Instructor: Drazen Prelec  
dprelec@mit.edu, tel. 253-2833, fax. 258-7597  
Office hours: E62-540, by appointment  
Teaching Fellow: Tlanzhou Duan, E62-584, jduan@MIT.EDU  
Administrative Assistant: Jason Clinkscales, E62-531, jclinksc@MIT.EDU

The 15.821 + 15.822 sequence

Marketing research may be divided into methods that emphasize understanding “the customer” and methods that emphasize understanding “the market.” This course (15.822) deals with the market. The companion course (15.821) deals with the customer.

Objectives of 15.822

The course will teach you how to prepare, conduct and analyze a small-scale marketing research study. The emphasis will be on discovering market structure and segmentation, but you can pursue other project applications. We will be selective in coverage, concentrating on techniques — some quite new — that provide most useful and critical information per time and effort expended.

We adopt a do-it-yourself perspective, and assume that you are conducting the study on your own and for your own benefit.

This is not a traditional market research class. Our philosophy is that numbers (sample sizes) are over-rated in market research, and that smaller numbers of knowledgeable and intellectually engaged individuals may tell you more than a hundred or a thousand unmotivated ones. Hence, we focus on methods that:

- are quick, relatively inexpensive
- can elicit high quality information from a relatively small number of customers,  
- can identify the experts or opinion leaders whose answers should be given extra weight,
- can add creativity, challenge, and excitement to the market research process.

A major objective of the course is to give you some “hands-on” exposure to analysis techniques that are widely used in consulting and marketing research (conjoint analysis, cluster analysis, perceptual mapping). These techniques were once considered advanced but now involve just a few keystrokes on most software packages.

The course assumes familiarity with basic probability, statistics, and multiple linear regression.
Text

Suggested but not required:

Hair, Joseph F. Jr., Black, William C., Babin, Barry J., and Rolph E. Anderson, Multivariate Data Analysis, New Jersey: Pearson Prentice Hall. This is a traditional marketing research text. Think of it as a comprehensive reference source; we will cover a fraction of the material.

There is also a course packet of HBS cases and reprints available from Graphic Arts.

Software

Most of the data analysis can be done in Excel. However, we will also rely on JMP for more advanced analyses (cluster analysis and perceptual mapping). To download JMP, go through these steps:

1. Make sure you have a valid MIT certificate
3. Select SAS JMP and Download

JMP is an intuitive, menu-based program, and our advice is to start exploring it on your own right away. We will distribute some notes indicating how to use the advanced features in JMP.

If you are already familiar with a different package (e.g., SPSS, SYSTAT, SAS), feel free to use it (but make sure it has cluster analysis).

Group Project (3-4 students per project)

This material is hard to learn from a textbook. Therefore, a major element of the course is a survey-based project, which comprises three assignments and a final presentation. The project is described more fully at the end of the syllabus.

Grading

Group project:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire construction</td>
<td>15%</td>
</tr>
<tr>
<td>Presentation</td>
<td>25%</td>
</tr>
<tr>
<td>Report</td>
<td>50%</td>
</tr>
</tbody>
</table>

Individual class participation: 20%
SPI questionnaire assignment 10%
### Schedule

Reading or written assignment indicated by ❑

<table>
<thead>
<tr>
<th>Weekly task guide</th>
</tr>
</thead>
</table>
| **March 29** Introduction | **March 31** Conjoint analysis  
❑ Green and Wind  
❑ Case: Portland Trailblazers  
HBS Note on conjoint  
Textbook, conjoint reading in Chapter 8 | Form team |
| **April 5** Advanced topic — Truth telling incentives for surveys and expert filtering | **April 7** Finding benefit segments with cluster analysis  
❑ Textbook, cluster analysis reading in Chapter 9 | Pick topic & start working on questionnaire content |
| **April 12** Crafting a Survey  
❑ Assignment 1 due  
❑ Case: SPI (to be distributed)  
❑ Criticism and annotations of SPI survey | **April 14** Conjoint based perceptual maps and market simulation | Complete Version 1 of questionnaire |
| **April 19** No Class — Patriot’s Day | **April 21** Advanced topic — Prediction markets | Produce final version of questionnaire |
| **April 26** Advanced topic — Genetic algorithms in conjoint  
Guest speaker: Kamal Malek, Nielsen  
❑ Latest date for submitting Assignment 2 | **April 28** Interpreting Market Structure with Perceptual Maps  
❑ Case: Johnson Wax (A)  
❑ Perceptual Mapping (HBS)  
Textbook, factor analysis in Ch. 3, Multidimensional Scaling Ch. 10 | Conduct survey |
| **May 3** Data analysis strategies | **May 5** Advanced topic — Neuroscience methods in market research | Enter and analyze data |
| **May 10** Presentations | **May 12** Presentations | Complete report  
❑ Assignment 3 due May 13 |
Class assignments

March 29  Course overview

There is no assignment in advance of the class.

March 31 Discovering segments with cluster analysis

Read the classic HBR article by Green and Wind. We will go over the basic purpose and method of conjoint analysis. For an alternative treatment, refer to the HBS Note on Conjoint Analysis, my note on conjoint, and the reading on conjoint in the Textbook.

April 5  Advanced topic: Truth telling incentives for surveys and expert filtering

In this class, I will describe the “Bayesian Truth Serum” scoring system. Most market research methods presume a good-faith effort on the part of the customer - there are no incentives for better performance, and all answers are ‘equally good.’

We will look at a new market research methods that convert the opinion elicitation process into a competitive game. In other words, consumers compete with each other to provide superior information. As in most games, there is a “score” which is then used to determine the winner. These scores are fine-tuned so that it is to everyone’s advantage to answer carefully and truthfully. The score also provide a way of identifying superior “market mavens” whose opinion may be especially valuable.

