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# Using the Internet to Administer More Realistic Vignette Experiments

Francis G. Caro<sup>1</sup>, Teck Ho<sup>2</sup>, Daniel McFadden<sup>3</sup>, Alison S. Gottlieb<sup>1</sup>, Christine Yee<sup>3</sup>, Taizan Chan<sup>4</sup>, and Joachim Winter<sup>5</sup>

## Abstract

This article illustrates an innovative method of administering stated choice studies (or vignette experiments) using computers and the Internet. The use of video clips to deliver information to research participants makes vignettes more realistic, helps to engage interest of research participants, and can reduce framing effects. The method also provides research participants with interactive options before making judgments. A study to determine the views of older people regarding residential options is used to illustrate the method. Even older people with limited experience in using computers participated successfully. The study findings showed that research participants responded both to the audiovisual characteristics of vignette persons and to the variables in the vignette structure.

## Keywords

stated choice methods, vignette, Internet, fractional factorial surveys, older people, residential choices

## Introduction

We describe here an innovative approach to the administration of a stated choice study. Sometimes known as vignette experiments, stated choice methods are used by social scientists to study decision making in a wide variety of applications. The innovative method presented here involves use of video and audio clips to deliver information to research participants in an Internet-based study. The method also takes advantage of interactive features of the Internet to provide research participants with opportunities to seek supplementary information before making choices. The method offers a

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<sup>1</sup>Gerontology Institute, University of Massachusetts Boston, Boston, MA, USA

<sup>2</sup>Haas School of Business, University of California Berkeley, Berkeley, CA, USA

<sup>3</sup>Workers Compensation Research Institute, Cambridge, MA, USA

<sup>4</sup>School of Information Technology, Queensland University of Technology, Brisbane, Australia

<sup>5</sup>Department of Economics, University of Munich, Munich, Germany

## Corresponding Author:

Francis G. Caro, Gerontology Institute, University of Massachusetts Boston, 100 Morrissey Blvd., Boston, MA 02125, USA  
Email: [frank.caro@umb.edu](mailto:frank.caro@umb.edu)

promising way to make information available to research participants and to gain greater insights about the manner in which people draw upon information to make choices.

We begin with a brief explanation of stated choice methods that incorporate the features of a fractional factorial survey design. We then explain how we administered a pilot study with the innovative features made possible by the Internet. We describe our experiences in mounting the study and administering the survey. We include attention to the varied expertise needed to carry out the research. We include the findings of our pilot study. Our focus is on the potential of the method. If other researchers make use of the method, we anticipate future studies in which the innovative method is compared to traditional methods for administering stated choice studies.

### *Stated Choice Methods*

Behavioral researchers interested in a wide variety of applications have used vignettes or stated choice methods to understand the basis for complex judgments (Kanninen, 2007; Louviere, Hensher, & Swait, 2000; Rossi & Anderson, 1982). In making decisions, people rarely use a systematic rational planning process through which they identify pertinent goals, establish priorities, and weigh evidence on the extent to which various options are likely to enable them to maximize their objectives. More often, people make judgments quickly with limited insights about the ways in which they were influenced by the information that was available to them. Vignettes are among the techniques used by social and behavioral scientists to understand the basis for human judgments on complex issues. Various names are used for these methods. Market researchers use the name “conjoint analysis.” Environmental economists often use the name “contingent valuation method” (Mitchell & Carson, 1989).

When used in surveys, vignettes are hypothetical situations presented to respondents to obtain an opinion about desirable or anticipated behavior. The premise in use of vignettes in surveys is that responses to hypothetical choices provide insights about behavior in real-choice situations. A further premise is that hypothetical choices may be informative in ways that are different from and more revealing than respondent opinions about abstract principles. Vignette methods are often used when it is not practical or feasible to study actual behavior. Vignettes in surveys represent an inexpensive technique for approximating the use of experiments to study behavior. A variety of names is used to identify vignette survey techniques: conjoint analysis, contingent evaluation method, fractional factorial survey, and stated choice methods. The differences in terminology reflect the fact that vignette methods have been developed independently in a number of disciplines. Topics frequently studied using vignette methods include market research on product preferences, empirical studies of ethics, the bases upon which professionals such as health care providers form diagnostic opinions and treatment recommendations, and the normative basis for public policy.

Cavanaugh and Fritzsche (1985) make a useful distinction between two types of vignettes used in surveys: constant variable value vignettes (CVVV) and contrastive vignette techniques (CVT). When the CVVV approach is used, all research participants are asked to respond to identical vignette content. When CVT methods are used, the vignette structure is systematically varied so that research participants are asked to respond to somewhat different vignette content. In the CVT approach, researchers examine the ways in which vignette structure influence responses. Studies that use the CVVV approach are easier to design and administer than those using CVT methods. However, studies employing CVT methods offer analytic possibilities that far exceed what is possible with data collected with CVVV methods. The current article is focused entirely on use of contrastive techniques (CVT). Fractional factorial surveys (Rossi & Anderson, 1982), conjoint analysis, which is employed in market research (Louviere et al. 2000), and contingent valuation methods (Mitchell and Carson, 1989) are all forms of CVT.

