

Examples adapted from *Statistics: Learning From Data*, Roxy Peck, Cengage, 2013.

Example 1:

## Deception in Online Dating Profiles

With the increasing popularity of online dating services, the truthfulness of information in the personal profiles provided by users is a topic of interest. The authors of the paper **“Self-Presentation in Online Personals: The Role of Anticipated Future Interaction, Self-Disclosure, and Perceived Success in Internet Dating”** (*Communication Research* [2006]: 152–177) designed a statistical study to investigate misrepresentation of personal characteristics. The researchers hoped to answer three questions:

1. What proportion of online daters believe they have misrepresented themselves in an online profile?
2. What proportion of online daters believe that others frequently misrepresent themselves?
3. Are people who place a greater importance on developing a long-term, face-to-face relationship more honest in their online profiles?

Example 2:

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### Example 7.3 Tuned-In Babies

The director of the Kaiser Family Foundation’s Program for the Study of Entertainment Media and Health said, “It’s not just teenagers who are wired up and tuned in, its babies in diapers as well.” A study by Kaiser Foundation provided one of the first looks at media use among the very youngest children—those from 6 months to 6 years of age (**Kaiser Family Foundation, 2003, [www.kff.org](http://www.kff.org)**). Because previous research indicated that children who have a TV in their bedroom spend less time reading than other children, the authors of the Foundation study were interested in learning about the proportion of kids who have a TV in their bedroom. They collected data from two samples of parents. One sample consisted of parents of children 6 months to 3 years of age. The second sample consisted of parents of children 3 to 6 years of age. Based

### Example 3:

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#### Example 7.5 Do U Smoke After Txt?

Researchers in New Zealand investigated whether mobile phone text messaging could be used to help people stop smoking. The article **“Do U Smoke After Txt? Results of a Randomized Trial of Smoking Cessation Using Mobile Phone Text Messaging”** (*Tobacco Control* [2005]: 255–261) describes an experiment designed to compare two experimental conditions (treatments). Subjects for the experiment were 1,705 smokers who were older than 15 years and owned a mobile phone and who wanted to quit smoking. The subjects were assigned at random to one of two groups. People in the first group received personalized text messages providing support and advice on stopping smoking. The second group was a control group, and people in this group did not receive any of these text messages. After 6 weeks, each person participating in the study was contacted and asked if he or she had smoked during the previous week. Data from the experiment were used to estimate the difference in the proportion who had quit for those who received the text messages and those who did not. Using statistical infer-

### Example 4:

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#### Example 7.7 My Funny Valentine

It probably wouldn't surprise you to know that Valentine's Day means big business for florists, jewelry stores, and restaurants. But would it surprise you to know that it is also a big day for pet stores? In January 2008, the National Retail Federation conducted a survey of 8,447 consumers that were selected in a way that the federation believed would produce a representative sample of U.S. adults (**“Consumers Opt for Quality Time with Loved Ones Over Traditional Gifts This Valentine's Day,”** [www.nrf.com](http://www.nrf.com)). One question in the survey asked, “Do you plan to spend money on a Valentine's Day gift for your pet this year?” The Federation hoped to learn about the proportion of U.S. adults that planned to buy a gift for their pet.

### Example 5:

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#### Example 7.8 Those Darn Cell Phones!

Example 7.6 described a study that investigated whether talking on a cell phone while driving had an effect on response time (**“Driven to Distraction,”** *Psychological Science* [2001]: 462–466). In the study, subjects were assigned at random to one of two experimental conditions (driving while talking on a cell phone and driving while listening to the radio). While driving in a simulator, subjects were told to brake when a traffic light changed from green to red, and response time was measured. The researchers were interested in answering the following question: Does using a cell phone while driving result in a slower reaction time?

### Answering Four Key Questions To Identify Appropriate Method

<b>Table Row</b>	<b>Q Question Type Estimation or Hypothesis Test?</b>	<b>S Study Type Sample Data or Experimental Data?</b>	<b>T Type of Data 1 variable or 2? Categorical or numerical?</b>	<b>N Number How many samples or Treatments?</b>	<b>Method to Consider</b>
<b>1</b>	Estimation	Sample	1 categorical variable	1	One-Sample z Confidence Interval for Proportion
<b>2</b>	Hypothesis Test	Sample	1 categorical variable	1	One-Sample z Test for Proportion
<b>3</b>	Estimation	Sample	1 categorical variable	2	Two-Sample z Confidence Interval for Difference in Proportions
<b>4</b>	Hypothesis Test	Sample	1 categorical variable	2	Two-Sample z Test for Difference in Proportions
<b>5</b>	Estimation	Sample	1 numerical variable	1	One-Sample t Confidence Interval for Mean
<b>6</b>	Hypothesis Test	Sample	1 numerical variable	1	One-Sample t Test for mean
<b>7</b>	Estimation	Sample	1 numerical variable	2	Two-Sample t Confidence Interval for Difference in Means
<b>8</b>	Hypothesis Test	Sample	1 numerical variable	2	Two-Sample t Test for Difference in Means
<b>9</b>	Hypothesis Test	Sample	1 numerical variable	More Than 2	ANOVA F Test
<b>10</b>	Estimation	Sample		More than 2	Multiple Comparisons