Introduction to
Quantitative Methods 1

Theory and Concepts

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Textbook

Seeing Through Statistics
by
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IMPORTANT

MY PART OF THIS COURSE

DOES NOT USE

BLACKBOARD, TOP CLASS, ONLINE CLASSES

OR ANY VARIATION OF THESE
What do you know about statistics?
It’s boring...
There are three kinds of lies:

- Lies
- Damned Lies
- and
- Statistics

- Benjamin Disraeli
Simpsons’ episode:

- Homer is questioned about his newly formed vigilante group

**Newscaster:** Since your group started up, petty crime is down 20%, but other crimes are up. Such as heavy sack beating which is up 800%. So you’re actually increasing crime.

**Homer:** You can make up statistics to prove anything.

43% of people know that.
Survey

Rate each person on a scale of 1 to 10 (1=lowest, 10=highest) on the following attributes:

- Intelligence
- Attractiveness
- Niceness
- Most Likely to be a Good Worker
Misuse of Statistics
Statistics is the science of data. This involves collecting, analysing and interpreting information.

Descriptive Statistics uses graphical and numerical techniques to summarise and display the information contained in a dataset.

Inferential Statistics uses sample data to make decisions or predictions about a larger population of data.
More Definitions

**Population:** The entire collection of individuals or objects about which information is desired.

**Sample:** A part (subset) of the population selected in some prescribed manner.

**Variable:** A characteristic or property of an individual unit in the population.

**Representative Sample:** A selection of data chosen from the target population which exhibits characteristics typical of the population.

Representative samples should give unbiased estimates
Mater responds to drug trial controversy

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Dublin's Mater Hospital has said the requirement of some pharmaceutical companies that women of childbearing age use contraceptives during trials of potential drug treatments, goes against its ethos.

The hospital said that individuals and couples have the right to decide themselves about how they avoid pregnancy.

The Mater was responding to the controversy over the decision of its ethics committee to defer approval of a clinical trial of a potential lung cancer drug, because of a requirement that those who participate in the trial use contraception.

Trials of the drug are underway at Tallaght and Beaumont Hospitals.

The hospital said it was committed to meeting all of its legal requirements regarding clinical trials while at the same time upholding the principles and ethos of the hospital's mission.

St Vincent's University Hospital cancer specialist Dr John Crown said hospital ethics committees should not object to the use of contraception, given the potentially fatal effect of experimental cancer treatment on an unborn child.
About our Live Votes and surveys

How 1,000 people can be more representative than 200,000

One week in the middle of the Clinton-Lewinsky scandal, more than 200,000 people took part in an MSNBC Live Vote that asked whether President Clinton should leave office. Seventy-three percent said yes. That same week, an NBC News-Wall Street Journal poll found that only 34 percent of about 2,000 people who were surveyed thought so.

To explain the vast gap in the numbers in this and other similar cases, it is necessary to look at the difference in the two kinds of surveys.

POLLS
Journalists use polls to gauge what the public is thinking. The most statistically accurate picture is captured by using a randomly selected sample of individuals within the group that is being targeted, typically adult Americans.

While a poll of 100 people will be more accurate than a poll of 10, studies have shown that accuracy begins to improve less at about 500 people and increases only a minor amount beyond 1,000 people.

So, in the case of that NBC-WSJ poll, only 2,005 adults were surveyed by the polling organizations of Peter D. Hart and Robert M. Teeter. The poll was conducted by telephone and had a margin of error of plus or minus 2.2 percentage points at the 95 percent confidence level. The confidence level means that if the same poll were conducted 100 times, each one randomly selecting the people polled, only five of the polls would be expected to yield results outside the margin of error.

Random selection of those polled is necessary to ensure a broad representation of the population at large. For example, a nationwide poll asking which NBA team is the best would likely yield a far different answer in Philadelphia than in Los Angeles. (And neither one would be a good sample of the population at large.)

In the NBC-WSJ survey, pollsters first randomly selected a number of geographic areas and then telephone numbers were generated in a way that allowed all numbers in those areas (both listed and unlisted) an equal chance to be called. Only one adult in each household was then selected to answer the poll.
While variation can occur depending on what questions are asked and how they are asked, similar questions tend to yield similar answers. One way to account for variation, however, is to ask the same question over a period of time.

**ONLINE SURVEYS**

In contrast, MSNBC's online surveys (Live Votes) may reflect the views of far more individuals, but they are not necessarily representative of the general population.