### *Innovative Use of Internet for Stated Choice Studies*

Major advantages of the use of the Internet for general survey administration have been documented elsewhere (Dillman, Smyth, & Christian, 2008). The Internet makes it possible for many respondents who are separated geographically to see a questionnaire simultaneously. Responses can be recorded promptly. Data entry is eliminated as a separate step in the research process since subject responses are added immediately to an electronic data file.

In the research reported here, the Internet is used not only to administer the survey but also to deliver information including vignette content to research participants through video and audio clips. Use of video and audio clips provides a means of engaging research participants more fully than is possible with written information alone. Videos have previously been used successfully in delivering vignette content. Arber et al. (2006) studied primary care doctors who viewed a video-vignette of a scripted consultation where the patient presented standardized symptoms of coronary heart disease. Videotapes were identical apart from varying patients' gender, age (55 vs. 75), social class, and race. The study showed that the gender of the patient significantly influenced doctors' diagnostic and management activities.

Use of video and audio clips to deliver vignette content provides investigators a number of distinct advantages. First, a video format can be helpful in enlisting interest from the subject and assisting the subject in identifying with vignette persons. Video can also be helpful in addressing some of the challenges identified by Wason, Polansky, and Hyman (2002) in designing vignette content. These challenges include making the vignettes believable, making the manipulated variables obvious, and at the same time guarding against framing effects. Use of video to deliver information provides investigators with a way to achieve a good balance between making the manipulated variables clear to research participants and minimizing the risks of framing effects.

Further, the Internet provides opportunities for investigators to make interactive options available to research participants before they make judgments. In real-world choice situations, people often have opportunities to seek additional information before they make decisions on complex matters. In the Internet-based vignette studies, research participants can be given opportunities to seek information beyond that initially provided by investigators. Opportunities to probe for additional information can be helpful in sustaining the interest of research participants. Further, investigators can record the extent to which respondents took advantage of opportunities to seek additional information. In addition, investigators can record the amount of time taken by research participants in responding to vignette content. For investigators, it is useful to know how the quantity and kind of information considered influence the judgments made by research participants.

### *Illustrative Pilot Study*

In this article, we describe a study that illustrates the use of this methodology. The study was concerned with the basis on which older people who live in their own homes make residential choices when they are confronted with health and disability challenges. Most older people in the United States live in homes that they own and have occupied for many years (Woodward & Damon, 2000). Characteristically, older people are emotionally attached to their homes and are reluctant to move (Mutchler & Burr, 2003). At the same time, there often are forces at play such as declining health and the death of a spouse that provide older people with reason to move to a more supportive residential environment (Walters, 2000). Both for-profit and nonprofit organizations provide a variety of service-supported residential options for older people. Some are described as retirement communities; others are known as assisted living facilities. Residential decision making of older people lends itself to study through use of vignette methods for a number of reasons: (a) the topic is important to older people, (b) older people can make but do not necessarily make a residential choice through a careful consideration of options, and (c) older people have reason to consider information

on a number of diverse dimensions in making decisions about residential options. Use of a method that permits delivery of information visually is particularly helpful in the case of research on residential options since information on housing characteristics particularly lends itself to visual presentation. Video clips of older people who are considering a move to a retirement community are useful in conveying the deeply felt dilemma experienced by older people as they consider this choice. Interactive options are particularly useful in this instance because of the complexity within the dimensions. Interactive options make it possible for respondents to get a simple summary of a complex dimension; alternatively, interactive options give respondents an opportunity to get more detailed information than is presented initially.

## Method

We describe, in turn, the design of the vignette experiment, the use of the Internet in administering the experiment, and data collection.

### *Research Design*

In designing the vignette experiment, we drew upon the findings of a qualitative preliminary study in which we interviewed older people about residential options (Gottlieb, Sauder, & Caro, 2009). For the experiment, we deliberately simplified the situation to be studied to avoid overwhelming research participants with information and options. Research participants were asked to consider only two options: remaining in current housing or moving to a specific retirement community. (Research participants were not asked to consider home modification as an option or a move to another kind of setting.)

Research participants were asked to consider the situations of hypothetical vignette persons with whom they could identify. We assumed that research subject-recommended actions for vignette persons would provide insights about what research participants would do themselves if confronted by a similar situation. We worked within the premise articulated by Rossi and Anderson (1982) that members of a society embrace common social norms; accordingly, the opinions of a sample provide a basis for understanding the norms that prevail within the society.

We considered only the circumstances of widows who were living alone. We created a vignette scenario using a framework proposed by Rossi and Anderson (1982) in which a distinction is made among dimensions, levels, objects, judgments, and the factorial object universe. Dimensions are social objects that can vary qualitatively or quantitatively. Levels are the specific values that a dimension may take. Objects are units being judged that are described by a single level for each dimension. A judgment is the rating given by a respondent to an object. The factorial object universe is the set of all unique objects formed by all possible combinations of one level from each of the dimensions (i.e., the product of all of the levels). In the study, we included five substantive dimensions with levels that varied from two to four: functional status (three levels), social network (three levels), current housing (three levels), retirement community characteristics (two levels), and financial considerations (four levels). The vignette structure is shown in Table 1. Considering only these substantive variables, the factorial object universe was 144. In addition, we included two supplementary dimensions: the identity of a host (described below) and vignette persons (described below). With the addition of the supplementary dimensions, the factorial object universe was 1,152.

