

Due November 3, 2010, at the **beginning of section**

For the reports about statistical studies in problems 1 through 4, identify the following items (if possible). If you can't tell, then say so.

- (a) The population
  - (b) The population parameter of interest
  - (c) The sample
  - (d) The sampling method, and if randomization (chance being introduced in a controlled way) was involved.
  - (e) Potential sources of bias that you notice.
1. The Gallup poll interviewed 1423 randomly selected American citizens in 1999, and reported that when “asked which type of content bothers them most on TV, 44% of Americans identify ‘violence’, 23% choose ‘lewd and profane language’, while 22% say ‘sexual situations’ ”.
  2. A company packaging snack foods maintains quality control by randomly selecting 10 cases from each day’s production and weighing the bags. Then they open one bag from each case and inspect the contents.
  3. Researchers waited outside a bar they had randomly selected from a list of such establishments. They stopped every 10th person who came out of the bar and asked whether he or she thought that drinking and driving was a serious problem.
  4. CNN has on its website a question asking visitors if they would prefer to watch Paula Abdul’s new dance show “Live to Dance” if it went head-to-head with “American Idol”.
  5. In a large city school system with 20 elementary schools, the school board is considering adopting a new policy that would require elementary school students to pass a test in order to be promoted to the next grade. The PTA wants to find out whether parents agree with this plan. Listed below are some of the ideas for gathering data. For each, indicate what kind of sampling strategy is involved, and what (if any) biases might result.
    - (a) Put a big ad in the newspaper asking people to log their opinions on the PTA website.
    - (b) Randomly select one of the schools and contact every parent by phone.
    - (c) Send a survey home with every student and ask parents to fill it out and return it the next day.
  6. In 1965, the U.S. Supreme Court decided the case of *Swain v. Alabama*. Swain, a black man, was convicted in Talladega County, Alabama, of raping a white woman. He was sentenced to death. The case was appealed to the Supreme Court on the grounds that there were no blacks on the jury; even more, no black “within the memory of persons now living has ever served on any petit jury in any civil or criminal case tried in Talladega County, Alabama.” The Supreme Court denied the appeal, on the following grounds. As provided by Alabama law, the jury was selected from a panel of about 100 persons. There were 8 blacks on the panel. (They did not serve on the jury because they were ‘struck’ through peremptory challenges by the prosecution; such challenges were constitutionally protected until 1986.) The presence of 8 blacks on the panel showed the “overall percentage disparity has been small and reflects no studied attempt to include or exclude a specified number of Negroes.”

At that time in Alabama, only men over the age of 21 were eligible for jury duty. There were 16,000 men over the age of 21 in Talladega County, of whom about 26% were black. If 100 people were chosen at random from this population, what is the chance that 8 or fewer would be black? What do you conclude?