To begin with, the people who respond *choose* to do so — they are not randomly selected and asked to participate, but instead make the choice to read a story about a certain topic and then vote on a related question. There is thus no guarantee that the votes would reflect anything close to a statistical sample, even of MSNBC.com users: The participants in a Sports Live Vote and a Politics Live Vote may overlap, but each group is likely to be dominated by people with an interest in each particular area. In addition, while MSNBC.com’s Live Votes are designed to allow only one vote per user, someone who wants to vote more than once could simply use another computer or another Internet account.

According to Nielsen//NetRatings, nearly 75 percent or 204.3 million Americans had access to the Internet from home in early 2004. In contrast, more than 90 percent of Americans live in homes with a telephone.

This does not mean that Internet polling cannot be scientific. *Harris Interactive*, for example, has set up a system with checks and balances that allow it to use the Internet to obtain survey results comparable with more traditional methods.

But MSNBC’s Live Votes are not intended to be a scientific sample of national opinion. Instead, they are part of the same interactive dialogue that takes place in our online chat sessions: a way to share your views on the news with MSNBC writers and editors and with your fellow users. Let us know what you think.
Searching for Correlations Between Beauty and Intelligence From the Male Perspective: A Brief Study

Alanna Albano

Abstract: In order to determine if men place particular stereotypes on women based on looks alone, five members of the Bryn Mawr College community answered a brief survey. The survey involved looking at a collection of pictures of different women, and then answering a series of questions that made references to the women's beauty, intelligence, personality, interactions with others, and job capability. Some small specific trends were observed in the completed surveys; however, it was rather disappointing to find that no two surveys were exactly alike in their responses about the women. Although no definitive conclusion was reached in regards to associating certain stereotypical roles with a particular feminine appearance, the majority of the survey responses reinforced some of the beauty-related issues previously debated in class.

Keywords: Beauty, symmetry, confidence, intelligence

Experimental Procedure: Nine color pictures of women from various age, job, and socioeconomic divisions were collected onto a single sheet. No information about the women was provided to the participants other than the pictures. A survey consisting of nine questions was designed to ask about the intelligence, personality, and status of the women (see Supporting Information for a listing of all survey questions). Participants were chosen based on accessibility, relation to the surveyor, and willingness to complete the survey. Candy and chocolate was sometimes used as an incentive, along with a pleasant disposition and firm, polite manner in order to attract survey participants. Usually, stating the overall purpose of the survey worked best when encouraging others to complete the survey. At this particular time of the year, it was very difficult to find survey participants. A couple of men "politely" refused the request to complete the survey due to excessive amounts of work and other commitments. Five members of the Bryn Mawr College community completed the survey. All participants were men; four were post baccalaureate students between the ages of 24-30, and one was a housekeeper of the College. Participants required 15-25 minutes to complete the survey.

Results: The results of the survey were found to be highly varied among the participants, with only a few common responses to some of the questions. This was probably due to the highly subjective nature of the survey; most of the participants expressed different reasons for answering the survey questions in the way that they did. Pictures 3 and 5 got the most votes for being beautiful due to reasons that included "nice eyes, lips, and hair," "3 looks good with a scarf on," "a put-together look and incredible/nice eyes," "looks good from many angles, well-proportioned, nice symmetry in her face," and a look of cleanliness. Picture 7 also received a majority of votes for beauty for the same reasons.
regarding eyes, facial symmetry, and a clean look; however, one participant remarked that she did not look as put-together as 3 and 5, but still had a natural beauty to her. The general consensus among the participants was that the woman in picture 9 was the least beautiful. Her irregular features were found to be quite distracting, and her facial expression was considered "interesting." 4 and 6 also got a considerable number of votes for not being beautiful for reasons similar to those for 9. One man thought all of the women were beautiful except for 4 and 9, and suggested a makeover would help 4. Another commented that 1 and 2 could be beautiful with the help of a different style. One man only chose 3, 5, and 7 to be beautiful, and said that the rest of the women were not beautiful due to odd features or looks/styles. Another commented that the reason he thought certain women to not be beautiful was due to today's societal attitudes toward beauty. He continued to write that 1 and 4 looked like they came from the 1980s, and since the 80s style is outdated, those particular women did not look beautiful to him.

Most of the participants agreed that 2 and 7 were the most intelligent. It was commented that 2 looked intelligent because of her glasses, shorter hair style, smile, personable expression, and overall look of a business woman. Another remarked that 7 appeared intelligent due to her confidence and composure, which gave the impression of a very productive person. Pictures 6 and 9 were thought to be the least intelligent. One man considered 6 to be unintelligent because she did not look like she was in control of her life. 9 was deemed as unintelligent because one participant remarked that she portrayed the stereotypical flaky blonde. One young man made a very interesting comment regarding the intelligence of 3 and 5. He thought that they were unintelligent because they looked like women from the 1950s, and he felt that women in that time period were not as focused on higher education. He admitted that he was probably wrong and that social aspects might be affecting his view; on the other hand, he did remark that he was giving his honest opinion about pictures 3 and 5.