### *Administering the Experiment on the Internet*

The core design and process flow of the vignette-approach experiment was captured in web-based software. In studies using this method, a software approach is necessary due to the use of the different media (text, still images, and video) to describe the vignettes (see below for the research process

**Table 1.** Vignette Dimensions and Levels

Dimensions	Levels	Interactive Options
Identity of host	A. Doctor B. Layman	
Vignette person	A. Alice (age 75) B. Jean (age 76) C. Dorothea (age 77) D. Lois (age 75)	
Functional status	A. A visiting nurse has assessed name's physical and functional abilities. Name has no difficulty in climbing a flight of stairs. She can drive her car safely under any normal road and weather conditions. She does not have trouble doing light housework. B. A visiting nurse has assessed name's physical and functional abilities. Name is able to climb a flight of stairs but must use the handrail. She can drive her car safely but only within town and during daytime hours. Name has some trouble doing light housework by herself. C. A visiting nurse has assessed name's physical and functional abilities. Name has difficulty in climbing one flight of stairs. She is not able to drive. She cannot do light housework by herself.	A. A. Recommendation of a nurse
Social network	A. Name has many good friends who live in her neighborhood. B. Name knows only a few people in the neighborhood; most of her friends have died or moved away. C. Name's best friend lives in the retirement community that she is considering.	
Current housing	A. Name lives in a house that has many features that make it safe and attractive for an older person. B. Name lives in a house with features that make it challenging for an older person.	A. Video clips with features of safe and attractive/challenging houses. B. Lists of features of safe and attractive/challenging houses C. Pictures of name's house

(continued)

**Table 1 (continued)**

Dimensions	Levels	Interactive Options
Retirement community	<p>A. Name is considering moving into a luxury retirement community in her area.</p> <p>B. Name is considering a move to a popular retirement community.</p>	<p>A. Video clips with features of luxury and popular retirement communities.</p> <p>B. Lists of features of luxury and popular retirement communities</p> <p>C. Pictures of the retirement community that name is considering</p>
Financial considerations	<p>A. Name's financial planner has determined that her monthly spending money would increase by \$194 if she moves to the retirement community.</p> <p>B. Name's financial planner has determined that her monthly spending money would increase by \$85 if she moves to the retirement community.</p> <p>C. Name's financial planner has determined that her monthly spending money would decrease by \$80 if she moves to the retirement community.</p> <p>D. Name's financial planner has determined that her monthly spending money would decrease by \$175 if she moves to the retirement community.</p>	<p>A. Table with financial details</p> <p>B. Recommendation of a financial planner</p>

embodied in the software). Consequently, the use of software is critical to integrating these different media in a seamless manner. Making the software web-based was necessary as the target respondents for the study were distributed across different geographical regions (albeit in this case within Eastern Massachusetts) and a web-based approach enabled us to gather data from these respondents easily and centrally. However, the design and development of media-rich web-based software for our target respondents (in this case, senior citizens) at different geographical locations presented several key challenges:

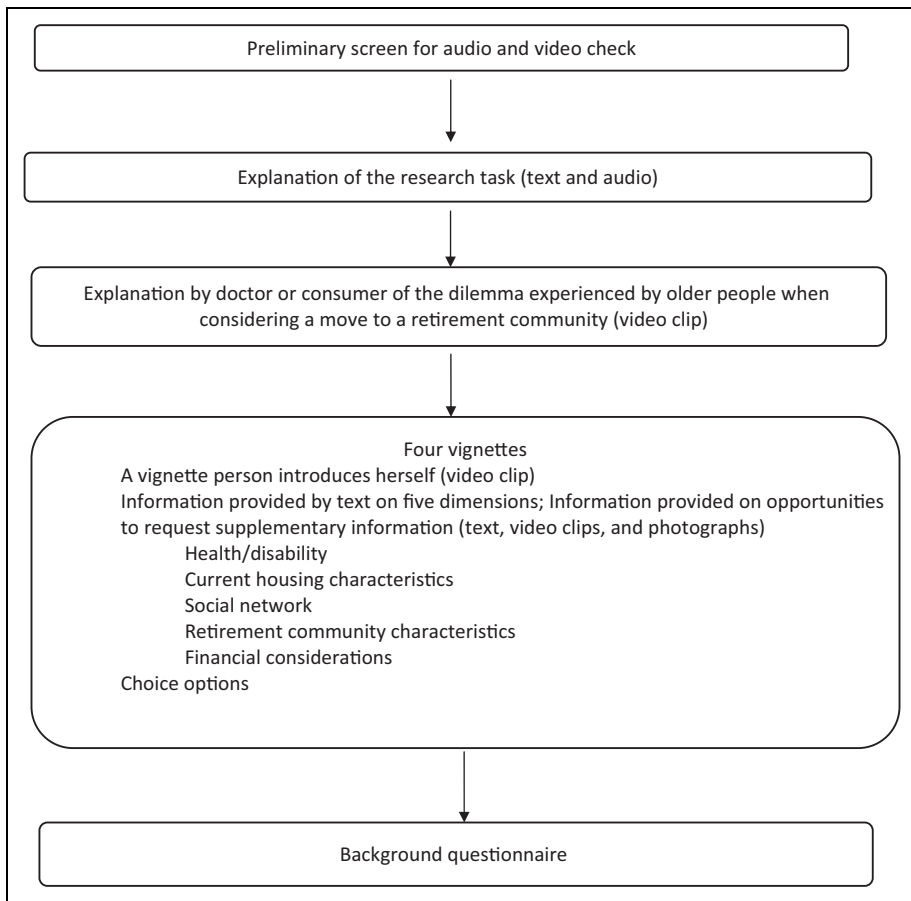
- Ensuring that the software would work cross-platforms (i.e., on various platforms such as Mac or PC), running different versions of different browsers (e.g., Internet Explorer version 6 vs. Internet Explorer version 7 vs. Safari for PC vs. Safari for Mac). This was achieved in this study mainly using browser-independent features as much as possible and where certain features are browser or platform-dependent, rigorous testing and revisions were made to ensure that they worked equally well, irrespective of the browser version or platform. Nevertheless, as the range of browsers and the versions within each browser is quite large, decisions were made to ensure compatibility with only the latest three versions of the three most popular browsers: Internet Explorer, Firefox, and Safari.
- Ensuring that the various media would be able to play with minimum additional installation. As the various media used came in different formats (e.g., MOV video vs. AVI video vs. WMA audio), considerable efforts were made in standardizing these different media for integrating into the software. To achieve this, all videos were converted into Flash format, as Flash player is the most popular cross-platform browser plug-in available and hence is likely already available on the computer used by a respondent.
- Ensuring that the software was suitable for use by our target respondents. In addition to addressing the above challenges to minimize the effort required by a respondent to run the software and complete the survey, considerable effort was directed at making the software easy to understand and use. This was achieved through a simple interface that requires minimum navigation (a respondent often simply had to click on a “continue” button to progress through a survey). Functionality was also provided to enable target respondents to adjust the font size on the screen to enhance readability.
- Ensuring that fine tuning and adjustments could be made to the survey easily and quickly. To achieve this, an administrator control panel was developed in addition to the experimental components with which the survey respondents interacted. The administration control panel enabled the researcher to monitor and coordinate the data gathering effort, as well as update instructions, and upload new media easily whenever necessary.
- Ensuring that the performance of the software was acceptable. To ensure that the software was able to support several concurrent users (respondents and experimenters), an industry-strength software (Microsoft SQL) was used as the backend database server. In addition, careful consideration (in trade-off between quality and size of video) was made in ensuring that the various media will download and start playing within a reasonable time frame. The use of flash format has the added advantage that it can play progressively, which means video can start playing before it is completely downloaded.

