SOLUTIONS MANUAL

2e

Feinberg | Kinnear | Taylor

MODERN MARKETING RESEARCH

CONCEPTS, METHODS, AND CASES

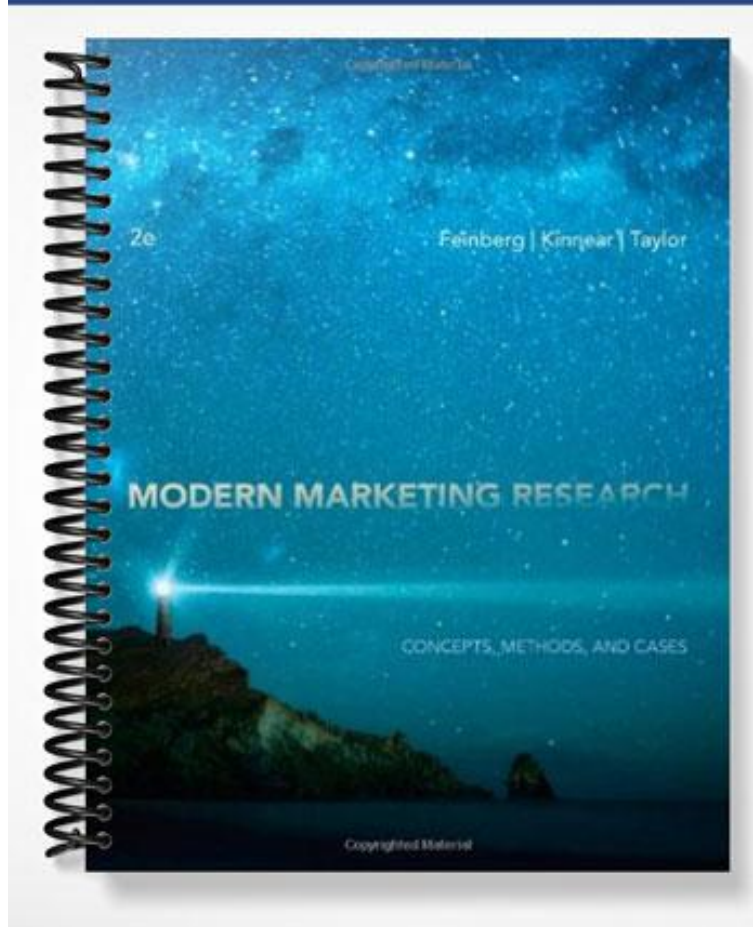**CHAPTER 2**
RESEARCH DESIGN AND DATA SOURCES

CHAPTER OUTLINE

Research Design   pg 54

A research design delineates what data to collect and how to collect them. It must specify:
- the type of information to be collected (consistent with the study objectives)
- possible data sources
- the data collection procedure (accurate, economical and timely)

Types of Research
Three sometimes overlapping streams of marketing research:
1. exploratory research—information to improve research
2. conclusive research—information to help choose between courses of action
3. performance-monitoring research—feedback on chosen course of action

Exploratory Research
Exploratory research helps determine the "space" of possible marketing actions by facilitating problem recognition and definition. It is appropriate when the research objectives include:
1. identifying problems or opportunities
2. gaining perspective on the nature of the problem
3. gaining perspective on variables involved
4. establishing priorities
5. formulating possible courses of action
6. identifying possible pitfalls in doing conclusive research

Conclusive Research
Conclusive research aims to narrow the field of strategic alternatives down to one. It can be sub-classified into descriptive research and causal research.

Descriptive Research
Descriptive research characterizes marketing phenomena and associations between them without testing for cause-and-effect relationships. Descriptive research is appropriate for:
1. determining the frequency of occurrence of marketing phenomena
2. determining the degree to which marketing variables are associated
3. making predictions regarding the occurrence of marketing phenomena

Cross-Sectional Design
Cross-sectional research design, often used in descriptive research, samples population elements at one point in time through surveys. Cross-sectional design is intended to be done just once, without ongoing surveying of participants.

Implicit Causal Models
The basis for descriptive research being of use for decision-making is the decision maker's implicit model of how the marketing system functions in regard to the specific area under investigation. The lower the decision-maker's confidence in the wisdom of the causal model, the lower the value of descriptive research in the decision-making process.

Causal Research
Causal research gathers evidence regarding cause-and-effect relationships through a structure designed to minimize systematic error, maximize reliability, and allow reasonably unambiguous conclusions regarding causality. It is appropriate for studying which variables give rise to an effect, why they do so, or how the causality works. Although surveys can be used to test hypotheses, controlled experiments are better for assessing causal hypotheses.