You can look at some notices on the method at these sites:

http://www.newscientist.com/article.ns?id=dn6535

The technical details are in the article “Bayesian Truth Serum” on Stellar.

We will take a look at how markets could be used to generate forecasts of demand for new products.

We will look at how conjoint analysis of your survey air conditioner data can give us a picture of market demand, as a function of air conditioner characteristics. We will also discuss some behavioral problems in inferring real market behavior from survey data.

April 7  Finding benefit segments with cluster analysis

Read my note on cluster analysis. In class we will see how cluster analysis can identify particular taste segments. For more detail, read Chapter 9 in the Textbook.

In class, we will look at how conjoint analysis of your survey air conditioner data can give us a picture of market demand, as a function of air conditioner characteristics.

April 12  Crafting and fine-tuning a survey

We will take this class to consider some possible survey formats for your project, and review some general principles of good survey design.
Download the case: Strategic Planning Institute (A and B) from the Stellar website.

Evaluate the survey developed by Mr. Chussil. Did it adequately address the hypothesis that motivated the study? What additional analysis should be conducted by Mr. Chussil?

Written assignment

Bring to class an annotated copy of the actual SPI survey pages, indicating problems in style, wording, format, etc. Also add a cover page explaining any changes in overall structure that you would recommend. We will collect, and grade check/check plus/check minus.

April 14  Estimating demand and building a conjoint based market simulator

We will look at how conjoint analysis of your survey air conditioner data can give us a picture of market demand, as a function of air conditioner characteristics. We will also discuss some behavioral problems in inferring real market behavior from survey data.

April 19  No Class — Patriot’s Day

April 21 Advanced topic: Prediction markets

We will take a look at how markets could be used to generate forecasts of demand for new products.

April 26  Guest speaker, Kamal Malek, Nielsen on genetic algorithms

April 28  Interpreting Market Structure with Perceptual Maps

Read the case Johnson Wax (A). Prepare to discuss in class:

What should Sherman do now (abandon, reformulate, retest, or national introduction)?

What is the nature of competition in the instant conditioner market, e.g., what are the roles of: product, advertising copy, advertising budget, and price in determining sales volume in the market?

How well does ASSESSOR measure the impact of each of these features for Enhance?

May 3 Data analysis strategies

So far, we have focused on advanced analysis methods. However, much of the critical information is in the simple statistics (averages, percentages, tables), which will be reviewed in this class.

May 5  April 21 Advanced topic: Neuroscience methods in market research
I will describe the (rapidly changing) state-of-the-current-art in applications of neuroscience methods and technologies to market research and forecasting.

May 10-12 Project presentations

ASSIGNMENT 3 DUE by 5PM Friday, May 13
Assignment 1 (due April 12)

1 Select a topic of interest to you (perception of ad copy, current products, new products, product concepts, service quality, customer satisfaction, political/cultural opinions and customs, etc.). This is an opportunity to find out something you have been curious about! Define the issues that you are concerned with and formulate some hypotheses.

One source of ideas would be products or ventures listed on Kickstarter. You can take an idea that seems less than perfect, and extend it with variations, new features, and different pricing options.

2 Define a target population. The population should be segmentable in some way relevant to your questionnaire (e.g., First vs. Second year students, Cambridge vs. Boston respondents, men vs. women, etc.). Generate hypotheses about how people in the different segments will respond.

3 Prepare a draft version of the questionnaire, online or paper. While there is no standard blueprint, here are four examples:
   • a conjoint survey, with different product configurations ranked by preference or by probability of purchase + segmenting personal questions; this supports estimation of individual utilities and market structure
   • a taste/aesthetic preference survey, with blocks of multiple choice preference questions + segmenting personal questions; this supports clustering/segmentation
   • a map of existing market structure survey, with ratings of existing products on blocks of attributes + ranking of existing products by preference + segmenting personal questions; this supports perceptual mapping
   • an opinion survey, containing blocks of attitude rating questions (agree/disagree) + segmenting personal questions; this supports factor analysis, and clustering/segmentation

4 In 1 page, point out the main objectives of your questionnaire. Include here any hypotheses about segmentation.

Assignment 2 (due no later than April 26)

This is a very short assignment, which must be turned in before you start collecting data (no later than April 26). The purpose is to finalize your survey and document some expectations about the results.

1 Submit the final version of your questionnaire.
Each group member should separately annotate the questionnaire with their personal guess of what the mean (average) response on each question will be. For example,

- If the question is a rating scale, give your guess of the average rating.
- If the question is multiple-choice, give your guess of the percentages of respondents that will choose each of the possible choices.
- If the question is a conjoint ranking task, give your guess of the most typical (average) ranking.

Fill out your guesses for the demographics section, too.

**Assignment 3 (due Friday May 13) includes:**

1. Executive summary (1 page)
2. Motivation for survey
   - An explanation of the main issues/questions/hypotheses that made you select this particular topic. You can draw on the material in the first assignment.
   - A brief explanation of how particular sets of questions were going to shed light on the motivating issues.
3. Data collection
   - A description of actual data collection. I suggest you collect about 30-40 questionnaires.
   - Indicate how you handled incomplete or weird questionnaires.
4. Analysis and interpretation
   - Discussion of question-by-question averages (what is surprising? anticipated?) You can also note relationships between key variables, using cross-tabs or regression
   - Presentation of “advanced” analysis (e.g., cluster, conjoint, or expert filtering).
   - Segmentation, either by individual variables (class year, gender, income, etc.) or clustering