The research process unfolded as follows:

- Research participants were given a unique username and password to obtain access to the study website.
- Research participants were asked to play an audio file to establish their having a working audio system; participants were also asked to play a brief video to establish their ability to play video files.



- Research participants were shown a screen with text that explained the research process. This explanation was also presented via an audio recording.
- To establish a substantive context for the research, research participants watched a video clip in which a host spoke about the relative merits for older people staying in their homes or moving to a retirement community. In one version, the man introduced himself as a doctor. In the other version, the man introduced himself only by his first name. (The identity of the host was established randomly.) Although the introduction was intended to be balanced, we wanted to see whether the identity of the host would have an influence on respondents' judgments.
- Research participants then watched a video clip in which an older woman introduced herself and spoke about her need to consider a move to a retirement community. Research participants saw a video clip that was selected randomly from a set of four. The vignette persons were Jean (age 76), Alice (age 75), Dorothea (age 77), and Lois (age 75). Each of the women provided similar information; that is, each was a widow, attracted to remaining in her home, experiencing health problems, and considering moving to a retirement community or assisted living facility. However, the women were different in their appearances. The settings in which the women were filmed also differed. We wanted research participants to be able to identify with the vignette persons. Because of the possibility that research participants would identify with the vignette persons in different ways, we considered the identities of vignette persons to be dimensions for analytic purposes.
- Research participants were shown a screen in which information on each of the five substantive dimensions was provided to them in a standard text format. Research participants were also provided with text informing them about links that they could select to obtain additional information. We provided interactive options on four of the five dimensions. On the functional status dimension, research participants could request the recommendation of a visiting nurse. Those who selected that option saw a text box with a recommendation. On the current housing dimension, research participants could request: (a) a video clip showing generic features of "challenging" (such as steep stairways both at the entrance and within the unit) or "elder-friendly" homes, (b) a list of challenging or elder-friendly home features, and/or (c) photographs of a few features of the homes of vignette persons such as bathrooms and interior stairs. On the retirement community dimension, research participants could request: (a) a video clip showing generic features of "popular" and "upscale" retirement communities, (b) lists of features of the retirement community that the vignette person was considering, and/or (c) a few photographs of the specific retirement community that the vignette person was considering. On the financial dimension, research participants could request a chart showing detailed expenses if they remained in their homes or moved to retirement communities. They could also ask to see the recommendation of a financial planner. The generic video clips for current housing and the retirement community that were available for viewing always corresponded to the housing or retirement community level that research participants were being asked to consider. In other words, when the vignette person lived in a "challenging" home, research participants had the option to see the video clip describing a challenging home. When the vignette person lived in an "elder-friendly" home, the video clip describing that home was available. Much of the detail of the vignette scenario is shown in the appendix.
- For each vignette, research participants were asked whether they would recommend that the vignette person either remain in her current home or move to the retirement community. They were also asked to rate their confidence in their choice on a 10-point scale anchored by "just guessing" and "absolutely sure." Research participants were also asked what they would do if they were in the situation of the vignette person. Again, they were asked to rate their confidence in their choice.
- After judging four vignettes, research participants were asked to respond to a questionnaire that sought background information on the type of current housing, interest in a retirement



**Figure 1.** Flow chart showing the research process.

community (among those living in their own homes), year of birth, gender, education, race/ethnicity, marital status, functional status of spouse, income, health, functional status of respondent, driving status, number of children, proximity of children and friends, expectation of leaving a bequest, survival expectations, financial concerns, and happiness.