Performance-Monitoring Research
Performance monitoring relate inputs to outputs by tracking marketing mix and situational variables, as well as sales, share of market, profit, and return on investment, in order to determine whether plans are achieving objectives, whether the marketing program is being implemented as planned, and whether the business environment is as anticipated when plans were formulated. Data sources appropriate for performance-monitoring research include questioning of respondents, secondary data and observation.

Longitudinal Design and Panel-Based Research
Continuous performance monitoring requires a longitudinal research design, in which a fixed sample of population elements, or panel, is measured repeatedly over time. Panels
- reveal important aspects of consumer behavior that cannot be gleaned from cross-sectional data
- gather more accurate data than cross-sectional surveys
- gather extensive background and geodemographic information on participants
- reduce bias through period-by-period recording of purchase
- tend to cost less per data point than surveys.

Disadvantages of panels include unrepresentative sampling, which occurs when the panel differs from the target population in certain characteristics, and response bias, which results when panel members' responses are affected by being on the panel.

Data Sources for Marketing Research Applications

Sources of marketing data can be categorized into four basic groups:
- respondents
- analogous situations
- experimentation
- secondary data

Communication with Respondents

Two principal methods are used to obtain data from respondents: communication and observation. Communication requires the respondent to actively provide data through verbal response during the course of focus group or in-depth interviews.

Observation of Respondents

Observation involves the recording of the respondent's behavior in order to eliminate errors associated with the recall of behavior. This is often less costly and more accurate than asking the respondent to recall the same behavior at another point in time. While observation can accurately record what people do and how it is done, it cannot be used to determine the motivations, attitudes, and knowledge that underlie behavior.

Case Histories

The case history approach involves intense investigation of prior situations that are analogous or appear relevant to the current one, particularly in situations involving complicated interactions between variables. Target cases are selected to help
- identify relevant variables
- indicate the nature of the relationship among those variables
- identify the nature of the problem or opportunity present in the original decision situation

Data sources include:
- records and reports
- observation of key variables
- discussions with experts and lay users

Marketing Simulation

A marketing simulation represents the marketing system incompletely through an analogous version of marketing phenomenon that was created using a statistical model. Based on data inputs on the independent variables and established probabilities regarding their effect on the dependent variables under study, the formal system can be used to generate probabilities for outcomes of interest.

Experimentation

Experiments involve the direct manipulation of key independent variables, and measurement of their effects on dependent variables, in order to support relatively unambiguous statements regarding cause-and-effect relationships. The objective is to control for other variables that might confuse one's ability to make valid causal inferences while measuring the effects of the independent variables on a dependent variable.

Secondary Data   pg 69

Primary data are collected specifically for the research needs at hand, whereas secondary data have already been collected for some other purpose. Internal secondary data are generated and made available within the organization; external secondary data originate outside it, in government publications, trade association data, books, bulletins, reports, and periodicals.

Internal Data
Organizations collect internal data as part of their normal operations. Advantages of internal secondary data are low cost, accuracy and easy availability.

External Data—Syndicated
Syndicated data sources are companies whose core business is collecting and selling standardized data to other firms. The data collected are selected to serve information needs shared by client firms, including:
- consumer data
- retail data
- wholesale data
- advertising evaluation data
- media and audience data

[A listing of syndicated sources of marketing data is provided in Appendix 2A starting on page 98.]

Data Technology and Information Systems   pg 72

Technological development in computer hardware and software has brought about innovations in the data gathering and processing techniques used in marketing research.

Technology Changes
Data types are increasingly gathered by electronic methods, including UPC scanners, split-cable TV, internet technologies, and "people meters" for monitoring television viewing habits.

[Features on current innovations in technologies appear throughout the book, including one on neuromarketing (pg 156), two on online MR (pgs 239 and 257), one on micro-targeting and survey panels (pg 565), and one on customer analytics (pg 590). The feature on multinomial logit analysis (pg 465) and the section on the Heckman Model for correcting selection bias (pg 585) also illustrate how the landscape of marketing research continues to be transformed through theoretical advances made possible by improved computational power. Although the later topics involve more advanced understanding of quantitative analytical techniques, the instructor might wish to reference to such advancements to impress on students how technological innovations and improvements continue to revolutionize the field.]