2, 7, and 8 were voted the most likely to be hired for a job. One man stated he would hire 2 and 8 as fashion consultants, and that it would not be possible to hire 7 because she would already be the boss. 7 also looks sophisticated enough to be the boss. 2 would also be hired because she looks successful, seems comfortable around money, is in control of who she is, looks put-together, and appears intelligent. These same reasons also applied to hiring 7; another man remarked that he would hire 7 specifically because she is very beautiful and appears nice, as well as intelligent. The friendly looking appearance of 8 would greatly increase her chances of being hired, according to one young man. Some interesting comments were made as to why the other women would not be hired. 1 looks like she is stuck in the 80s and is against change, which is an important quality for hiring. 4 would not be hired because she looks socially awkward. 6 is unfit for employment due to her emotional state, and because she does not look intelligent. Since she does not present herself as intelligent, 9 would not be hired either. One man stated that who he would hire would entirely depend on the job that the woman was applying for.

According to one participant, he determined the niceness of the women by their facial expressions, and another made judgements based on the pictures of women who resembled nice women in his own life. 2, 4, 7, and 8 got the most votes for being nice
people. Reasons for these choices included soft and welcoming facial expressions, as well as looking family oriented. 1, 3, and 9 were voted to be not nice. 1 and 9 appear to be on the defensive and look unhappy. 3 would not be nice because people that are pretty often tend to have an attitude toward others, and expect everything to be given to them. 5 and 6 got mixed reviews in terms of niceness. One man felt that 5 would be nice only to do something sinister later, and another thought 5 was nice in the same way that 2 would be. 6 could be nice because she appears family oriented and emotional, implying that she is a very caring person; on the other hand, she might be mean since she looks unhappy in the picture.

Most of the men would be likely to give money to 6 if she asked them for it, because she has a child, looks like she is sad and poor, and seems to really need the money. However, one man remarked that he would not give 6 any money because she looks all disheveled, and probably would not put the money to good use. With the exception of 1, 6, and 9, this same man also stated that he would be more likely to give the other women money because they look like they try hard in life. One participant would give money to 4 because she looks like she needs it, and another said that he would actually give money to 9 because she has a cup (in the picture) to put it in. In terms of lending the women grocery money, two of the men would lend money to any of the women; one specifically stated he would lend to all of them because he knew he would feel sorry for them, and at least he would know what the money was being used for. Another would give money to some of the women, and another said that he would give it to all of the women except 9, because she does not look like someone who helps others. One participant made it clear that he would give all of the women money at the grocery store because money is not important to him.

The women most likely to be offered assistance if they found themselves lost at a busy street corner were 1, 2, 4, 7, and 8. 9 looks too mean and scary, 6 looks like she is crazy and unstable, and 3 and 5 look like actors who would only "act" like they were lost at a street corner. Some of the other participants stated that they would assist any of the women. One man wrote that he likes to help people in need, especially when they do not ask for it. Another would help any of them because he would want directions if he were lost, and someone else said he would give any of them directions if they looked disturbed enough.

All of the participants gave various responses for the types of jobs and lifestyles that they could envision each of these women living. The summary is as follows: 1 - Ex-rock star from the 80s, professor, waitress, lawyer, chef, dental hygienist; 2 - Doctor, TV anchor, professor, mother, lawyer, waitress, comedian; 3 - actress, model, entertainer, professor; 4 - farmer’s wife, professor, lawyer, librarian, scientist, mother, housekeeper; 5 - actress, professor, mother, housewife; 6 - mother, poor immigrant, housekeeper, professor, housewife, counselor, social worker; 7 - maintenance worker, housekeeper, writer, CEO, professor, mother, real estate agent, lawyer; 8 - housewife, mother, professor, social worker, office secretary, lawyer, housekeeper; 9 - entertainer, waitress, "gold digger"/seeker of men with money. One man commented that most of the women seemed
capable of a variety of different jobs, although wearing glasses made for better doctors and scientists.