The research process is shown in chart form in Figure 1. Readers can experience the research process by visiting the project's demonstration website <http://128.32.75.8/vignettetdemo/>.

Video and audio clips were prepared at nominal cost at the University of California Berkeley. Scripts were prepared by the investigators. Video/audio recording was done by a film student volunteer. Vignette persons were volunteers recruited at the senior center in Berkeley.

To make sure that research participants were able to understand the research process, we conducted a pilot study with 10 respondents. The presence of a member of the research while pilot study participants completed the survey made it possible to learn of difficulties experienced with instructions and access to the website. Members of the research team conducted semistructured cognitive interviews (Willis, 1995) with pilot study participants to determine understanding of the research task and to identify difficulties in understanding information presented. The pilot study provided information that was useful in refining the vignette content.

## Data Collection

Research participants were recruited from among older people enrolled in a learning-in-retirement program at the University of Massachusetts Boston and in five senior centers in Boston suburbs. The suburbs selected for subject recruitment have above-average income levels with high rates of home ownership. In the learning-in-retirement program, research assistants went to classes where they made brief oral presentations and asked for volunteers. Those enrolled in classes were given handouts describing the study. In the senior centers, the study was described in newsletters that were mailed to homes of older residents. Interested persons were invited to call to make an appointment. Research assistants also recruited research participants by approaching seniors present at the senior centers.

We found older people to be challenging research participants for a study that sought to develop new methods for web-based vignettes to research participants. Many older people have limited skills using computers for Internet access. Because we sought to include research participants with little skill using computers, we used data collection techniques that would not have been necessary with Internet-proficient research participants.

In most cases, research participants used computers at the university or at a senior center. In these settings, a research assistant was present to provide instructions. Research participants who were skilled in use of computers typically needed help only with getting started with the survey process. Often, research participants needed help at the outset in navigating screens and in recognizing interactive options. A few research participants with no experience using a mouse needed help throughout the process. Research participants recruited in senior centers tended to be a few years older than those recruited through the learning-in-retirement program. Further, those recruited in senior centers tended to be less computer proficient than those recruited through the learning-in-retirement program.

Research assistants kept track of comments made by research participants both during and after completing the survey. Upon completion of the research, research participants were given a handout with web addresses that provide information about multiple aspects of the residential issues with which older people are concerned. Research participants were not given a financial incentive for participating.

## Results

Research participants participated in the survey between November 2007 and May 2008. Data were collected from 115 respondents. With each respondent asked to rate 4 vignettes, we had ratings for 460 vignettes. In stated choice studies, individual vignette ratings are the unit of analysis (Rossi & Anderson, 1982). As indicated above, we had 460 vignettes available for analysis. Since there were no more than 4 levels in any dimension, we expected to have a minimum of roughly 115 vignettes in which each level was represented. Consequently, the sample provided us with a basis for obtaining a statistically stable estimate of the effect of each level. The sample was also large enough to provide us with a basis for conducting a multiple regression analysis with 13 levels within dimensions specified as dummy independent variables (Hogg & Tanis, 2009).

Characteristics of research participants are summarized in Table 2. The typical respondent was a White woman in her 70s, who was healthy, married, and a college graduate with an income well above average for older people in Massachusetts.

Respondents were well divided between recommending a move to a retirement community and recommending that vignette persons remain in their current homes; for 61% of the vignettes, a move to a retirement community was recommended. Respondents were somewhat less likely to predict that they would move to a retirement community under similar circumstances; 51% of the

**Table 2.** Characteristics of Subjects ( $N = 115$ )

Variables	Percentage/M (SD)
Gender (female)	79.1
Age	73.1 (7.9)
Race (White)	96.5
Married	45.2
Health (self-reported; Excellent or very good)	50.4
Household income (\$50,000 or over)	46.9
Usually travels by automobile	87.7
Lives in retirement community	7.0
Considering retirement community (nonresidents of retirement community)	21.5

**Table 3.** Predictors of Recommended Move to Retirement Community

	Model 1 (B/SE)	Model 2 (B/SE)	Model 3 (B/SE)
Doctor introduction	1.237 (0.316)	1.204 (0.311)	1.213 (0.318)
Jean	1.544 (0.434)	1.545 (0.446)	1.547 (0.452)
Dorothea	1.727* (0.482)	1.707* (0.476)	1.721* (0.485)
Lois	1.545 (0.415)	1.585* (0.440)	1.579* (0.432)
Live independently with help	1.760** (0.431)	1.832** (0.468)	1.840** (0.466)
Needs help regularly	8.028*** (3.154)	8.502*** (3.365)	8.461*** (3.338)
Knows only a few people in neighborhood	2.635*** (0.672)	2.685*** (0.746)	2.726*** (0.750)
Best friend lives in retirement community	1.966** (0.548)	1.856** (0.553)	1.915** (0.565)
Elder-friendly home		0.487*** (0.094)	0.491*** (0.098)
Luxury retirement community		0.731 (0.152)	0.719 (0.151)
Small improvement in financial status			0.82 (0.260)
Small decline in financial status			0.763 (0.226)
Larger decline in financial status			0.784 (0.228)
Constant	0.260*** (0.092)	0.435** (0.182)	0.516 (0.235)
Adjusted $R^2$	.114	.136	.137
$\chi^2$	41.36	56.219	58.117
$N$	460	460	460