Single Sourcing
A single source is a marketing research provider having a single, comprehensive, and integrated database that contains everything the client needs to conduct its marketing research program, including sales tracking and household-level purchase behavior as well as other data collected via UPC scanners, people meters, split-cable advertising, and panel data. Single-source information supports the ability to make decisions in real-time response to the market.

Marketing Intelligence Systems
Marketing intelligence systems, such as marketing decision support systems (MDSS) and marketing research information systems (MRIS) include:
- a system for the collection and storage of recurring data
- a statistical model for interpreting the data
- a presentation or interface for accessing this information

Role of Secondary Data pg 78

When determining appropriate sources of marketing data while designing a research project, survey research should be used only if the data cannot be collected via secondary data. The first step in the data collection stage is to determine whether the data have already been collected internally or by a library or syndicated source.

Advantages of Secondary Data
Secondary data is less expensive and time-consuming to collect than primary data. They can aid in the formulation of the decision problem, suggest methods and types of data for meeting the information needs, and serve as a source of comparative data by which primary data can be interpreted and evaluated.

Disadvantages of Secondary Data
The major disadvantages of secondary data are:
- data fit—data often don't exactly fit the information needs of the project
- level of aggregation—data aggregated without the breakdown or cross-tabulations required by the project
- accuracy—difficulty in evaluating accuracy of data (need original source that does not have a conflict of interest and that discloses a detailed research design that is consistent with high quality data)
- timeliness—data may be outdated

Library Sources of Secondary Data
Library sources of marketing data include government documents, periodicals, books, research reports, and trade association publications.

[A listing of library sources of marketing data is provided in Appendix 2B starting on page 103.]

Government Data Sources
The largest single source of statistical data is the U.S. government:
- Bureau of the Census—People, Business, and Geography
- North American Industry Classification System (NAICS) code—classifies all manufacturing into 20 major industry groups to provide broad statistical comparability regarding business activity across North America

Though the fundamentals of marketing research apply universally, data sources available to marketing researchers differ greatly across countries.

International Data Sources
Sources of international research data include:
- the U.S. Department of Commerce (U.S. DOC) and other governmental agencies
- international organizations such as the Organization for Economic Cooperation and Development (OECD)
- service organizations such as banks, export trading companies, trade associations, and world trade clubs
- private research organizations

International Secondary Data Sources
Virtually every country, as well as various international organizations, have available secondary data from both government and private sources; these are helpful in providing general information such as economic indicators, political stability, and the exchange rate fluctuations. Care must be exercised in using these data; they are not always comparable across countries, as the definitions used for variables are sometimes different.

accuracy
Reducing both systematic (i.e., in a definite direction; a bias) and random (in any direction at all; noise) errors increases the accuracy of research results.

causal model
A formal system laying out which marketing variables result in specific outcomes; the causal model can be supported or refuted by empirical data.

causal research
A formal research design whose purpose is to determine cause-and-effect relationships among a set of marketing variables.

consumer profile
Comprehensive description of the characteristics of consumers of a particular product or service, typically including geodemographic, psychographic, and purchase data.

continuous performance measures
Measures of marketing performance (e.g., weekly sales) taken at regular intervals on an ongoing basis.

cross-sectional design
Research involving a sample of units (people, firms, products, etc.) selected from the population of interest and measured at only a single specific time.

descriptive research
Research whose emphasis is not causal, but on providing a rich descriptive portrait (e.g., determining the frequency with which a marketing action or outcome occurs or the degree to which two marketing variables co-occur).

endogeneity
As opposed to an exogenous variable, which can be completely controlled to understand its effects on a system, an *endogenous* variable is itself at least partially affected by the system of which it is a part (e.g., one's decision to apply to college is affected by tuition rates, but tuition rates are also affected by the number of students applying to college, so therefore one might say that tuition rates are determined endogenously).

focus group
An exploratory research technique, consisting of a group discussion led by a moderator, used to gauge consumer attitudes, beliefs, and preferences towards a (perhaps novel) product or service, which is particularly useful in the early stages of a complex marketing research project and helps avoid biases intrinsic to closed-form survey questions.

geodemographic
A variable that gives information about the basic facts of someone's life, such as age, income

level, education, gender, ethnic background, location, and many other such (typically categorical) variables; almost always collected on consumer surveys, and they allow for useful breakdowns of market behavior (e.g., to "men vs. women" or "urban vs. rural"). Note that they do not include descriptions of attitudes, intentions, or behavior.

hypothesis
A specific statement about a set of measurable quantities, usually assessed by collecting data.