Discussion: In my last paper, I had written about a beauty survey on feminine beauty and intelligence that I conducted on twelve female participants from the Bryn Mawr community. This detailed survey was done in response to a similar, much shorter type of survey that had been given in class. When the question of whether a beautiful woman pictured on the slide projector screen was also intelligent, many of the students responded no. This answer disturbed me greatly, and I decided to find out how different members of the Bryn Mawr community viewed women's beauty and its connections to intelligence. My first survey did not contain any male input. Therefore, this motivated me to conduct a second survey in which the participants were male students and employees of the Bryn Mawr community. The exact same survey questions and pictures were used for the male participants as for the previous female ones. Although the small number of five participants did not accurately represent all male perspectives on feminine beauty and intelligence, it was still very helpful and interesting to read what they had to say on the topic. Despite some of the many flaws in the structure and design of the survey, some trends were indeed observed in the survey responses.

Symmetry, an air of confidence, and a neat, clean appearance played huge roles in determining which women were most beautiful (3, 5, 7). Asymmetrical features, an unhappy countenance, and outdated styles were characteristics shared by the least beautiful women, 4, 6, and 9. Of the women declared most beautiful, only 7 would be considered intelligent and hired for a job. The confidence and beauty of 7 give her an edge in these areas, whereas the glasses and hairstyle that 2 wears are what label her as intelligent and job worthy. 8 seems more likely to be hired because of her glasses and friendliness. Somehow, wearing glasses gives a person the look of an academician. 6 and 9, considered to be the least beautiful, were also considered to be the least intelligent and not very likely to be hired for a job. Although 3 and 5 were considered beautiful, most of the participants knew that these women were actresses in real life, which probably influenced their decisions to not specifically label them as intelligent. It is interesting to consider how responses toward 2 and 7 would have changed had the participants known that one woman is a model and the other is an actress.

Interestingly enough, the women considered most intelligent and job competent were also considered to be the nicest people. Ironically enough, the women on the two extremes of the beauty scale (3, 5, and 9) were deemed to be mean people. 6, who was considered to be one of the less beautiful women, would be the most likely to receive money if she asked for it because she has a child and appears sad and distraught. Some opinions about giving her money might have changed had her child not been in the picture with her. 9 is the least likely to receive any money because she looks mean and scary. Most of the women, regardless of their looks, would still receive help from the male participants if they got lost.

I thought it very interesting that only the male housekeeper survey participant thought that one of the women might be a doctor; none of the male postbacs labeled any of the
women as potential doctors. One would think that the postbacs, who are studying to attend medical school someday, would be the more likely ones to label some of the women pictured in the survey as physicians. I noticed that the term "housewife" was mentioned frequently as a potential career for some of the women, especially 4, 5, 6, and 8. The job associations that the men made for each of the women were too widespread to make any definitive connections between being beautiful and having a particular career. However, it should be noted that all women except 9 were labeled as potential professors, all except 1 and 9 were considered to be potential mothers, and 1, 2, 4, 7, and 8 were thought to be possible lawyers. One male participant commented that he judged the jobs and lifestyles of these women based on the women he knew in his own life; for example, he thought 8 could be an office secretary, since she looked very much like the secretaries who work in his father's office. He also thought 1 could be a dental hygienist, since she looks so much like his own. Sometimes the articles of clothing or jewelry that the women were wearing influenced the men's decision regarding what kind of lifestyle each woman might be living. 2 was thought to live a nice lifestyle because of her nice glasses. 4 was thought to be a lower middle class person because of her outdated clothes and glasses. The flashy necklace that 9 wears implied a superficial lifestyle, as remarked by one male participant.

This survey yielded some very eye-opening data. However, a similar survey conducted on a much larger scale, and perhaps with a different type of answer response format, would be more useful in understanding how men view feminine beauty and intelligence. One male participant suggested giving the survey to more people both on the campus and off the campus. I heartily agree that this would be a better step in the direction of learning more about the masculine perspective of beauty. However, if such a survey on a larger scale were ever conducted, I would hope that the majority of men would be much more willing to complete it.

Supporting Information: The following are the original questions asked in the survey:
Which of these women do you find to be beautiful? Not beautiful? Either way, explain why.
Which of these women do you find intelligent? Not intelligent? Either way, explain why.
Which of these women would you hire for a job? Why?
Which of these women do you think would be nice people? Which do you think would be mean people? Explain why.
If all of these women asked you for money, which women would you choose to give it to? Why?
What kinds of jobs and lifestyles do you envision each of these women living? Why?
If any of these women found themselves a couple dollars short at the grocery counter, would you spare them some cash? If so, which women, and why?
If you saw any of these women looking hopelessly lost on a busy street corner, would you immediately offer assistance? Which women and why?
Maintenance workers? Housekeepers?
Any other comments.

The nine photos of the different women, as well as the actual survey responses, are attached to the back of the hard copy of this paper.