Note. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

respondents indicated that they were likely to move a retirement community under circumstances like those described in the vignettes. For recommendations for vignette persons, confidence ratings average 7.3 on the scale of 1–10. Research participants were more confident in their retirement community recommendations than they were with their continue-at-home recommendations ( $F = 5.6$ ,  $p < .05$ ). Research participants were more confident in their recommendations for themselves, with average confidence ratings of 7.9. In this case, research participants were equally confident in their stay at home predictions as they were in their move-to-the-retirement community predictions.

To determine the effects of the vignette structure on recommendations to move into a retirement community, we estimated a logistic regression model. Table 3 reports three specifications of the model above. In each model, we included whether or not the introduction was made by a physician and indicators for each vignette person (video introduction by elderly female actresses). The first regression additionally included the functional status and social network of the vignette person. In the second, we added the characteristics of the current housing of the vignette person and the characteristics of the retirement community. In the third, we added the financial implications of a move to a retirement community. Each of the dimension estimates is rather robust to

specification, which is suggestive that the dimensions were independent from one another as designed by the fractional factorial design.

A number of variables in the vignette structure were associated with recommended moves. The independence-in-daily-living dimension had the strongest effect. Compared to vignette persons who were fully independent, the odds of a recommended move were about 75% larger than the odds for vignette persons who had modest limitations in ability to perform daily living tasks. However, when the vignette persons had extensive self-care limitations requiring regular help, the odds of a move to a retirement community were more than eight times greater than the odds for vignette persons who were fully independent. Compared to vignette persons having many good friends in their neighborhood, those knowing fewer people in their neighborhood or those having a best friend in the retirement community under consideration, odds of a recommended move were at least double. Characteristics of the physical environment in current housing also influenced the recommendations. The odds of those living in “elder-friendly” homes, being recommended for a retirement community was about half for those living in homes with numerous mobility barriers. Surprisingly, neither retirement community characteristics nor implications of the move for the financial status of vignette persons had a significant effect on retirement community recommendations.

Incidental variables had mixed effects on recommended moves. In some cases, the “persona” of the vignette person affected recommendations. Relative to vignette person Alice, vignette person Jean did not significantly draw people toward recommending retirement communities. However, the vignette persons Dorothea and Lois positively influenced recommended moves to a retirement community. Compared to Alice, the odds of a move being recommended were about 70% greater for Dorothea and about 55% greater for Lois. Although described as only 1 or 2 years older than the other vignette research participants, the actress who played Dorothea was indeed older by more than 5 years than the other actors who volunteered to be vignette research participants. Lois introduced herself as a person with a disability. The other vignette persons did not describe themselves as disabled. In short, research subjects were affected by cues in the appearance and speech of the actresses who played the vignette persons. The other incidental variable, the identity of the person (physician or layman) who provided substantive background information did not have a statistically significant effect on recommendations.

We also explored the possibility that characteristics of respondents affected judgments. Because only a few characteristics of respondents are correlated with their recommendations and these associations were weak, we do not report the results here.

## Discussion

The study was effective in demonstrating the potential of the Internet to administer stated choice studies with substantial information delivered through video audio clips and with interactive options. We created a web environment in which research participants could see video clips, hear audio presentations, and interact with hyperlinks to supplement text. Research participants were able to access the survey using varied hardware and software. Research participants were able to move from screen to screen without difficulty. Video content came up promptly enough so that research participants were not frustrated by delays in the availability of information. Older research participants unfamiliar with computers were able to participate with the aid of a research assistant. In most cases, research participants needed help only in getting started. Informal feedback from research participants indicated that the introductions by vignette persons helped to engage their interest. Seeing and hearing the vignette person helped the subject in relating to the vignette person. Many research participants commented that they identified with the women, their houses, and their situations. The multiple regression findings also showed that when the vignette person appeared to be older and spoke

with greater hesitation, research participants were more likely to recommend a move to a retirement community. The subject matter of the research lent itself to visual presentation. Accessibility and safety features of homes are readily shown visually. The physical features of retirement communities can also be shown visually. The detailed financial information that was made available to research participants could most readily be understood by examining the table that was included. Research participants showed interested in using the interactive options, particularly for the first and second vignettes they judged. They welcomed the opportunity to view video clips describing the elder-friendliness of home environments and generic characteristics of modest and affluent retirement communities. Research participants were consistently willing to complete the research process.

For this experiment, we did not have in place a capacity to record subject use of interactive features. We were able to record only the total amount of time research participants spent participating in the study. In future experiments, we expect to be able to record the extent of use of specific interactive options and the amount of time spent in considering specific vignettes.