longitudinal research design
Research involving a sample of units (people, firms, products, etc.) selected from the population of interest and measured at multiple points in time, yielding a time-series for each.

omnibus panel
A group of respondents whose measurements are taken repeatedly over time, such as in a longitudinal study, but with the important proviso that the variables on which they are measured can change from one time to the next.

panel
A group of respondents who have agreed in advance to offer data to a specific researcher—common in supermarket purchases (so-called scanner panels), media assessment (e.g., Nielsen households), and online; allows researchers to have a stable set of respondents whose core characteristics are already known, and so do not need to be measured afresh each time data are collected, and also to provide individual-level response histories, allowing changes to be accurately assessed over time.

psychographic
A variable that accounts for the ways in which people live their lives, comprising such concepts as lifestyle, social classification, and personality type; transcends mere demographic categories (e.g., whereas young, urban, and professional are geodemographic descriptors, "yuppie" is psychographic and connotes far more).

reliability
The degree to which a variable is consistent in repeated measurements taken under identical conditions.

response bias
A tendency on the part of a respondent, either conscious or unconscious, to misreport the quantity the researcher is attempting to measure.

sample
The units selected by the researcher, usually at random from a target population, to participate in the research study.

scenario analysis
Assessing how results change when input quantities are assumed to take on a variety of different values (e.g., how a product's sales projections change at various price levels).

selection bias
Any of a number of possible factors that result in a non-random sample being selected from the target population, thereby causing an inaccurate measurement in a desired output.

sensitivity analysis
An analysis performed to gauge the effects of assumed parameter values or assumptions on a final answer, policy, or other dependent variable (e.g., if we have assumed that 10 percent of people will reply to a survey), to calculate total costs, a sensitivity analysis would ask how much costs might change for each 1 percent difference in response rates in the range 5 percent to 15 percent.

single source
A type of data stemming from one research provider alone, who has either collected comprehensive data directly or skillfully aggregated it from multiple sources.

survey research design
A common marketing research design that involves a (cross-sectional) sample of various population subgroups at a particular moment in time.

systematic error
An error in measurement attributable to a consistent bias, one not attributable merely to the randomness of the sampling process.

traditional panel
A group of respondents whose measurements are taken repeatedly over time, using the same variables.

units of analysis
The main entity being analyzed in the course of a research project—usually the "lowest level" of data available, with other comparisons based on aggregation (e.g., in marketing applications, it may be consumers, groups/segments, locations, salespeople, stores, or channel members).

unrepresentative sampling
A frequent problem in panels, where those likely to take part do not represent the general population (e.g., people with a greater sensitivity to inducements or a general willingness to have their purchases and behavior recorded).

DISCUSSION QUESTIONS

1 *Provide an example of a business situation in which a cross-sectional design could provide misleading results compared to a similar individual-level longitudinal study.*

Students' examples should present an instance where a series of survey results unconnected in time could miss salient features of, or create a misleading impression about, the phenomenon under investigation. For example, where the response to a promotion shows an increase in sales, but does not show that those customers responsible for the increase were largely previous customers stocking up on the product while it was on sale rather than new customers trying the product for the first time. The key feature of any answer should be the lack of ability to connect survey units from one sampling period to the next, and consequent problems in interpreting effects.

Instructor's Further Probe: If longitudinal design eliminates such weaknesses of the cross-sectional design, why then use the cross-sectional design?

Suggested Probe Response: A key advantage the cross-sectional data is that it can be compiled much faster, thus yielding quicker results. Encourage students to recognize the constant trade-offs required in research. In a particular situation without reason to suspect otherwise, it may be that a cross-sectional design is adequate.

2 *If you had to design research to examine consumer buying habits regarding various consumer goods and to develop hypotheses regarding the positioning of a particular brand, which syndicated data sources would be useful? Which specific firms might you consult?*

Student responses should reference one or more of the syndicated sources of consumer data mentioned in the chapter text (starting on page 70) or the appendix (starting on page 98).

3 *What is the role of secondary data in the research process? What are the advantages and disadvantages of secondary data relative to primary data? How can they be used in concert to arrive at quicker, more accurate results than relying on either alone?*

Secondary data can provide more easily available, lower cost information than survey research. They can aid in the formulation of the decision problem, suggest methods, serve as a source of comparative data, and reveal details that may facilitate the design of proposed research. Disadvantages are that the data often don't exactly fit the information needs of the project, that the data are often aggregated without the breakdown required by the project, that the accuracy of the data is difficult to evaluate from available sources, and that the data may be outdated.

