occur because redundant sites were dropped from the analysis.

⁵ Two of the 31 sites were redundant as they were co-created (and co-linked) by CNNFN and Quicken.

⁶ See the ABA Banking Journal, September 2000, page 114.