Further methodological work on use of video/audio clips to deliver information in vignette studies would be useful. Formal experimental studies that compare the findings of vignette surveys with and without interactive features would be welcome. Such research could test our hypothesis that research participants are more likely to discriminate on structural characteristics of vignettes when information is presented visually and with audible narration. Also useful would be studies that tested the ability of investigators to use video and audio to deliver sensitive information without framing effects. Information on variables such as gender, race, ethnicity, and age can be presented through video/audio clips of vignette persons. Research participants can be asked after the fact to classify vignette persons on these variables. Such experiments would make it possible to examine the relationship of subject reporting of characteristics of vignette persons with anticipated behavioral responses to demographic characteristics of vignette persons.

The research described here involves technical challenges associated with both use of stated choice methods and administration on the Internet. Most social scientists already need assistance from a computer programmer to administer a study using stated choice methods with complex designs even when making use of paper questionnaires. Use of the Internet for administration of a stated choice study with video content adds technical demands that include:

- skills to design, develop, test, and maintain dynamic webpages that uses both server-side and client-side computing (in our case, the dynamic webpages are active server pages using VBscript for server-side scripting and Java script for client-side computing);
- knowledge of how various media can be embedded and controlled in the webpages;
- knowledge of the use of an industry-strength database management systems (in our system, we use Microsoft SQL server 2005 Express Edition);
- skills to design, develop, maintain, and migrate databases on the database management systems;
- ability to search for the necessary tools and apply them to convert media from one format to another (such as from WMA to Flash).

Over time, the methods described here are likely to become more accessible to social science researchers. Low-cost technology for video productions is already available. The programming for the current project is based upon a template that could be adapted for other studies. Consumer access to high-speed Internet connections will continue to increase. The speed with which computer files can be downloaded will continue to increase. With greater use of these methods, software may be developed specifically to provide flexible options for social scientists to design stated choice experiments with video files and interactive options within the framework of Internet surveys.

## Appendix

### *Instructions for Subjects (Text With Audio Narration)*

Throughout this survey, you will become familiar with four hypothetical situations regarding women who are deciding between moving to a retirement community or staying in their current homes. For each scenario, we will introduce you to a woman and describe certain aspects about her life. These aspects include the woman's physical condition, social network, current housing quality, retirement community quality, and financial tradeoffs. For the physical condition, we will provide information from a registered nurse. For the financial component, we will show numbers provided by a financial planner. In considering finances, you should understand that each woman hopes to leave some money as a bequest when she dies. Each woman currently has enough spending money to get by if she uses her money carefully. If she overspends her budget, she will have less money to leave in her bequest.

After viewing information about each woman's situation, we will ask you your thoughts and recommendations regarding her decision to move to a retirement community. Finally, you will be asked to take a quick survey.

Let's begin with Elmer, who has experience living in a retirement community and has a comment about retirement communities that he would like to share with you.

## Dimensions

### *Functional status*

A visiting nurse has assessed Dorothea's physical and functional abilities. Dorothea is able to climb a flight of stairs but must use the handrail. She can drive her car safely but only within town and during daytime hours. Dorothea has some trouble doing light housework by herself.

*Supplementary information offered: nurse's recommendation.*

Example of nurse's recommendation

- The nurse has concluded that Dorothea is able to live independently, but she needs some help with household chores.

### **Current housing (elder-friendly condition)**

- Dorothea lives in a house that has many features that make it safe and attractive for an older person.

*Supplementary information offered:*

- Video showing generic features of a safe house
- Pictures of Dorothea's house: (outside, and bathroom).
- A list of features of a safe house:
  1. Easy access to the interior of the home:
    - a. Entry to the home without stairs.
    - b. Minimal number of stairs; handrail next to stairs.

2. Living area on one floor including bedroom, bath, kitchen, dining room, living room, and laundry.
3. Bathroom with grab bars, easy access to shower, seat in shower.
4. Good lighting.
5. Minimal maintenance:
  - a. Compact size.
  - b. New or updated heating, ventilating, and appliances.
6. Open floor plan.
7. Elimination of clutter.
8. Absence of throw rugs.

## Retirement community option

Dorothea is considering a move to a popular retirement community.

*Supplementary information offered:*

1. Video with an explanation of the features of such a retirement community
2. A list of features of such a retirement community,
3. Pictures of the retirement community that Dorothea is considering: (outside, lobby, dining area, and room).

## Financial considerations

Dorothea's financial planner has determined that her monthly spending money would decrease by \$175 if she moves to the retirement community. Here's how the financial planner came to this conclusion. Dorothea hopes to bequeath \$300,000 to her children, relatives, or friends. Assuming that Dorothea will live for 12 more years, the average expectancy for a woman her age, the financial planner has calculated the maximum Dorothea can spend per month to meet her financial goal: If Dorothea were to stay in her current living arrangement, she could spend up to \$920 per month. If Dorothea decides to move into the retirement community she is considering, she could spend up to \$745 per month. Thus, the monthly cost to moving is \$175.

*Supplementary information offered:*

- A financial planner's recommendation
- A chart showing how the financial planner analyzed the implications of a move

Example of financial planner's recommendation:

The financial planner has concluded that Dorothea will be much better off financially if she stays in her current home.