4 *Using the most recent data published by the Bureau of the Census, compare the demographic characteristics of your county, your state, and the United States in general. Include analyses*

of total population, general level of education, income, and employment in each population unit.

Responses should touch on demographic data within each population unit and note differences from national mean values.

5 *Using the U.S. Bureau of the Census's most recent edition of Census Tracts, report for the MSA of your choice. Compare the totals for the MSA with two tracts within the MSA. Select and compare two tracts that will provide noticeable contrasts in areas that interest you, such as ethnic make-up, age breakdowns, industries employing residents, education levels, income, or others. Provide a short report comparing the two tracts and the MSA for each area you studied, including appropriate graphical evidence.*

Reports should include demographic comparisons between the tracts and the MSA as a whole, using at least some of the stated breakdown variables.

6 *MINICASE: You have been hired by an electronics automobile parts marketer to research the market in Europe for its products. The company has tentatively targeted SAAB and Volvo in Sweden, Fiat in Italy, Renault in France, and Audi in Germany as its prime prospects. Outline an approach to the use of secondary data to help assist the marketers in the assessment of these markets.*

To get an overview of the data available on the European market, students may wish to consult various European directories of marketing sources. Students' secondary sources may include any of the following types, and specific publications within each: annual or quarterly reports of the companies in question; popular press, academic and specialist articles written about the international automotive and auto parts industries; specialist sources (e.g., trade magazines and web resources) specific to the automotive industry; governmental publications on the auto parts sector, including those available from the countries in question. Other secondary sources of marketing information might include Chambers of Commerce for each of the countries involved in the research, foreign brokerage houses' reports on each of the companies in their respective countries; and corporate information databases. It would then be the task of the researcher, once these sources have been identified, to determine what data can be used as information for the marketers.

REVIEW QUESTIONS

1 Which of the following is an example of a research design?
   a using syndicated secondary data
   b setting up a consumer panel using UPC scanners
   c statistical analysis and modeling through an MDSS
   d identifying a plausible hypothesis regarding a marketing problem by interviewing experts
Ans: d
Rationale: A research design must describe the information to be collected, as well as the data sources. Answers a, b, and c only specify a data source or collection method, not the information to be collected. Answer d is an example of exploratory research.

2 Which of the following is not a formal hypothesis?
   a Improving the quality of the product by using rubber instead of plastic will increase the percentage of repeat buyers by 20 percent.
   b A consumer panel will test how consumers respond to a 25 percent increase in advertising frequency.
   c A television campaign emphasizing the achievements of candidate X will result in an 8 percent boost in the polls.
   d Moving the root beer display nearer to the ice cream freezer will result in a sales increase of both products.
Ans: b
Rationale: A hypothesis is a firm statement that is testable as either true or false. Answer b does not postulate a hypothesis regarding consumer response.

3 Research aimed at making predictions regarding the occurrence of marketing phenomena based on association between marketing variables is a form of:
   a descriptive research
   b psychographic analysis
   c causal research
   d market potential study
Ans: a
Rationale: Descriptive research includes research with the objectives of portraying the characteristics of marketing phenomena and determining the frequency of occurrence, determining the degree to which marketing variables are associated, or making predictions regarding the occurrence of marketing phenomena. Causal research requires rigor in determining a cause-and-effect relationship rather than mere association, usually through experimentation. A market potential study does not necessarily make predictions.

4 Cross-sectional design relates to longitudinal design in what way?
   a Sampling across one dimension of data gives a different result than across an orthogonal (i.e., uncorrelated) dimension.
   b Cross-sectional research cannot avail itself of certain statistical methods, such as clustering or ordinal regression.
   c Longitudinal samples (e.g., panels) provide information about the same group of units over a period of time.

d Survey research focuses more on attitudinal issues than longitudinal panel research.

Ans: c

Rationale: Longitudinal or panel research studies the same sample over time, whereas a cross-sectional design studies a sample at a single point in time.

5 A causal model does what in marketing research?
   a It allows a cataloguing of sources of systematic response error.
   b It facilitates effective marketing choices by gathering evidence for conclusive research.
   c It provides a basis for hypotheses and a means of incorporating evidence toward arriving at a sound final decision.
   d It is the statistical analysis input into an MDSS.

Ans: c

Rationale: Causal models allow researchers to assess which variables (under managerial control or not) affect quantities of interest. Note that answer b is not correct because it suggests that the causal model gathers evidence.