## Example of financial analysis

Target Bequest	\$300,000	
	Current Living Situation	Retirement Community
<b>Real Estate Assets</b>	\$300,000	\$5,000
Value of House or Security Deposit		
<b>Liquid Assets</b>	\$62,500	\$339,500
Checking, Savings, CDs, Stocks, Bonds less Transaction and Moving Costs		
<b>Monthly Income</b>	\$4,063	\$5,448
Social Security, Pension, Interest and Dividends from Liquid Assets		
<b>Fixed Monthly Expenses</b>	\$3,700	\$5,100
Food, Maintenance or Rental Costs, Property Tax, Supplemental Health Insurance		
<b>Monthly Budget for All Other Expenses (in order to Reach Target Bequest)</b>	\$920	\$745
For Example: Transportation, Clothing, Gifts, Entertainment, Vacation Travel		
<b>Effect of Moving on Monthly Budget</b>		
Moving may increase or decrease the budget for all other expenses.		<b>Decrease of \$175 in the amount available for spending</b>
If moving decrease the budget, then moving requires a tighter budget than staying does in order to reach the target bequest.		

## Choice options

### 1. What would you recommend that Dorothea should do?

- Continue living in her current home
- Move into the retirement community that she is considering

### How confident are you of your recommendation?

- 10 point scale from “Just guessing” to “Absolutely sure”

### 2. What would you do if you were in Dorothea’s situation?

- Continue living in your current home
- Move into the retirement community

### How confident are you of your choice?

- 10-point scale from “Just guessing” to “Absolutely sure”

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## References

- Arber, S., McKinlay, J., Adams, A., Marceau, L., Link, C., & O'Donnell, A. (2006). Patient characteristics and inequalities in doctors' diagnostic and management strategies relating to CHD: A video-simulation experiment. *Social Science & Medicine*, *62*, 103-115.
- Cavanaugh, G., & Fritzsche, D. (1985). Using vignettes in business ethics research. *Research in Corporate Social Performance and Policy*, *7*, 279-293.
- Dillman, D., Smyth, J., & Christian, L. (2008). *Internet, mail, and mixed-mode surveys: The tailored design method* (3rd ed.). New York, NY: Wiley.
- Gottlieb, A., Sauder, K., & Caro, F. (2009). Residential adjustment of elders: Learning from experience with parents and peers. *Journal of Housing for the Elderly*, *23*, 149-165.
- Hogg, R., & Tanis, E. (2009). *Probability and statistical inference* (8th ed.). Upper Saddle River, NJ: Prentice Hall.
- Kanninen, B. (Ed.). (2007). *Valuing environmental amenities using stated choice studies*. New York, NY: Springer Science+Business Media.
- Louviere, J., Hensher, D., & Swait, J. (2000). *Stated choice methods: Analysis and application*. New York, NY: Cambridge University Press.
- Mitchell, R. C., & Carson, R. T. (1989). *Using surveys to value public goods: The contingent valuation method*. Washington, DC: Resources to the Future.
- Mutchler, J., & Burr, J. A. (2003). Living arrangements among older persons: A multilevel analysis of housing market effects. *Research on Aging*, *25*, 531-558.
- Rossi, P., & Anderson, A. (1982). The factorial survey approach: An introduction. In P. Rossi & S. Nock (Eds.), *Measuring social judgments: The factorial survey approach*. Beverly Hills, CA: SAGE.
- Wason, K., Polonsky, M., & Hyman, M. (2002). Designing vignette studies in marketing. *Australasian Marketing Journal*, *10*, 41-58.
- Walters, W. H. (2000). Types and patterns of later-life migration. *Geografiska Annaler*, *82B*, 129-147.
- Willis, G. (2005). *Cognitive Interviewing: A Tool for Improving Questionnaire Design*. Thousand Oaks, CA: SAGE.
- Woodward, J., & Damon, B. (2000). *Housing characteristics: 2000*. Census 2000 Brief. Washington DC: U.S. Census Bureau.

## Bios

**Francis G. Caro**, PhD, is a sociologist and gerontologist. He is a Professor Emeritus of Gerontology at the University of Massachusetts Boston and a Fellow in the Gerontology Institute at the University of Massachusetts Boston. He is the editor of the *Journal of Aging & Social Policy*. E-mail: frank.caro@umb.edu.

**Teck Ho**, PhD, is the William Halford, Jr. Family Chair in Marketing at the Haas School of Business at the University of California Berkeley. He is also the Director of the Asia Business Center and Chair of the Haas Marketing Group. Email: hoteck@haas.berkeley.edu.

**Daniel McFadden**, PhD, is the E. Morris Cox Professor of Economics at the University of California Berkeley where he is also the Director of the Econometrics Laboratory. He is a 2000 Nobel Laureate in Economics. Email: daniel\_l\_mcfadden@yahoo.com.

**Alison S. Gottlieb**, PhD, is a fellow in the Gerontology Institute at the University of Massachusetts Boston. Email: Alison.gottlieb@umb.edu.

**Christine Yee**, PhD, is an econometrician who is a recent graduate of the economics program at the University of California Berkeley. She is currently with the Workers Compensation Research Institute. Email: [christine.yee@gmail.com](mailto:christine.yee@gmail.com).

**Taizan Chan** is a senior lecturer in the School of Information Technology at the Queensland University of Technology, Brisbane, Australia. School of Information Technology, Queensland University of Technology, Brisbane, Australia. Email: [t.chan@qut.edu.au](mailto:t.chan@qut.edu.au).

**Joachim Winter**, PhD, is an associate professor of economics at the University of Munich, Germany. Email: [joachim.winter@lrz.uni-muenchen.de](mailto:joachim.winter@lrz.uni-muenchen.de).