6 A response bias is
   a a bias a respondent has about the surveyor.
   b an error caused by people who are too mobile or well-off to be interested in panel inducements not being selected for the study.
   c also called a "mortality rate," resulting from members moving or losing interest or other forms of attrition.
   d a tendency, conscious or not, to mis-report the degree of the behavior being monitored.

Ans: d

Rationale: A response bias can come about for many reasons (which the other choices conjecture), but deals with inaccurate reporting on the part of the respondent.

7 On omnibus panel
   a measures the *same* variables over time for a set of respondents.
   b measures *different* variables over time for a set of respondents.
   c provides suggestions for researchers about which questions are facilitating their marketing decision-making, and how to change them if not.
   d surveys the market potential for privately owned marketing firms and their syndicated data services.

Ans: b

Rationale: That measured variables change is a key feature of an omnibus panel.

8 When pre-testing commercial messages to be aired on television, which of these methods allows for immediate observation of participants' responses?
   a public opinion survey
   b diary panel
   c recruited-audience method
   d normal viewing environment method

Ans: c

Rationale: Public opinion surveys are not used to pre-test commercials. A diary panel and the normal viewing environment method will result in a delay between the response of the

participants and their report of it and do not allow direct observation. The normal viewing environment would be disturbed by the intrusion of real-time measurement methods. The recruited-audience method tests commercials in a viewing center where participants' reactions can be immediately observed and reported.

9 Which of the following is a primary advantage of the use of scanner panel data over other methods of consumer data collection?
  a accurate longitudinal histories of household purchases
  b allowance for shelf usage optimization
  c better tracking of consumer awareness and attitudes
  d full demographics of panel households
Ans: a
Rationale: The main purpose of scanner panel data is to generate accurate histories for each household, including all purchases made and the store environment for each. Shelf usage refers to store data, which does not require a panel; attitudes cannot be tracked via household-level purchases alone; demographics would be part of any panel, not only scanner panels.

10 Suppose your research objective was to determine the potential market for a dog-themed work organizer. Specifically, you are to determine the probability that dog-owning office workers would purchase such an item. Which of the following pieces of secondary data would enable you to come up with such an estimate?
  a income profiles of dog-owning office workers
  b probability that a dog owner would buy such a product
  c probability that an office worker would buy such a product
  d all of the above
  e none of the above
Ans: e
Rationale: Secondary data that is highly aggregated cannot be broken down so that more specific research needs can be met. The buying habits (i.e., probability of purchase) of dog owners and that of office workers may bear no relation to the buying habits of the conjoined group (dog-owning office workers). It would be wrong to merely multiply these probabilities, even as an estimate. Knowing income profiles (choice a) for the conjoined group would not suggest anything about purchase likelihood or the overall market size.

TOPICS FOR FURTHER DISCUSSION

A.   An advertising firm has used a series of print ad campaigns where the visual image and caption of the ad bear no relation to the product or service being marketed. The campaigns have been fairly successful, with revenues increasing following the campaigns. The theory behind this strategy is that the ads appeal to a quirky sense of humor and irony characteristic of the target demographic. Discuss with the students
- what kind of implicit causal model might be being employed by the decision-makers behind this campaign
- whether (and if so, how) the decision-makers at the firm can be confident of their model
- other causes that might account for increased revenue
- whether descriptive research could be helpful in this situation
- what questions they think were (or should have been) asked before deciding on this campaign and what types of research activities might have these questions

B.   A supermarket that has provided many incentives for using its customer loyalty card has compiled a great deal of data suggesting that special product demonstrations done in a particular area of the store correlate with substantially higher sales for that product. Discuss with the students
- whether this can be presumed to be a cause-and-effect relationship (i.e., that the physical location of the product demos causes the higher sales)
- what information they would gather at the outset if hired to study the causal mechanisms involved (e.g., data from product demos done at other locations, other variables that correlate with the successful demos such as certain salespeople, certain types of products)
- whether they think that causal research could be performed well in this setting (and why they think so)
- what sources of error they think would need to be minimized

C.   A major health care organization is rolling out electronic patient medical charts operated through wireless carts over the course of five years. Discuss with the students
- how ad hoc surveys might be used to measure the advantages and disadvantages of the new system to patients
- the sorts of information might not be obtainable without the collection of longitudinal data
- how longitudinal data might be collected in this case and any possible weaknesses of the suggested method(s)

FURTHER READING

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